# Attachment G1 - Business Solution

Part 1, Business Solution Response

Part 2, Business Requirements List

Part 3, State Guiding Principles for Customer Service Support Center and Level of Effort Budget

Part 4, Acronyms and Glossary

# 4A: Business Solution Overview (BS DID)

**CCSAS**
**Document Number SCP - FTB - 00 -1730 –150**
**Volume 1, FINAL**

| Document Review and Change Summary | | | |
|---|---|---|---|
| **Version Number** | **Issue Date** | **Author(s)** | **Brief Summary of Changes from Prior Version** |
| | | | |

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# PART 1

## Business Solution Response

# 4A.1 Introduction

### 4A.1.1 Purpose

The purpose of this response is to describe how the alliance will fulfill the requirements for a Business Solution (BS) as outlined in Exhibit 5O, Deliverable Item Description, and Business Solution. It includes an overview of the other document sections and a discussion of the business requirements list.

### 4A.1.2 Document Overview

This text is a part of Section 4A.1, an introduction to the superset Section 4A, the Business Solution Overview. The remainder of Section 4A formally describes the alliance Business Solution for CCSAS. Inspired by the Business Solution DID, that description is organized into the following major sections:

- 4A.3: CSE System Conceptual Design
  - 4A.3.1: Overview
  - 4A.3.2: CSE System Architecture
  - 4A.3.3: CSE System Architecture Objectives, Best Practices, and Attributes
  - 4A.3.4: Conceptual System Solution
- 4A.4: CSE System Environments
  - 4A.4.1: Production Environment
  - 4A.4.2: Production Simulation Environment
  - 4A.4.3: Performance Environment
  - 4A.4.4: Testing Environment
  - 4A.4.5: Conversion Testing Environment
  - 4A.4.6: Development Environment
  - 4A.4.7: System Administration Support Environment
  - 4A.4.8: Training Environment

### 4A.1.3 General Overview

The objective of the alliance solution is to provide California with a Child Support Enforcement (CSE) System that complies with the Federal provisions of the Family Support Act of 1988 (FSA88) and the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA), and the implementing State policy, regulation and statutes, and satisfies the California child support business improvement needs as specified in the SCP.

We have created the alliance business solution based upon our understanding of the CCSAS system requirements as stated in SCP Exhibit 3A – Business Requirements List. The alliance team has carefully analyzed and reviewed the provided requirements, and has identified areas that necessitated clearer definition. To clarify the scope and

solution definition, the alliance added a new field (QBP Remarks) to the CCSAS Business Requirements List. Section 4A.5 Appendix B – CSE Business Requirements List of this document contains the modified requirements list and represents the adjusted requirements in their entirety.

As articulated by the documentation in this section and in Section 4.1, the Business Solution Narrative, the alliance business solution is a best of breed configuration of current technologies, techniques, and approaches. These are:

- A state-of-the-art e-business solution architecture;
- Thoughtfully applied and developed custom components and supporting Commercial-Off-the-Shelf (COTS) products designed to support industry standards and the best practices articulated by the SCP; and
- Proven frameworks and design solutions from leading alliance child support system experiences in other states.

Taken as a whole, the alliance solution for CCSAS will support the State's vision for the future of California's Child Support Program. The formal definition of that solution is documented in the balance of Section 4A.1.

### 4A.1.4 Definitions

See Part 4 of this Attachment.

# 4A.2 Referenced Documents

## 4A.2.1 Introduction

The external documents listed below were used as reference material during the preparation of Business Solution portion of this response. As appropriate to the individual reference, we have provided the number, title, revision, date, and source of these external documents.

### 4A.2.2 Referenced Documents List

"Automated Systems for Child Support Enforcement: A Guide for States", U.S. Department of Health and Human Services, Administration for Children and Families, Office of Child Support Enforcement. Revised April 1999. Updated December 1999.

IEEE Standard 1471-2000, "IEEE Recommended Practice for Architectural Description of Software-Intensive Systems", Approved 21 September 2000, Software Engineering Standards Committee of the IEEE Computer Society.

"The Family Support Act of 1988." ("FSA88"; Public Law 100-485), enacted October 13, 1988.

"Personal Responsibility and Work Opportunity Act of 1996" ("PRWORA"; Public Law 104-193), enacted August 22, 1996.

# 4A.3 CSE System Conceptual Design

***The purpose of the CSE Conceptual Design is to provide an <u>implementation independent</u> representation of the proposed solution, and to indicate how this solution meets the system's architectural, business and operational requirements.***

The CSE System Conceptual Design consists of the following sub-sections:

- 4A.3.1 Overview. This introduces the CSE Conceptual Design. It provides a 'big picture' perspective and then examines the system from a functional and technical perspective. Finally, it reviews the main conceptual design characteristics.
- 4A.3.2 CSE System Architecture. This section describes the system architecture, which is presented from three viewpoints. The Enterprise Viewpoint focuses on business concerns, purpose, scope, and policies, the Informational Viewpoint focuses on the kinds of information handled by the system, and the Computational Viewpoint focuses on the functional decomposition of the system into a set of interacting entities.
- 4A.3.3 Architecture Objectives, Best Practices and Attributes. This section relates the CCSAS architecture objectives, best practices and attributes.
- 4A.3.4 Conceptual System Solution. This section describes the conceptual design from the perspective of how the proposed solution addresses the five business problems. It uses two viewpoints; the Conceptual CCSAS Business Problem Viewpoint depicts components of the solution with respect to how they address the business problems, and the Conceptual Operations Viewpoint describes the operational system characteristics from a user's point of view.

# 4A.3.1 Overview

***This section introduces the CSE Conceptual Design. It provides a 'big picture' perspective and then examines the system from both a functional and technical perspective. Finally, it reviews the main conceptual design characteristics.***

## 4A.3.1.1 Introducing the Conceptual Design

In this section the conceptual design is introduced. The purpose of this introduction is to quickly paint a complete picture of the solution, so that the later detailed descriptions can be more easily understood and placed in context. The section is structured as follows:

- 4A.3.1.2 Introducing the CSE System – the Big Picture. This introduction commences with pictorial view of the system, which presents the major components of the system from a 'big picture' perspective. Each of these components is then described at a high level of detail.
- 4A.3.1.3 Introducing the Functional Architecture. This introduces the functional architecture layers, and the components contained in each of the layers.
- 4A.3.1.4 Introducing the Technical Architecture. This section provides an introduction to the technical architecture, which forms the basis for the system environment descriptions provided in section 4A.4
- 4A.3.1.5 Introducing the Conceptual Design Characteristics. The section completes with an overview of the most salient and significant characteristics of the solution. These characteristics are highlighted and accentuated to illustrate how this solution meets the business and technical requirements. The characteristics are then referenced in section 4A.3.3 CSE System Architecture Objectives, Best Practices, and Attributes.
- 4A.3.1.6 Conclusion. The section concludes with a recap of the main features.

Some important comments about the nature and purpose of this conceptual design are now provided:

- The conceptual design described in this section is the full, complete Version 2 solution, as it will exist at the end of Phase 2.Version 1 is a subset of, and will evolve into the Version 2 solution. As such it is not separately described.
- The representations used in this introduction are supplementary to, and orthogonal to the System Architecture described in section 4A.3.2. The System Architecture description provided in section 4A.3.2 maps to the Business Services layer in the Functional Architecture. In other words, the System Architecture expands on and further defines the business functionality represented by the Business Services layer.
- There has been no attempt to identify in this conceptual design where alliance assets would be or may be used.

## 4A.3.1.2 Introducing the CSE System – the Big Picture

This section provides an overview of the system. We start this introduction with a 'big picture' view of the whole business solution, in this overview. This is then followed by a brief description of each of the elements represented in the diagram.

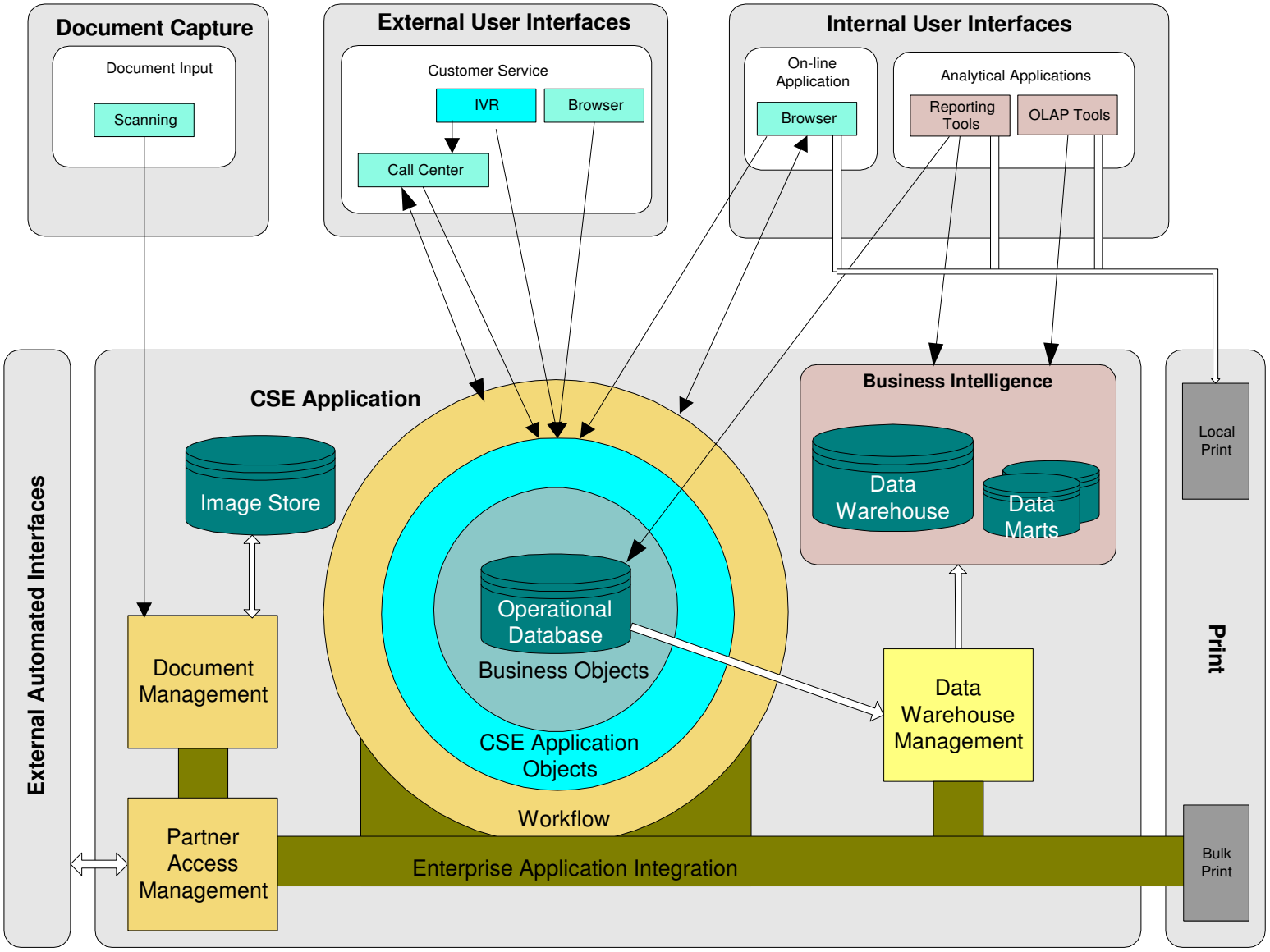



**Figure 4A.3.1-1 CSE Conceptual Design Overview** – *The 'big picture.'*

Figure 4A.3.1-1 represents the system as a core application surrounded by the various interfaces to the system. This view is additional to, and orthogonal to the three architectures (System, Functional and Technical) presented in more detail later in this section and Section 4A.4.

The system represented by this view includes the hardware, operating software, COTS products, and custom built components, integrated into a complete and consistent architecture to support the needs of the CSE system. The conceptual view is organized at the highest level into the following six major components.

***CSE Application***

The CSE Application contains all the data and functionality to be provided by the new CSE system.

***Internal User Interfaces***

The internal user interfaces component provides all the various means by which a CSE worker or other DCSS authorized staff can use the CSE system. This is primarily the custom developed browser based interface, but also includes COTS tools to support reporting and OLAP.

***External User Interfaces***

The external user interfaces component provides all the various means by which an external user can use the CSE system. This can be via the web interface, the IVR automated telephone system or through the intermediary of a call center operator.

***Document Capture***

The document capture interface is used for documents received as paper. These are scanned to create an electronic image.

***External Automated Interfaces***

The external automated interfaces component provides all the various means by which the CSE system communicates with other systems or agencies, such as Welfare, DHS, DMV, FCR, SDU, INC, etc. These may be real time or batch interfaces.

***Print***

The print component provides the ability to produce correspondence and other hardcopy output. This may be bulk correspondence, such as billing statements, monthly support statements, and mass mailings to case members, or it may be individual or low volume output such as caseworker correspondence to case members or custom reports.

Each of these components is now described. We will start at the core and work outwards.

### 4A.3.1.2.1 CSE Application

***Operational Database***

The operational database is the core of the system. It contains all the case management data that is needed to support the on-line application. It will be implemented on the DB2 relational database product, and will be designed and optimized for quick response times and high volume transaction processing. Note that the database can only be accessed by the business objects (except for read-only access by the reporting tool). This 'encapsulation' is crucial to the principles embodied in this architecture.

***Business Objects***

The business objects are custom developed code that 'encapsulate' the data in the database. The CSE business objects represent entities such as case, participant, case member, obligation, court order, etc. These will be coded in Java (using the General Reusable Netcentric Delivery System (GRNDS) framework described in Section 4.1.3), and will execute on the IBM WebSphere Application Server. The business objects can be thought of as the implementation of the Informational Viewpoint. Just as the database access is encapsulated by the business objects, access to the business objects is encapsulated by the CSE application objects.

***CSE Application Objects***

This is the custom developed code that represents the CSSAS functionality that operates on the business objects. An application object implements business functionality such as 'Receive Request for CSE Services', 'Establish Paternity', or 'Calculate Monthly Obligation Amount'. These will also be coded in Java (using the GRNDS framework), and will execute on the IBM WebSphere Application Server. The application objects can be thought of as the implementation of the Computational Viewpoint. Note that the application objects component interacts with numerous types of system interfaces. This architectural approach allows the same business function to be used for different interfaces, thus facilitating the 'multi-channel' nature of the CSE system.

It will be observed that the custom built application code has been sub-divided into either business objects or application objects. The reason for this should be explained, especially as both types of object are coded in Java and execute on the same platform. The main reason is re-use and maintainability. One business object will be used by many application objects. The data and functionality implemented by that business object will be equally applicable to whichever application object uses it. Keeping it in one place 'componentizes' this functionality. If the data or functionality needs to be changed, the developer knows where to go to make the change. Having made the change, it is immediately and consistently applied to all the application objects that make use of that business object. From an engineering perspective, it is also worth noting that the structure, patterns and protocols employed by application objects and business objects are different.

***Workflow***

Workflow provides the ability to implement business processes. A business process can be a long running series of activities that involve many manual actions conducted by

numerous people as well as automated system actions. (Manual actions may be totally external to the application, such as making a telephone call, or may involve user interaction with the application via a user interface.) The individual user interaction and automated system activities tied together by workflow are the application functions implemented by the CSE application objects. Workflow will be implemented with custom developed processes built using the IBM MQWorkflow product.

### *Enterprise Application Integration (EAI)*

EAI is a business computing term for the methods, and tools aimed at consolidating and coordinating the computer applications in an enterprise. It encompasses methodologies such as object-oriented programming, distributed, cross-platform program communication using Common Object Request Broker Architecture (CORBA), and enterprise-wide content and data distribution using XML, message queuing, and other approaches.

The messaging approach is fundamental to the construction of a loosely coupled system. It allows data to be posted to a queue for one or more clients to access, asynchronously, so the provider of the data does not have to wait for the user of the data to receive or process it. As indicated, messaging also allows one to many communication relationships to be easily established. Data 'published' to a queue can be received by any number of client 'subscribers'. The publisher of the data has no knowledge and therefore no dependency on the users of the data. It is worth noting that where synchronous communications are desirable, the eAI messaging architecture can be used in this manner.

To further enable the system capabilities to connect disparate publishers and subscribers, eAI also provides system integration capabilities to route data based on content, to transform data from one format to another, or to apply other business rules to determine routing, validation, etc.

In the CSE system, eAI messaging will be used as the underlying mechanism to implement the routing of workflow tasks from one activity to another. It will also be used by the application and business objects to communicate with other systems and external agencies. Application and business objects will communicate with each other through program calls, either directly or remotely using CORBA protocols.

eAI will be implemented using IBM WebSphere MQ for messaging support, and SeeBeyond's eBusiness Integration Suite for the system integration component.

### *Business Intelligence (BI)*

Business intelligence is the capability of the system for gathering, storing, analyzing, and providing access to data to help enterprise users make better business decisions. This includes query and reporting, online analytical processing (OLAP), statistical analysis, forecasting, and data mining[1]. The business intelligence capability consists of the data and the tools that use that data.

The CSE system will maintain two types of BI data stores; a data warehouse and data marts. The data warehouse is an amalgamation of all the data that the system produces

[1] Data Mining capability is not included as part of the alliance's solution.

or receives, that is deemed significant to effective BI. This is primarily data copied from the operational database, but can include other data obtained from other sources. The data warehouse serves three main purposes. It holds the data in a format that is conducive to BI (as opposed to the highly normalized structure used by the operational database), it allows this data to be accessed and manipulated by the BI tools without impacting the performance of the operational system, and it allows historical data to be accumulated without 'cluttering' the operational data. The data warehouse contains everything known about the system.

The data marts are smaller, specialized data stores created and used for specific BI needs. A data mart is constructed from data copied from the warehouse. A mart can be created for many reasons, such as to provide invariant point in time data for repeated analysis, to create a subset of data focused on one particular aspect of the system, or to hold the data in a different format for specific BI purposes (e.g. as an OLAP cube),

The CSE system will maintain a full data warehouse, implemented using the DB2 UDB EEE relational database product. This is logically the same as the DB2 product used for the operational database (e.g. it stores its data in rows within tables and is accessed using SQL), but is physically implemented differently to optimize for BI activities. The major difference is its support for parallel operation of SQL statements. Data marts will be created as determined during BI requirements analysis. These will either use DB2 UDB EEE or DB2 OLAP Server, which stores data as an optimized cube.

***Data Warehouse Management (DWM)***

This is the infrastructure needed to feed the data warehouse. It contains capabilities for extracting and transforming data and loading it into the warehouse (or data marts), and provides a scheduling component to invoke and control the appropriate ETL tasks. The DWM provides a console to define, create, schedule and manage these tasks. The DWM component is also used to create and populate the data marts.

The DWM component can obtain its data either from the operational database directly, or from EAI. It will be implemented using DPROPR to extract data from the operational database. This operates at the database level (not the application), and extracts data directly from the DB2 logs. The DWM console and run time environment will be implemented using IBM Data Warehouse Manager.

***Image Data Store***

The image data store is the physical storage mechanism for electronic documents. This is a proprietary storage medium, separate from the operational database, and managed by the Document Management component.

The image data store is used to store scanned documents received through the Document Capture interface, as well as printed document images. Storage of both received and sent documents in the image data store provides a consistent, consolidated approach that facilitates the creation and use of the 'electronic case folder'. The stored documents are logically a part of the electronic case folder and are available for retrieval across the state.

***Document Management***

Document management represents a broad set of capabilities in the acquisition, storage, management, presentation and use of paper-based documentation. This is a significant component of the proposed solution. There is more to the alliance's document management solution than can be reasonably addressed in this section, so additional details have been provided in section 4A.5 Appendix C.

The document management capability is further differentiated into the following sub-components:

- *Imaging Services* - This service provides the capacity to capture paper documents in electronic format, associate the image to the appropriate CSE entity (such as case or participant), and then store the image permanently in the image data store. These imaged documents become a fixed part of the 'electronic case folder' and are accessible statewide. The proposed Image Services component will exhibit the following characteristics:
  - Provide the capability to convert hard copy legal or critical documents to electronic media
  - Provide each LCSA with the capability to capture documents locally and then store them centrally for a single Statewide repository
  - Provide electronic access to centrally stored "documents" available via Web Browsers using Intranet / Internet technology
  - Use of the central image data store will allow for a county, cross-county or State view
  - Provide a "single view" of all relevant document information in the form of an electronic case folder available to caseworkers and appropriate staff personnel
- *Forms Management Services* - Forms Management is concerned with the uniform and consistent construction and use of forms in the system. This includes specification of the formatting and layout of forms, including language and data, through a centralized integrated unit that manages all form updates and changes. Forms and report templates will be created and maintained centrally. As part of the Forms Management process, Accelio (formerly Jet Forms) will be used to be consistent with the existing installed base throughout most of the LCSAs. The forms will be able to be output using local print, high-volume central print, e-mail, and PDF. The proposed Forms Management solution will provide the following capabilities:
  - Forms and report templates will be created and maintained centrally and made available to print centrally or locally "on demand"
  - The system will provide the capability to store, retrieve and print local addresses and letterheads
  - The system will provide the capability to specify the order in which the forms in each formset are printed
  - The system will provide the capability to print barcodes on forms and letters
  - The system will provide the capability to store, retrieve and print digitized signatures on forms/letters
  - The system will provide the capability for the reprinting of forms and letters, such that identical replicas can be produced
- *E-forms Services* – This service represents a basic facility to prepare and manage the presentation of e-forms that will be used to collect information from end-users. The service will provide the following capabilities:

  - Present consistent, easy-to-use data capture forms to customers supporting different browser types and versions
  - Be consistent with the Forms Management "paper" solution, by utilizing the same extensible Markup Language (XML) form templates database and forms
  - Be consistent with the Forms Management "paper" solution, by utilizing the same forms designer tool
- *Print Services* – The proposed print solution is a centralized system managing both local and central print resources. It will provide support for high volume printing at central facilities as well as local printing at each LCSA office. High-volume printing is used for correspondence such as billing statements, monthly support statements, and mass mailings to case members. This capability will rely on existing State print facilities, and is external to the CCSAS project scope. The print services component will provide print files to the State print facility for printing, stuffing and mailing. Local printing is used for low volume case work, such as letters, specific requested documents or custom reports. These will print on a 'local' printer (i.e. in an LCSA office), but via a central print 'manager' that allows the worker to direct the output to the appropriate printer The print services will provide the following capabilities:
  - The system will be able to print a minimum of 2.5 million monthly billings, and a minimum of 2.5 million monthly distribution statements
  - The system will be able to print a minimum of 1.1 million monthly billings for NCP's with a current obligation and/or arrearage. The average monthly bill is no less than 4 pages printed duplex on letter size (8 1/2 x 11) paper.
  - The system will be capable of printing a minimum of 35 million multiple page forms per year
  - The system will provide the capability for a user to specify to which printer each formset is printed
  - The system will provide the capability to select print preview with the data fields populated for all forms/letters
  - The system will support duplex printing
  - The system will sort, batch, bundle and print forms, notices, billings or statements
  - The system will allow the capability, at the user's option, to preview any form, notice, billing or statement online as it will be printed

***Partner Access Management***

Partner Access Management manages the business process boundary between the CSE system and external 'partners'. A partner is any agency, company or system with which the CSE system communicates in an automated fashion.

Partner Access Management is both an administrative facility and a run-time environment. It will be implemented using SeeBeyond eXchange Partner Manager. The administrative facility provides the capability to define profile information such as contacts, digital security certificates, memoranda of understanding, etc, for each partner, in a centralized and re-usable manner. For these partners, transactions can be defined, together with schedules, data conversion rules, error handling, reconnect and recovery procedures, etc. The same logical transaction (e.g. same data content) can be mapped to multiple partners, each with its own data conversions, and communication protocols. This 'abstraction' between the logical transaction and the actual data exchange with potentially multiple partners is a key feature that furthers the architectural objective of loose coupling.

The run-time environment uses the defined profile and transaction information to communicate with the partner agencies and conduct the actual data exchanges. As mentioned, this facilitates the use of multiple channels (it can be thought of as an 'interface multiplexer'). The environment can use WebSphere MQ messages or flat files (FTP) to send data from or receive data into.

Use of partner access management in the CSE solution will significantly simplify the definition and maintenance of the large number of external agencies and automated data transactions that are integral to the nature of child support. It will also provide a more robust and reliable data exchange mechanism. It also paves the way for the possibility of closer integration of CSE business processes with external agencies in the future.

### 4A.3.1.2.2 Internal User Interfaces

***Browser Interface***

This component represents the graphical user interface provided to an internal user of the system. In keeping with e-business architectural principles, a browser interface is used. As this is a thin client, most of the interface functionality is actually implemented on the server and not the client workstation. The interface functionality is implemented as custom code using Internet and J2EE technology such as web servers, servlets and JSPs

The browser interface is shown interacting with both the CSE application objects and the workflow components. The interaction with the CSE application objects allows the user to access CSE business functionality. The interaction with workflow provides access to worklists, and allows the user to review tasks and work with business process definitions. The interaction with workflow is shown as bi-directional as this can be used to 'push' work to a user.

A data flow to local print is also depicted. Local print is implemented by using the browser's print capability to print forms or letters displayed in the browser.

***Analytical Applications***

Reporting tools are used to produce reports on CCSAS CSE data. These tools operate mainly on purpose-built business intelligence data in the data warehouse or data marts, but as shown, they can also use data in the operational database. This would be used in cases where 'up to the second' information is needed (data is not immediately copied to the data warehouse, but batched according to the propagation strategy defined in DWM), or if the data required is pure operational data that is not copied to the warehouse.

Reporting tools are much more than report generators. Reporting tools also provide interactive capabilities for conducting OLAP activities, which allow a user to drill down into the report and view it from different perspectives. This means that a report is much more than a static view of data, structured according to some pre-defined (and coded) design, but can be used by different users to 'see' different aspects of the reported data. This is a very powerful capability. The use of a tool also removes most of the need to print reports. Reports can be viewed, manipulated and stored in soft copy. Where printing is required it is achieved through the local print facility.

The main reporting tool to be used for CCSAS is Brio Intelligence. This is actually a suite of tools that provide capabilities of varying power and sophistication depending on the user. Brio can access data held in relational database format, whether in the operational database, the data warehouse or data marts or a DB2 OLAP Server cube. This single tool permits most types of reports to be created, from scheduled 'canned' reports and on-demand parameterized reports, to ad hoc analytical and 'what if' OLAP 'reports'.

Another tool that will be used to provide additional OLAP capabilities against the DB2 OLAP Server cube tools is DB2 OLAP Server Analyzer. Use of the cube provides better performance, but more significantly allows more powerful end user analysis, such as multi-dimensional capabilities.

### 4A.3.1.2.3 External User Interfaces

The external user interfaces component provides the means for an external user to dynamically interact with the system (i.e. engage in a 'conversation' with the system) to access the system's Customer Service capabilities.

#### *Browser Interface*

The browser interface available to external users is very similar architecturally to that used for internal users. It is more restricted in terms of the system functionality it makes available, and is implemented using simpler techniques, both to accommodate dial-up access speeds and to be compatible with a wider range of browsers. The system shall support Internet Explorer 5.0 and Netscape 4.5 and later browsers. There are actually two different types of external browser interface, one which gives general information to the public in a read-only mode, and another that provides secured conversational interactions with authorized case members or other parties / agencies. This second interface allows external users to obtain information specific to a case, and to update certain case and participant information.

#### *Interactive Voice Response (IVR)*

This is an automated telephone interface that provides a subset of the functional capabilities available through the browser interface.

#### *Call Center*

The call center provides the facility for an external user to talk to a call center operator. The user can transfer to an operator from the IVR interface. The call center operator can access the CSE application to provide information to the caller, or to accept certain information for entry into the system. A call center operator can only access the same functionality that is available through the external user browser interface. If the caller requires more comprehensive service than this, the operator transfers the request to an appropriate CSE worker via the workflow component. The call center is more fully described in section 3C.14 Production Support.

### 4A.3.1.2.4 Document Capture

The document capture interface is used for documents received as paper. These are scanned to create an electronic image.

***Scanning***

Scanning will occur in each LCSA at a central facility (one per LCSA). The number and type of scanners will be appropriate to accommodate the volumes for each LCSA. The scanned image will be captured and stored in the image data store as a PDF file.

Each scanned document is indexed. The index number is input to the operational database as an attribute of the CCS Case or Participant, so that the image can be later retrieved and presented as an integral part of the CSE application.

The scan process will support automatic document separation, in the form of bar codes and patch codes, which helps to speed the processing of scanned documents. At scan time, the software will read the barcode on the document, and route the image and barcode values to the index process. A forms redesign process is recommended to include bar-code values on documents that are sent out to be returned by the customer. The bar-code values will speed up the capture of documents by electronically reading the indexing (bar code values) information.

These capabilities are described in more detail in section 4A.5 Appendix C.

### 4A.3.1.2.5 External Automated Interfaces

The external automated interfaces component provides the various means by which the CSE application communicates with other systems or agencies, such as Welfare, DHS, DMV, FCR, SDU, INC, etc. These may be real time or batch interfaces.

### 4A.3.1.2.6 Print

There are two distinct print capabilities; high volume central print and low volume local print. High volume correspondence, such as billing statements, monthly support statements, and mass mailings to case members, are produced by background processes and sent as a print file to the existing print facility. Individual or low volume correspondence is printed using a network attached LCSA printer accessed via the centralized print management capability.

These capabilities were introduced in more detail in the description for Document Management above, and are described in considerably more detail in Section 4A.5 Appendix C.

# 4A.3.1.3 Introducing the Functional Architecture

The preceding conceptual design overview describes the major system components and presents an overall structure for the system. This has been designed to address the technical architecture objectives and principles, and to enable the CSE system to support the required functionality. However, the principles embodied and the architectural decisions made could be equally applicable to numerous problem domains. This section introduces the specific business functionality to be provided by the new CSE system.

The CSE System Architecture is described from three different viewpoints; namely the Enterprise Viewpoint, the Informational Viewpoint, and the Computational Viewpoint. These are fully described in Section 4A.3.2. This introduction augments the three system architecture viewpoints by building a framework of other services around the business functionality and data represented by the viewpoints. The purpose of this framework is to factor out support type services from the business services represented in the viewpoints. We have called this framework the 'Functional Architecture'.

The construction of the layered functional architecture is a step into high level design. This high level design may be further refined during project development.

## 4A.3.1.3.1 The Business Functions

The business functions of the new system have been identified by the State. The alliance has retained this, and thus has based the solution around eleven high-level Business Services, grouped into three categories. This is represented below in Figure 4A.3.1-2.

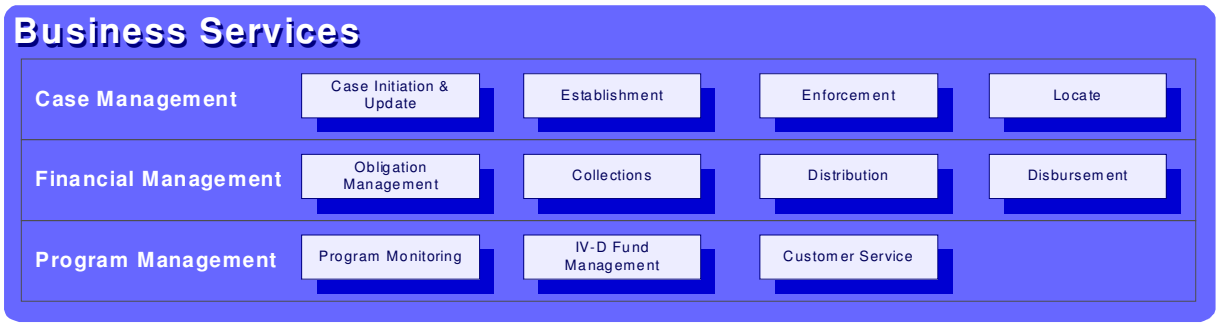



**Figure 4A.3.1-2 The Business Services Layer –** *This layer consists of the eleven business services.*

These eleven Business Services are defined in Section 4A.3.2a, the Enterprise Viewpoint, and then further decomposed in Section 4A.3.2c, the Computational Viewpoint.

### *4A.3.1.3.1.1 Case Management*

#### ***Case Initiation and Update***

Case Initiation and Update is where the case and participants are created or updated, or a case is closed. A case is initiated either because of an application received, or a

referral from a State agency (e.g., welfare), or a non IV-D referral. Information update encompasses all CCS case and case member updates that occur as a result of information received from an external source, such as new employment, welfare closures, deaths, births, marriage, etc. Case closure is when the case meets federal case closure criteria or a valid request from the applicant is received.

Key CSE Case Initiation and Update features include:

- A CCS case represents a Mother, Father, their children in common, and other custodians as appropriate; a new case will not be created every time custody of a child changes
- CCS cases requiring paternity services may have multiple alleged fathers; a new case will not be created for each alleged father
- Separate structures are used in the CSE system to represent Court Cases, Assistance Cases and Obligation Groups. Use of these structures means that it is not necessary to alter the CCS Case in order to reflect changes in this information. A CCS Case is built on the basis of being a workable case, rather than an accounting case.
- Obligation Group(s) and Assistance Case(s) associated with a CCS Case accommodate payer/payee/beneficiary relationships and unreimbursed assistance processing. The combination of these structures support the current federal reporting requirements, and the federal rules for collection of unreimbursed assistance.
- Interfaces will be implemented to facilitate communication between the CSE system and the State's IV-A (welfare) systems; manual paper processing will be eliminated when possible and appropriate.
- The CSE system will simplify the process of transferring a case from one county to another within California. Once a determination has been made that the case should be transferred, the owning jurisdiction can simply update the Child Support Agency to whom the CCS Case is assigned. The appropriate status and new worker will be automatically determined by the system.

***Establishment***

Establishment is the process of obtaining the legal basis (judgment) for the determination of paternity, and the obligation to provide financial support and health insurance for a child that has not reached the age of emancipation.

Key CSE Establishment features include:

- Supports appointment scheduling for genetic test, voluntary agreements, and court hearings; it will not be necessary to schedule appointments outside the system
- Tracks and records genetic test results to support accurate and timely initiation of the next appropriate action
- Where available, a photo image of the NCP will be retained to support positive identification of the NCP from paternity establishment through enforcement
- An automated interface will be available to communicate with genetic test labs providing efficient scheduling and receipt of genetic test results
- Multiple alleged fathers are accommodated in a single case; multiple cases will not need to be managed for paternity establishment of a single child

- INC data is expected to be used as a locate source to discover income information; support orders will reflect accurate income information
- Support is calculated using the Guideline Support Calculator. NCP's and CP's will have the opportunity to know the support amount prior to court action.

***Enforcement***

Enforcement encompasses actions that result in compliance with the non-custodial parent's financial or health insurance obligation. Enforcement starts when non-compliance with an obligation is detected. Non-compliance is determined by the system.

Key CSE Enforcement features include:

- Enforcement thresholds and business rules (based on State and Federal requirements) will determine the most appropriate enforcement action to be automatically invoked
- Appropriate enforcement actions include: intercepting payments (e.g., tax refunds, unemployment benefits, and lottery), seizing financial accounts, establishing cash surety bonds, liens on real or personal property, suspending licenses, increased wage withholding, pursuing court actions (contempt), passport denial. The CSE system supports appropriate enforcement remedies.
- Intercepting payments requires actions by external agencies. There are different criteria applied 'by agency' to determine whether to intercept and at what frequency to submit requests and updates. The CSE system manages the interface requirements of the external agencies.

***Locate***

Locate starts with the assessment of a participant's locate status. A locate status indicates the type of information that is needed for the participant: their identity, physical whereabouts, income, and assets. A participant remains in a particular locate status until information is obtained (and verified) and triggers a reassessment of the locate status.

Key CSE Locate features include:

- The CCS Case is not assigned a Locate Status, and Locate is not a functional Status. The participant is the target of the locate effort, and a distinct Locate Status is assigned to each participant. This separation provides the advantage of knowing that a participant (NCP or CP) may need to be located, and at the same time, one of the CCS cases they are involved in has a functional status of Enforcement.
- The next appropriate action is automatically determined based on a combination of the CCS Case functional status and the NCP's locate status; worker interaction is significantly reduced
- Locate will use the operational and data warehouse data captured by the CSE system, in preference to querying external sources. This is intended to include data from the INC warehouse. It could also obtain pro-active change data (i.e., push rather than pull) from certain external sources, where viable (this approach will be validated during analysis and design). Such an approach will reduce the time taken to perform locate actions, and will lead to a high quality store of reference data.

- If the initial 'internal' locate is unsuccessful, a request is sent to external agencies. A hierarchical approach will be used. Focusing on automated and high quality interfaces first, followed by manual or less reliable interfaces provides higher quality information in a shorter timeframe.
- Specific criteria will be defined for each locate source/interface in order to identify at least two identifiers that will be used for matching purposes
- When the locate source provides a single matching response, the data provided by the source is automatically processed. The participant information is updated and verification requests are created. It is anticipated that the majority of locate responses will be processed automatically, without user intervention.

### *4A.3.1.2.1.2 Financial Management*

#### ***Obligation Management***

Obligation Management processes all activity associated with managing court ordered support (financial and non-financial) obligations. It includes the Review and Adjustment process.

Key CSE Obligation Management features include:

- Periodically calculates monthly obligation amounts, including interest amounts to determine the amount required to be paid by the NCP for the month. The monthly obligation amount may change each month based on the billing cycle (number of payments due in a month), and/or seasonal adjustments. The amount is automatically calculated by the system without worker intervention.
- End dates and effective dates for obligations will be monitored and automatically applied by the system without worker intervention. Manual tracking of future effective dates, seasonal term payments will not be necessary.
- Manages arrears balances, including assigning arrears for potential re-imbursement for welfare payments. Obligations entered with a past effective date will have the amount due calculated and applied to the appropriate arrears balance reducing the need for adjustments to be made by the child support worker.
- Manages payee changes when custody of child changes (foster care) or an assignment of rights to support is received (welfare); workers will not be required to change the payee for a support obligation when the change is received from an automated interface and can be successfully processed.
- Supports the review and adjustment process; automatically identifies orders eligible for review, including when a substantial change in income is detected. A notice to parties of the Right to Request a Review will be automatically generated once every three years without worker intervention.
- Monitors compliance with financial and non-financial obligations and determines next appropriate action without worker intervention

#### ***Collections***

The vast majority of child support payments will be received by the SDU. The SDU will provide payment information on a continuous basis throughout the day. All collections are recorded in the CSE system. Child support payments for special circumstances such as purge orders and walk-ins, will be received by the LCSA worker.

Key CSE collection features include:

- If a payer for whom the payment is being made cannot be identified, the collection is posted to an unidentified payer account. These collections are considered to be held in “suspense” and will not be distributed or disbursed by the system. As part of routine system operations, the system will attempt to automatically match these collections to the actual payer, without worker intervention.
- It is assumed that the volume of payments processed by LCSA Workers will be extremely low because the SDU will be operational. Even though the volumes will be low, the CSE system will support grouping collections into batches for posting for the purpose of cash control.
- Services to enable payers to have support payments withdrawn from their bank accounts automatically

***Distribution***

Distribution determines how collections will be applied to the payer’s child support obligations.

Key CSE Distribution features include:

- Obligation Group(s) and Assistance Case(s) associated with the CCS Case support payer/payee/beneficiary relationships and the collection of unreimbursed assistance according to current federal regulations.
- Automated distribution applies collections to specific obligations, without worker intervention, according to a distribution hierarchy determined by federal and state rules
- Manage Unreimbursed Assistance applies assigned distributions to the CP’s Unreimbursed Assistance Pool (UAP). These refunds are governed by federal and state rules. With automated distribution to the Unreimbursed Assistance Pool, manual action will not be necessary.

***Disbursement***

Disbursement instructions are created to disburse funds to a participant or third party. They are sent to the SDU for processing. After producing a disbursement, the SDU provides a response containing the confirmation, check number, and print date.

Key CSE Disbursement features include:

- The CSE system will manage payee instructions for electronic disbursement. If a payee wishes to receive disbursements via EFT/direct deposit, they must submit instructions identifying the bank and account number and authorizing DCSS to provide disbursement electronically; customer service is enhanced.
- Funds must be disbursed to individuals immediately. Funds available for disbursement to state agencies or other entities may be held to aggregate a larger disbursement (weekly or monthly disbursements). This will reduce the number of individual disbursements.

- If a participant has funds available for disbursement, but no verified address or disbursement instructions, a request for locate will be produced. The funds will be held in suspense until adequate information is available to support disbursement. Funds will automatically be released from suspense when adequate information is obtained without worker intervention.

### *4A.3.1.3.1.3 Program Management*

#### ***Customer Service***

Customer Service manages customer relations; employer and third party relationships. Customer Service also manages interstate relations when a worker in another State initiates a request for information or registers a complaint.
Key CSE Customer Service features include:

- Customer Service is available through multiple channels, with an emphasis on self-service. The preferred channel is through the external web site or telephone IVR. However, a full call center service is available to back up the web and IVR.
- Customer Service manages requests for an application. An application and program materials are sent to the requestor and the process is monitored so that all requests for applications are processed within federal timeframes. Use of this feature means that manual processing is significantly reduced.
- Internet Customer Self-Service functions allow case members to view payment information, provide information to help with locate activities, and read program and policy information. Convenient access to case and program information provides efficient and beneficial customer service to case members.
- Routine, commonly occurring customer inquiries can be handled by self-service or call center workers. More significant actions will be logged and routed to the appropriate caseworker. This allows caseworkers to focus on more difficult, urgent cases.
- Complaints may be received via telephone, mail, or Internet. The complaint will be logged and referred to a caseworker for further research. The ability to register a complaint by any of these methods increases the likelihood of complaints being received in a timely manner. The ability to refer it to an appropriate user, and the subsequent tracking and management of this complaint, will all contribute to improved complaint resolution.
- An Outreach Campaign is used to contact groups of customers, to provide information or offer services that could improve their relationship with the Child Support Program. Outreach campaigns provide an efficient method to reach large groups of individuals to improve program awareness.
- The possibility for customers to be able to request electronic delivery of general child support correspondence will be explored.

#### ***IV-D Fund Management***

IV-D Fund Management controls and accounts for the use of federal, state and local child support program funds. This includes federal and state fund management and administrative expenditure information.

Key CSE IV-D Fund Management features include:

- The CSE system will receive data at a high level from the State's accounting system to produce the OCSE-396A, including operation expenses, county administrative advances, county budget allocations, incentives, etc. The CSE system will maintain detail for costs, fees recovered, and collection data.
- The CSE system will capture and maintain the FMAP rate for the State. The FMAP rate is used in calculating the Federal and State share of assigned collections (OCSE-34A report).
- The CSE system will capture and maintain Incentive Payment Data for each County.

***Program Monitoring***

Program Monitoring encompasses all activities concerned with observing and monitoring the operation and business effectiveness of the Child Support Program as a whole. (It does not encompass the systems management activities that monitor the technical operation and performance of the system.) Program Monitoring takes a number of manifestations:

- The Program's compliance is reviewed on a periodic basis by analyzing the data within the CSE system and measuring the level of compliance with federal and state timeframe requirements and standards.
- The Child Support Program's ability to deliver services efficiently and effectively is reviewed on a periodic basis by analyzing data within the CSE system, measuring the Program's performance, and comparing the current performance to the performance in prior periods.
- Capturing, and gathering statistical information to support the generation of the OCSE-157 and other reports used for program forecasting, pilot project monitoring and legislative inquiries

The reporting capabilities will be provided through the Reporting Business Service. This provides the tools to construct, schedule, execute and distribute reports (e.g. as web documents), and to perform on-line analytical processing.

### 4A.3.1.3.2 The Data

The first thing that is obviously needed to support the business services is the data. This includes the data about cases, participants, financial transactions, and so on, that is used in the day to day operation of the system. However, it also includes data gathered or retained for reporting, monitoring and analysis work. To represent the data storage needs of the system, a Data Services layer is introduced. The Data Services layer is organized into three components as shown in Figure 4A.3.1-3.

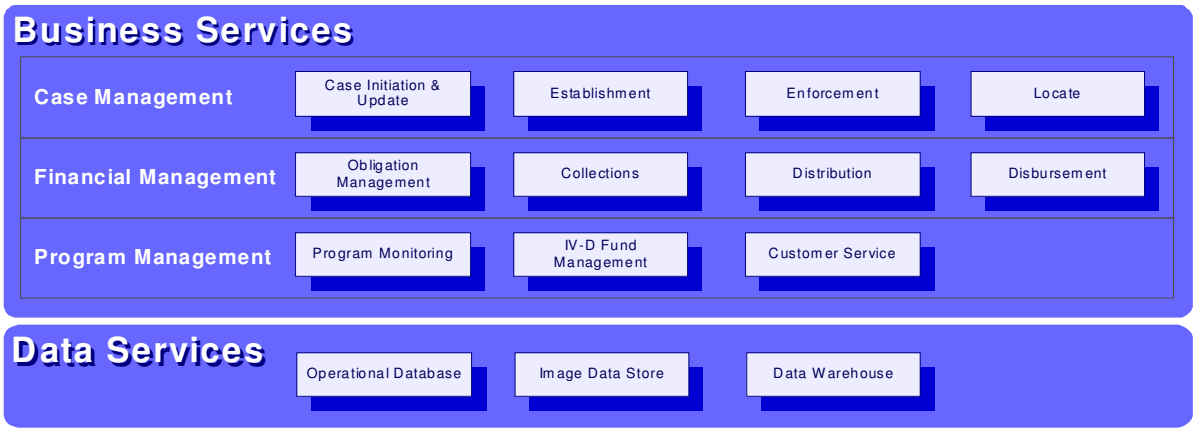



**Figure 4A.3.1-3 Adding the Data Services Layer –** *The Data Services support the Business Services.*

### *Operational Database*

The operational database contains the data that is directly used and updated by the application during case processing. It contains the case management data that is needed to support the on-line application, and will be implemented on the DB2 relational database product. It will be designed and optimized for quick response times and high volume transaction processing.

The data contained in the operational database is the data described at a high level in Section 4A.3.2b, the Informational Viewpoint.

### *Data Warehouse*

The data warehouse is a separate data store that is used for reporting, analysis and other business intelligence activities. It serves three main purposes.

- It holds the data in a format that is conducive to reporting. This is structured differently than the operational database (e.g., star schemas and OLAP cubes)
- It allows reports to be generated and other BI activity to occur without impacting the performance of the operational system. BI tools and reporting can place heavy and unpredictable demands on the database, so a physically distinct environment to support this activity is essential.
- It allows historical and summary data to be accumulated without 'cluttering' the operational data. The volume of data in a database affects performance, so it is beneficial to avoid keeping data used primarily or solely for reporting and BI purposes in with the operational data.

### *Image Data Store*

The image data store is an adjunct to the operational database. It is physically separate due to the different nature of document images from operational data, and it is managed by different data management software. It is used in an operational sense to enable documents to be viewed in the context of a case folder.

### 4A.3.1.3.3 The Interfaces (Channels)

The next thing that will be required to enable system operation is a means for the outside world to communicate and interact with the CSE system business functions. Using e-Business terminology, any mechanism for interacting with a system is termed a 'channel'. The functional architecture therefore defines a Channel layer to represent these interfaces. The Channels layer is organized into two components as shown in Figure 4A.3.1-4.

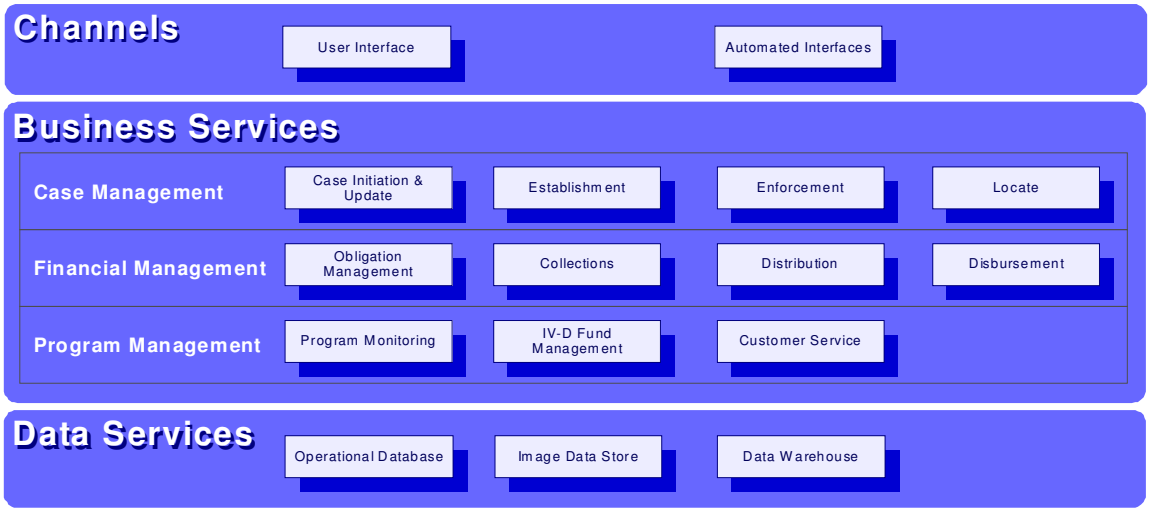



**Figure 4A.3.1-4 The Channels Layer –** *Channels are the means by which the outside world communicates with the automated system.*

#### *User Interfaces*

The user interfaces component provides all the various means by which a CSE worker, other DCSS authorized staff, or external users can use the CSE system. This includes the custom developed browser based interface, the IVR system and various COTS tools.

#### *Automated Interfaces*

The automated interfaces component provides all the various means by which the CSE system can communicate with other systems. There are numerous types of automated interface such as direct, real time communications with external systems, batch file transfers, email communications, and incoming document capture and outgoing document generation.

### 4A.3.1.3.4 The Common Services

The functional architecture now has all the basic components needed to define the functional system. It has defined the business functionality needed, the data and the interfaces to the system. However, this architecture is incomplete from a structural perspective, as there are various capabilities required by the system that will be duplicated across business services. In order to avoid implementing these capabilities within each business service, which would produce redundant functionality, tightly coupled and inter-woven into each business services, these capabilities are best isolated out and presented as services that can be re-used. These common services are presented as the Common Services layer in the architecture. They are true components that encapsulate their functionality and provide a defined interface.

As the alliance proposal team worked through describing the functionality to be provided by the business services, common services emerged. The major characteristic of a common service is the potential for re-use, so as it became apparent that similar functionality was needed for multiple business services, this was coalesced into a common service. The proposal team has identified nine common services as shown in Figure 4A.3.1-5.

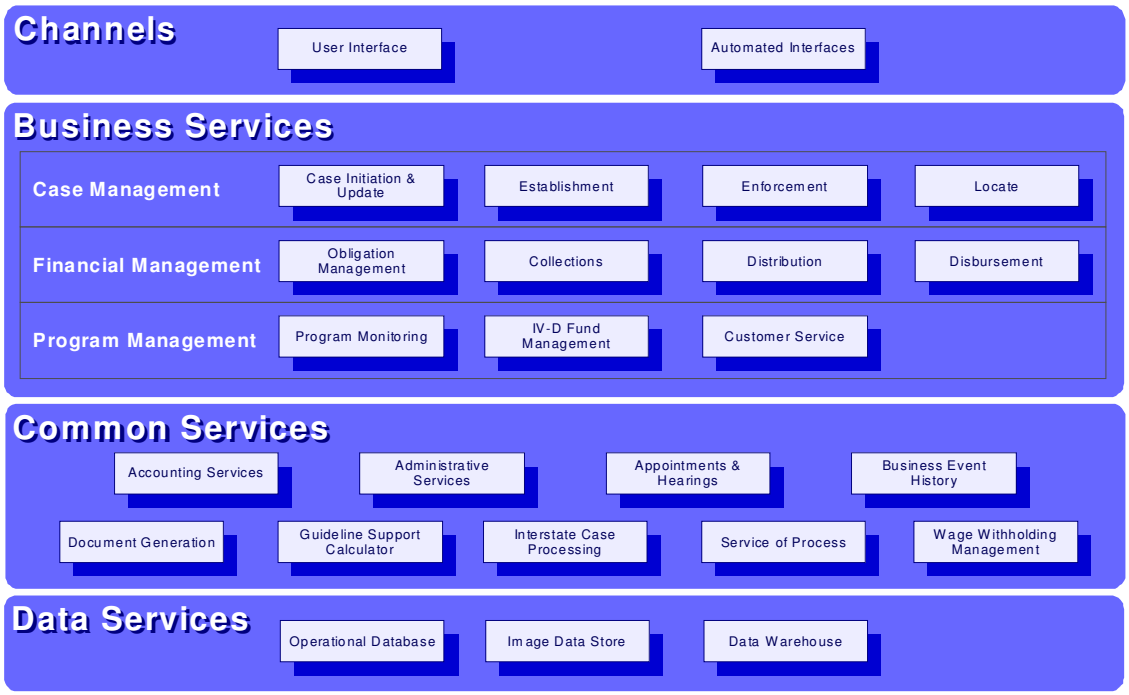



**Figure 4A.3.1-5 Identifying the Common Services Layer –** *Common Services support the Business Services with common, business-oriented capabilities.*

### *Accounting Services*

Accounting Services provides the services necessary to perform accounting functions in a consistent manner throughout the CSE system. This service will control the functions necessary to create, update, or delete data used in managing the accounts receivable and cash flow processing.

Accounting Services will be available to other business services or common services in the system that have a need to interact with accounting functions, for services such as:

- Creating financial accounts and sub-accounts. So that these objects are created in a consistent manner, accounting services will be used whenever it is necessary to create a new account or sub-account.
- Creating, updating or deleting financial transactions. As a unit of work, operations on financial transactions also require updates to financial accounts, or sub-accounts
- Apply or release holds. Holds will be available at the transaction, CCS case, and account level. A hold is used to suspend the automated processing of funds through the system. When it is necessary to review funds manually, or when it is desirable to prevent funds from moving any further, a hold is applied.

### *Administrative Services*

Administrative Services provides a variety of services to manage and maintain the system. These include the following:

- Business oriented maintenance activities, such as maintaining information on Employers, Child Support Agencies, etc. These activities do not fit into any of the eleven Application services, but they are essential to the maintenance of the CSE data.
- Financial Audit. Again, this does not fit into any of the eleven Application services but is a necessary capability of the system.
- Reference table maintenance. Business codes and reference values, such as regulatory or policy control financial amounts, dates, timelines, etc. Wherever these are liable to change, they will be held in an easily modifiable format, such as in a database table.
- Archive and purge. When data is no longer actively needed in the system, a mechanism to archive or remove it is needed.
- Audit trail administration. This includes the ability to view, interrogate and archive audit trail information.
- User profile and user group maintenance. This is used to control access privileges and workflow groups.

### *Appointments and Hearings*

Numerous types of office appointment and court hearings are integral to the child support case workflow. The Appointment & Hearing Business Service creates and manages these appointments on behalf of Application Services throughout the lifecycle of the case. The Appointment & Hearing Business Service automates as much of this process as possible. Depending on the specific type of appointment needed, the system will use calendaring functions and, if available, interfaces to the appropriate external entity (e.g., court or genetic test lab) to create a scheduled event in the system. The Appointment & Hearing Business Service generates an appointment or court hearing notice to the appropriate case participant(s) and caseworkers.

The type of appointment may trigger a next appropriate action. For example, a “Tax Appeal” hearing may trigger a hold on disbursement of tax intercept collections until the appointment was disposed. A disposition to an appointment will reflect the outcome of the appointment/hearing and may start or end a program timeline. For example, when a specific court hearing type for the establishment of paternity has the disposition of “paternity established with support”, the timeline for paternity/support establishment will end.

### *Business Event History*

The CSE system will maintain an automated, comprehensive, chronological history of all significant actions taken, whether manual or automated. The specific type of action taken, the date and result of the action will be automatically recorded in the event history. If a significant action is taken outside of the system (e.g., a phone call), a worker will have the ability to manually enter the event into the system.

Events created automatically by the system will not be able to be edited. Events created manually may be edited based on State-defined timelines, (e.g., not to exceed one business day from the entry of the data).

Some events are significant to a Participant, and some to a Case. Events will be held by the appropriate entity, but the event history will be able to be viewed by either Participant or by Case.

***Document Generation***

The Document Generation Common Service produces standardized forms, correspondences, notices and legal documents. These will be able to be printed at a central or local site, and County specific letterhead will be available for appropriate documents. Documents may be generated as a result of automatic triggers based on system processes or as a result of worker request or actions.

A document is created by merging data from the CSE system (e.g., Case and Participant data) with a document template.

The use of a Common Service to handle document generation avoids the need for the Application Services to understand or format documents. This de-coupling facilitates reuse and maintenance.

***Guideline Support Calculator***

The Guideline Support Obligation Calculator Common Service is used by the Establishment and Obligation Management applications. The Guideline is a standard method for setting child support obligations based on the income of the parent(s) and other factors determined by State law. When a new order is established or modified, the State's child support guideline is used to automatically calculate the support obligation amount. The use of the guideline to determine the amount of support is required by federal law, unless the guideline is rebutted by a written finding that applying the guidelines would be inappropriate to the case. When the support ordered child support obligation deviates from the support obligation amount, as calculated by the Guideline Support Obligation Calculator, the deviation will be recorded in the CSE system. The Guideline Support Calculator will be available via the web page.

***Interstate Case Processing***

Interstate Case Processing Common Service is used in cases in which the dependent child and non-custodial parent live in different States, or where two or more States are involved in some case activity, such as enforcement. The initiating jurisdiction is the State which sends a request for action to another jurisdiction in interstate child support cases. The responding jurisdiction is the State with jurisdiction over the non-custodial parent or child support order on which an initiating State has requested action.

The CSE system will send and receive an interstate request or response using federally mandated standard interstate forms, via the Child Support Enforcement Network (CSENet). CSENet is a State-to-State telecommunications network, which transfers detailed information between States' automated child support enforcement systems.

When an interstate form or CSENet transaction is sent or received, an event is recorded in the case record to indicate the specific request/response, the type of attachments sent or received, and the specific interstate form that was generated.

***Service of Process***

Service of Process is a Common Service that provides documents to an individual for the purpose of meeting due process notification requirements pursuant to legislation. Service of process is used by multiple Application Services, such as Establishment and Enforcement.

Specific Child Support actions may require that service be accomplished by a different methods; by regular mail, certified mail, or in-person. The method of service is driven by legislation and policy. When a request is sent for a process server to serve the documents, the process server will make one or more attempts to serve the individual following the State's due diligence policy. The process server will return a certification indicating successful or unsuccessful service. The certification will include information for each service attempt made by the process server.

Details of each Service of Process are recorded and tracked in the CSE system to facilitate workflow and timeline management. For example: a "serve-by date" will be tracked to alert a worker when a response has not been received from a process server. Multiple attempts made by a process server will be recorded to prove due diligence. The cost of the service will be recorded to facilitate court-ordered reimbursement. Communication to and from the process server will be enhanced by use of a web page.

***Wage Withholding Management***

Wage Withholding Management is a Common Service by which scheduled deductions are automatically made from wages or income to pay a child support obligation. The employer must withhold support from a non-custodial parent's wages and transfer that withholding to the State Disbursement Unit. The OCSE standardized Income Withholding Notice is automatically generated to the non-custodial parent's employer to initiate withholding within 2 business days after the support is established or a new employer is identified. The Income Withholding Notice summarizes the support amount for all of the non-custodial parent's child support cases, and is printed at a central location. If an employer should fail to comply with the terms of the Income Withholding Notice, appropriate documents for enforcement are generated. Income Withholding remains in effect until the employer is notified to terminate withholding, or the employer sends notification of a non-custodial parent's termination of employment. Communication with the employer is available via the web page.

## 4A.3.1.3.5 The Support Services

Even having identified and separated out the common services, there are still aspects of the system's behavior that do not fit into any of the functional architecture components yet defined. These are the lower level capabilities that are typically needed in any (or at least many) computer systems. They provide services at the 'infrastructural' level. Typically these are general purpose tools or custom built facilities. The proposal team has identified nine support services and structured these into a Support Services layer as shown in Figure 4A.3.1-6.

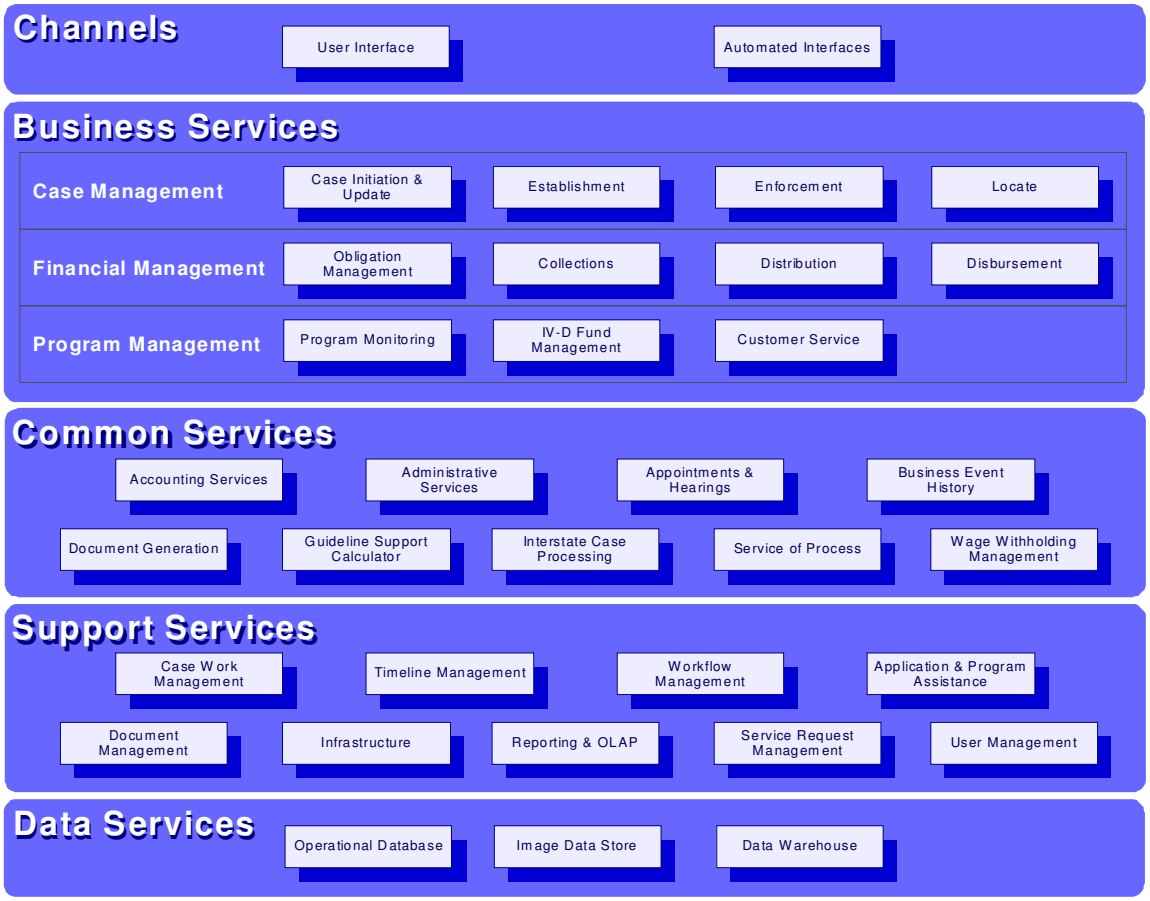



**Figure 4A.3.1-6 The Support Services Layer –** *Support Services are the common, system-oriented capabilities that support both the Business Services and the Common Services.*

### *Case Work Management*

Case Work Management is the capability of the system to monitor activity and events, and to determine the next appropriate action. It can be thought of as the overall road map for the CSE system business processes. Each business process is modeled with tools provided with Case Work Management. This is an event based 'state diagram' that allows the various states of a case to be defined, along with the events that could cause the case to transition, and the actions to be taken to effect each transition.

At run time, the Case Work Management service "watches" each case. As events occur to affect the case, Case Work Management detects the event and invokes the next defined action. The next action could be an automated system process, or it could require user intervention.

The use of Case Work Management allows the system to be modeled and implemented in an event driven manner. This not only simplifies the definition process, but it is also consistent with a component based approach.

Case Work Management is closely associated with Timeline Management, as the expiration of a defined period of time is one type of event that can be detected by Case Work Management.

***Timeline Management***

Timeline Management is the capability of the system to monitor the passage of time relative to specific system actions to determine if the next required event does or does not occur within the required elapsed time. This is an orthogonal view to Case Work Management, which is unaware of time, and only reacts to events. An example of Timeline Management is to determine if a response is received within a specified time following the sending of a communication. In cases where the timeline expires, Timeline Management will post an expiration event for Case Work Management to detect and invoke the next appropriate action.

Applications and Business Services use timeline management to manage timeframes for a business process. For example, a timeline of 20 calendar days is managed within the Case Initiation and Update Application from the event of receiving a referral to the event of establishing a case record and referring the case to the appropriate processing unit.

For clarity, it should be stated what Timeline Management is not. It is not the monitoring of Federal timeline requirements. These are monitored by the Program Monitoring Application. It may be helpful to think of Timeline Management as the ability to monitor each case for the passage of time and to determine when time parameters have been exceeded, while Federal timeline requirements are monitored across all cases to evaluate program effectiveness.

***Workflow Management***

Workflow Management is the capability of the CSE system to define and implement low level, continuous business process flows. This is different than Case Work Management, which deals with high level, event driven (non-continuous) business processes. The term “continuous” is used to indicate that the flow is a sequence of steps, where as one step completes, the next can be performed. A typical workflow routes a case among a succession of human and automated actions to complete a business function. The routing uses queues to present work tasks to the human worker or automated actions, and allows the human / automated action to notify Workflow Management when the task is complete. Workflow Management then routes the case to the next appropriate human / automated action.

***Application and Program Assistance***

This service provides on-line help features for child support program staff. Staff will have on-line access to the Software User Manual to help identify and resolve problems. Common issues and problems will be searchable on-line through the Software User Manual. Context-sensitive help will be provided.

***Document Management***

Document Management handles the receipt, the imaging, the storage, retrieval and the presentation (printing or on-line) of documents in the system. This applies both to documents generated by the system, and to those received.

It differs from the Document Generation Business Service in that Document Generation is concerned with the creation of documents to be sent out of the system. Document Generation understands the documents, and the data that they contain. Document

Management is the infrastructure to capture, store, organize and present these and other external documents.

***Infrastructure***

The Infrastructure Service provides basic, system type services for the developed application. These include services such:

- Audit – a change log is maintained of who changed what, when, and (possibly) why
- Security – mechanisms for enforcing authentication and authorization (access control)
- Trace – system level tracing to assist with problem resolution
- Error handling – standard mechanisms for trapping, handling and presenting (or recovering from) errors.
- Logging – standard mechanisms for logging errors or other system messages
- Locking – the mechanism to protect against workers concurrently working on (updating) the same data from corrupting the other's updates

Many of these services are provided by the GRNDS framework. They are used as-is or modified for the CSE system application.

***Reporting and OLAP***

Reporting and OLAP provides the tools to produce reports and to conduct analysis on CSE data. It provides a general purpose reporting infrastructure that will allow users to submit their own reports, receive information, and act on it quickly. The Reporting Service provides the following features:

- A web-based interface to create and run reports, conduct analytical processing, or view static (scheduled) reports. Report scheduling, execution, publishing and distribution. Reports can be made available through various means, such as html or PDF.
- Decision support tools ranging from basic query and reporting to advanced online analytical processing (OLAP).
- Meta data management, which manages the meta data associated with the complete business intelligence system, including the technical meta data used by developers and administrators, and the business meta data for supporting business users.

***Service Request Management***

The Service Request Tracking Control Service provides the capability to track and report complaints, problems, or system change requests.

***User Management***

User Management is the component that administers the definition of users, roles, and groups that are then used to control user's access to and use of the application.

## 4A.3.1.3.6 The Whole Functional Architecture

We have now defined a working functional architecture that represents the overall functionality of the new system. The five layers of the functional architecture have been introduced, and a description and justification for each component within these layers

has been presented. The complete functional architecture is shown below in Figure 4A.3.1-7.

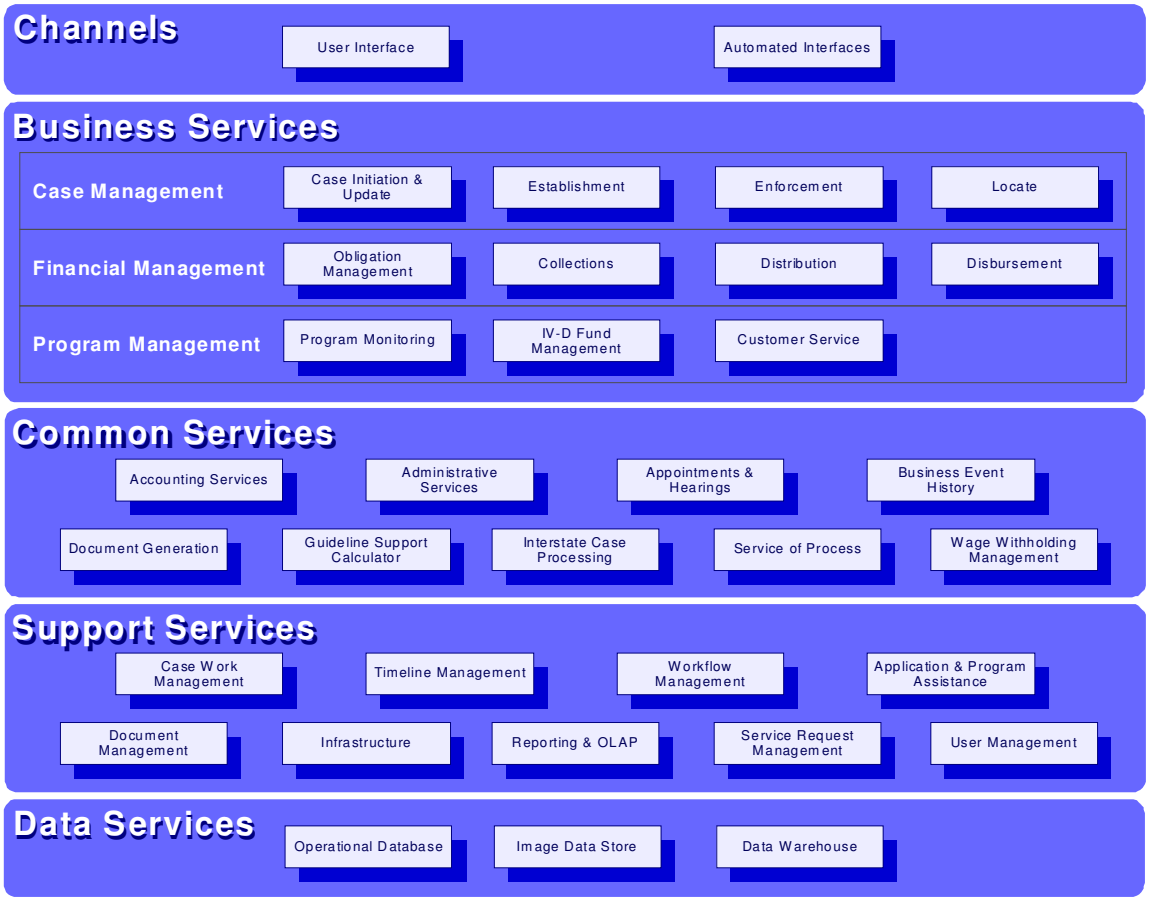



**Figure 4A.3.1-7 The Complete Functional Architecture –** *All the layers together form the Functional Architecture.*

The layered organization provides a structure that simplifies visualization and understanding of the system. It also provides a framework that influences the design and construction of the system.

The most significant aspect of the layered organization is that it creates a service-oriented view of the system with clearly defined dependencies. A layer provides services that can be used by a client, which in this organization is any of the layers above it. The layer providing the services however is not 'aware' of which client is accessing its services. This means (among other things), that new client types can be introduced in the future without requiring any changes to the layer providing the services. Equally, a layer cannot use the services of a layer above it in the organization, so these can be modified, upgraded, or replaced without affecting lower level layers.

Within each layer, we have introduced the major, large-grained functional components of the system. Here we begin to see signs of large-grained reuse, as more generic components in lower layers can be reused by components in higher layers. The significance of this is that high-level components have been identified at the architectural level. We know that to build good engineering components, good Java classes, we need to define business components early. In other words, our architecture needs to reflect

the fact that we are using components. For, components are not an after thought. They are fundamental to the way the alliance thinks about, communicates, evaluates, and ultimately designs the CSE solution. A component-based approach forms the foundation for our best of breed CSE solution.

## 4A.3.1.4 Introducing the Technical Architecture

The technical architecture of a system represents the configuration of the physical building blocks -- the technology components – that enable the realization of the business functions and service levels required by the users of that system. It is the blueprint of the technology underpinnings of a systems based solution, like the design plan behind a new car that will meet the business and transportation requirements of those who purchase it.

### 4A.3.1.4.1 Clothing the CSE System Solution

> "(An architecture is) the fundamental organization of a system, embodied in its components, their relationships to each other and the environment, and the principles governing its design and evolution."
> *IEEE Standard 1471-2000.*

The technical architecture of the CSE system solution proposed by the alliance will enable California's Child Support Program to effectively address the business problems and requirements described in the SCP. To do so the alliance has assembled a powerful, flexible, and robust solution designed around the latest technologies -- hardware and software-- and systems design techniques. Those include:

- An e-business architecture.
  The architectural style of systems solutions has gone through many evolutionary stages. Proprietary mainframe host-centric, distributed and client server architectures represent just a few of the generations of solution types that have been used over time.
  The alliance CSE system will be an e-business solution. e-business solutions exploit the best techniques and technologies from the marriage of the standards-based and pervasive Internet and traditional information technology applications.
- A single integrated, architected data model with centralized data.
  Like the system that uses it, the CSE system data model is designed to be an integral and coordinated part of the overall solution. It is an organized representation of the data required to support California's Child Support Program developed through the latest in data modeling techniques.
- A solid foundation of products and technologies.
  The fundamental building blocks of the alliance CSE system solution are some of the most successful products and technologies employed in e-business solutions today. Those include such industry leaders as:
  - IBM's WebSphere Application Server™ family of products to provide the base application execution environment and to support web page handling and distribution
  - IBM's DB2™ database management system
  - The WebSphere MQ™ product suite, including messaging and workflow
  - Tivoli enterprise management products
  - IBM eServer™ hardware platforms, including pSeries and xSeries servers in concert with the AIX™, and Microsoft Windows™ operating systems

  - IBM Enterprise Storage Systems™ disk and Storage Area Network (SAN) solutions
  - Cisco routers, and Cisco and Nokia firewalls
  - Accelio (formerly Jet Forms) document management products for e-Forms support
  - VisualAge Java applications development tools
- Industry and open standards, techniques, and best practices.
  Underlying the alliance's technical architecture for the CSE system and the products used to support it is a dedication to the use of industry and open standards, techniques and best practices. The applications infrastructure of the alliance solution is illustrative of that support. It is a J2EE™ compliant system with component services oriented design, generalized interfaces, a platform neutral design and development strategy, and uses XML, message-oriented interfaces, HTML/HTTP, and other industry and open standards.

The alliance also strongly supports the State's architectural best practices and guidance."

- Adherence to industry and open standards, techniques and best practices on previous projects enables us to assemble and apply a store of re-usable solution technical components to the solution. Those include:
  - Reusable Java components and innovations from CSE system implementations in other states
  - Use of Accenture's GRNDS Java component framework for development and execution
  - Components from IBM's work with FTB on the Integrated Non-Compliance (INC) Project.

### 4A.3.1.4.2 Putting It All Together

A high-level view of the CSE system technical architecture is shown in Figure 4A.3.1-8, CSE System Technical Architecture Overview.

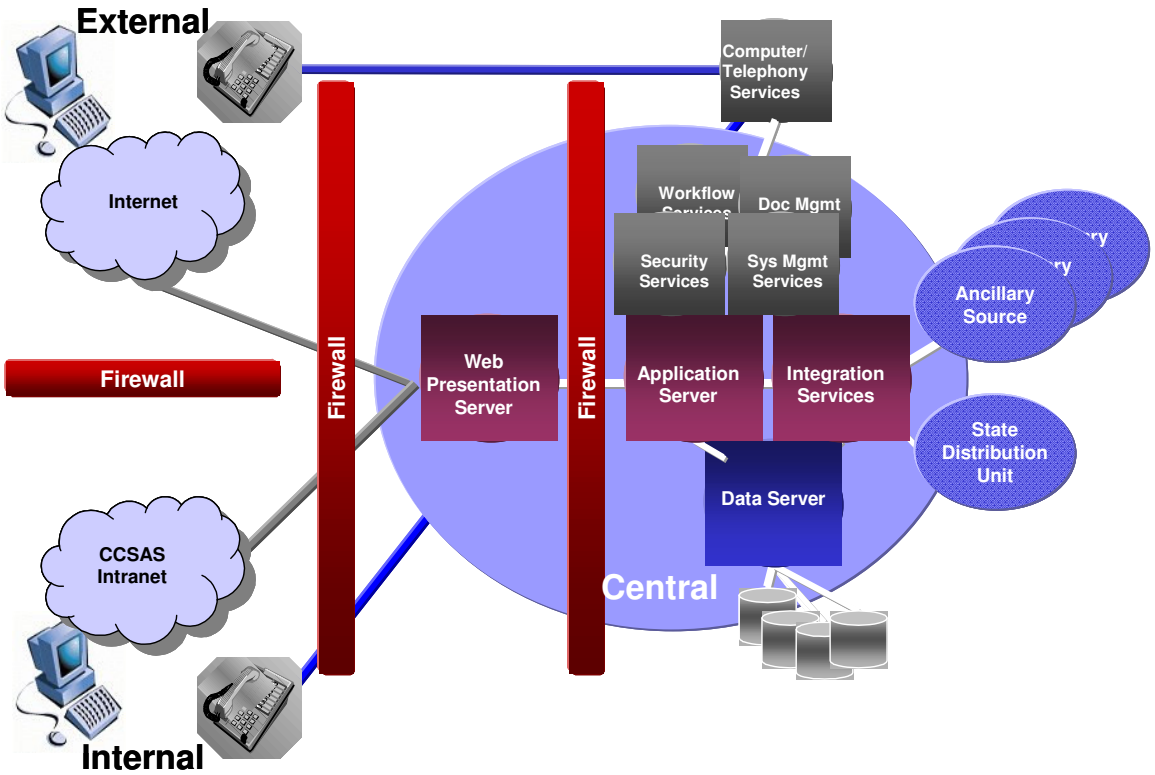



**Figure 4A.3.1-8 CSE System Technical Architecture Overview** – *How the pieces fit together.*

As illustrated by that diagram the CSE system technical architecture embodies the design styles and practices of an e-business solution at its core.

As such, it is a centralized solution with thin clients. Most of the data and business logic of the system is focused within the central services area. "Thin" Internet browser technology is the primary systems-based channel for user access and interaction with the system core.

The underlying configuration of the technical architecture is multi-tiered and distributed. The tiers provide support and services:

- To the users – including the network they use for communicating with centralized services
- For presentation and business logic
- For management, control and access to the CSE system data core

> "Every now and then, a technology or idea comes along that is so profound, so powerful, so universal that its impact changes everything.
>
> (The Internet) will transform every institution in the world. It will create winners and losers. It will change the way we do business, the way we teach our children, communicate and interact as individuals"
>
> Louis V. Gerstner
> Chairman and CEO
> IBM Corporation

The logical and physical realization of those tiers and the services they provide is through multiple servers distributed across the architecture -- and linked through the application and support of various networking and distributed systems standards. Key servers within the CSE system include:

- Web Presentation Server. The presentation server provides the platform for managing the "user experience" with the system, including the storage and serving of web pages, and the formatting of content aggregated from other servers. From the users viewpoint, the presentation server *is* the system, providing transparent access to the business logic and data provided by the other CSE system components.
- The Application Server. The brain of the solution, the application server is the execution platform for the main business logic of the system
- The Data Server. The data server is the manager of the CSE system central data store. It controls all major data elements of the solution including the statewide Child Support database. If the application server is the brains of the system the data server may be thought of as its heart.
- Integration Services. The CSE system needs to interface with many outside entities including various Federal, State, interstate, intrastate and private sources of information. Integration Services provides the critical function of providing, coordinating, organizing and controlling that communication.
- Other supporting servers including those that support customer service, security, business workflow, and systems management

The CSE system will support various types of users and ways for those users to access the system. The alliance technical architecture supports internal users – LCSA and State staff – through the CSE system intranet, a private, secure network accessible through network points of presence in authorized locations. External users – members, employers, and the general public – will be provided access to valuable CSE system self-service facilities through Internet and phone-based access channels. Support for those channels is provided through authorized browser and telephony services support within the technical architecture.

The CSE system solution must address the business problems and requirements of California's Child Support Program. The alliance's CSE system technical architecture navigates those critical challenges through the thoughtful application of the latest technology and systems design techniques. The result is a powerful, flexible, and robust solution to support the current and future business needs of the child support program, thus enabling emerging and future requirements to be readily incorporated.

### 4A.3.1.4.3 Summary

Our innovative response to California's CSE automation challenge supports the State's vision for a state-of-the-art solution. Utilizing best of breed design components and reusable frameworks will reduce development risk while preserving the benefits of constructing the solution on a modern platform. Furthermore, because our solution will be designed and constructed with a clear understanding of the State's overall program goals, our best of breed system will be a valuable tool for introducing uniformity of process across the State. When combined with the State's vision for the child support community, our solution will place California at the forefront of innovation and establish the State as a leader in the next wave of program improvements.

# 4A.3.1.5 Introducing the Conceptual Design Characteristics

The CSE business solution and conceptual design, as introduced above, has been chosen and designed to meet the CSE requirements by application of industry best practices. Specifically though, how does it satisfy the State's architectural principles and objectives. This section identifies the major characteristics of the solution, and provides a brief overview of some of the ways in which these characteristics contribute to the architectural principles. A full evaluation of the suitability of the proposed solution, including a detailed analysis of these characteristics is presented in Section 4A.3.3 CSE System Architecture Objectives, Best Practices, and Attributes.

## 4A.3.1.5.1 Layered Component-Based Architecture

A concept fundamental to the alliance's solution approach is that of the 'component'. The component approach and its attendant benefits from a software construction perspective are introduced in Section 3C.12.4 Software Architecture Design. The concept is further discussed here.

### 4A.3.1.5.1.1 Making Things Less Complex

A primary reason for the component approach is concept of 'divide and conquer'. CSE will be a large and complex system. Application designers (in fact humans in general) cannot handle complexity of this magnitude directly. To enable us to manage and understand the complexity, we break down systems into smaller, more comprehensible building blocks - blocks with manageable scope, which we can understand and talk intelligently about. This is a hierarchical process, wherein these blocks are similarly organized into their constituent components, and so on until we get to the actual 'primitives' – code and data that form the basic building blocks of the system.

### 4A.3.1.5.1.2 Components for Modularity, Decomposition, and Reuse

So, what is a component? The term is often thrown around loosely, when people want a fancy synonym for "thing" or "chunk" or "subsystem." But for the alliance, a *component* is much more than an identifiable thing in the overall system architecture. As discussed above, a component can be large grained, like a sub-system, or fine-grained like a Java class. It can be software or hardware, although for the purposes of this discussion we are concentrating on software. It can be a business, partitioned business or engineering component. Whatever it is, it has to exhibit certain characteristics. It has to provide a clear and well-defined function, and present a formal, well-defined interface to invoke that functionality. It has to be independent, or encapsulate its dependencies so they are not exposed. It has to encapsulate the details of its implementation. And it has to be well-documented, controlled (for change management) and supported.

The use of a component approach is fundamental to many of the architecture objectives, principles and best practices. For instance, it is by definition modular, which contributes directly to characteristics such as loosely coupled, scalable and portable. It assists understanding and is easily re-usable, thus contributing to maintainability. These benefits are formally defined in Section 4A.3.3.

### 4A.3.1.5.1.3 Object-Oriented (OO) Techniques

The alliance's solution will use OO techniques to design and construct the custom developed software. Object-Orientation is an approach that enhances and extends the concept of components. An object is by definition a component, but it is governed by additional techniques and conventions. An object exhibits encapsulation, as does a component, but defines the term more precisely in regards to how the object is constructed. In addition it employs techniques known as inheritance and polymorphism. These techniques are now well understood and have been extensively applied in large, industrial-strength systems. The benefits have been well proven in the industry, and extensively documented. These three characteristics of a well-constructed OO application together enable higher productivity and easier maintenance.

The concept of encapsulation was introduced above. In OO terms, an object is a 'packet' of data and coded functionality. The functionality can only be invoked using the defined interface, and the data cannot be seen or changed except by the object itself. This encapsulation prevents side effects common in procedural code, caused by sharing data between different algorithms, each of which may apply slightly different logic. Used in a well-structured software architecture, these objects are also easily understood. A developer knows where to go to in the expanse of the application to make a certain change. Even more importantly, the change can be made knowing that it will be completely and consistently reflected in the application. The problem of keeping track of all the places in a program where a change may have to be made, so prevalent in procedural languages, is avoided. Equally, the packaging of the data and functionality together into an object avoids the problem of unexpected side effects caused in procedural programs by applying changes inconsistently.

Inheritance and polymorphism are construction techniques that facilitate re-use and modification. Inheritance allows common data and behavior to be defined and implemented in a 'base class', that is then re-used by 'derived classes'. A derived class extends the base data and / or behavior with its own specific processing requirements. Polymorphism is the ability to use classes derived from a particular base class to be used as if they were the base class, i.e. the specific type of derived class does not have to be known[2]. These OO characteristics reduce the amount of code that has to be written, but the real power of these two techniques lies in the fact that they both allow new derived classes to be added in the future without affecting existing code in the base class, or in code that uses the base class in a polymorphic fashion.

Another characteristic of a well-developed OO application, is that the classes programmed in code (in Java for the CSE system) are an implementation of classes that are represented in an OO design model, which are themselves an elaboration of objects that have been identified in the system architecture's informational and computational models. For the CSE system, this means that there will be actual Java classes to represent entities in the system architecture such as the computational object Initiate Case, or the informational object Participant. This direct mapping from real world entities through design to code facilitates a thorough understanding of the effects of a change, and simplifies the perennial problem of keeping design consistent with the code.

[2] This is a simplified explanation. For a more complete description see a tutorial on OO development.

### 4A.3.1.5.1.4 Layering

A layer provides the following advantages:

- Creates reusable logic
- Supports “fix in one place”
- Enables changes in one layer without impacting another
- Simplifies designing, building, and maintaining applications
- Avoids complex, spaghetti code
- Facilitates application plug-and-play
- Leverages existing alliance assets[3] and other proven approaches, patterns, standards, and technical services
- Improves scalability and performance; an
- Allows application team members to specialize

How then does a layer provide these advantages? How is it defined; what are its characteristics, and what is the difference between layers and components?

To start with, a layer is primarily a logical concept. It is not a component per se, as it does not fulfill a clearly defined function, nor does it present a (single) well-defined interface. It contains components that exhibit these characteristics, but it is not possible to ‘invoke a function’ on a layer. Rather a layer is a grouping of similar components. Each layer in a layered architecture can be thought of as a ‘horizontal cross section’ of the architecture.

Using layering provides a formal structure to the relationship between components that facilitates an understanding of the architecture, and even more importantly, organizes and controls the interaction between components. The main feature of this formal relationship is that a layered architecture is hierarchical. Higher level layers ***use*** the services of layer(s) directly beneath them. Lower level layers do not use the services of layers above them. Equally, a layer can only use the services of layers that it can ‘see’ beneath it. Usually this means only the next layer down in the hierarchy, although occasionally an architecture permits direct access to a layer across an intervening layer.

This limited visibility effectively means that each layer encapsulates the layers beneath it, from the perspective of the layer above it. This provides the same benefits as encapsulation for a component; the implementation can be changed without affecting clients. In this case, a layer, or components in a layer could be replaced, as long as the interface and functionality remains unchanged or is extended.

The use of layering supports and extends the independence touted as a feature of components. The hierarchical nature of layering gives rise to a one-way, limited ‘dependency’. Each layer is only directly dependent on one or at most two others, and two layers are never dependent on each other. If, for whatever reason, changes are made to components in a layer that does affect its interface or functionality, the scope of the repercussions of that change is known to be limited to the layer or two immediately above it. If on the other hand, there is no formal structure, but components were free to

[3] Like GRNDS, our set of J2EE frameworks, which is discussed in section 3C.12.4

use any other components in the system, then complex interdependencies would arise. This is very similar to the “spaghetti code” problem, except as it is now a tangle of objects, the term “ravioli code” may be more appropriate.

### 4A.3.1.5.2 Java & Internet Technology

The use of Java and Internet Technology is fundamental to the proposed solution. We will briefly review these aspects.

Java is a fully Object-Oriented programming language. This means that it supports the concepts described in the preceding section. However, it is not the only OO language. What then does it offer that others do not? The main answer to this is that it is created for, and thoroughly woven into Internet technology. The first characteristic that supports this claim is Java’s portability and incorporation into web browsers. Java will run on any platform that provides a Java Virtual Machine (JVM), which is like a common machine language and operating system. This allows Java to run on any supported platform including AIX, zOS, Linux, and NT. The fact that a JVM is included in web browsers is significant as it allows Java code to run on the client workstation, with no deployment or administration concerns.

Reaching far beyond the initial advantage of portability, Java has become a complete architecture for developing web and enterprise applications. Even if a web browser is not used in a particular system, the J2EE (for Java 2 Enterprise Edition) standard and supporting products provide a complete, industrial-strength environment that supports many of the architectural principles. Characteristics such as scalability, portability, openness/standards and interoperability are engendered by the use of this technology. J2EE defines an architecture that includes Enterprise Java Beans, Servlets, Java Server Pages (JSP), Java Database Connectivity (JDBC), Java Messaging Service (JMS) and Applets. These standards are fully embraced by an industry which has, in the past three to five years, developed an astonishing array of products and tools to support Java and J2EE. These products and tools provide industrial strength OLTP transaction processing support (e.g. IBM WebSphere Application Server), extremely sophisticated development / test environments (e.g. IBM WebSphere Developer Studio), and other productivity and quality tools such as Sitraka Jprobe for code profiling and Wily Introscope for performance monitoring and tuning.

The use of Java and Internet technology has other ramifications. One of the most significant is that now all aspects of the application can be developed using the same common language and tools. This includes functionality that will be provided for self-service customers over the web, internal system functions for caseworkers, and even batch jobs. This has an obvious benefit in system development considerations, such as the applicability of developer’s skills. However, the benefits extend beyond a sharing of skills and tools, to a re-use of code. Using a so-called ‘multi-channel’ architecture the same business functions can be accessed and re-used from all of these different client types.

One early concern with Java was performance. As Java is an interpreted language, it was originally not competitive in performance terms with languages such as C++. This situation is no longer a concern. Significant improvements in the technology, such as improvements in compilers using pre-compiled or just-in-time (JIT) techniques, and other aspects such as optimized garbage collection and improvements in library code, have

moved Java beyond these concerns. The alliance has extensive experience of developing very large, industrial-strength applications in Java, and can point to their own experiences to support this position.

### 4A.3.1.5.3 Best of Breed Solution Approach

The best of breed approach is a blend consisting of a brand new custom system, built upon an existing alliance framework and other technology assets, and incorporating proven, innovative techniques and concepts from prior alliance Child Support systems in California and elsewhere in the country.

This approach is designed to meet the specific business requirements of the California Child Support Program, as defined in the Business Requirements List (BRL). It specifically addresses the five business problems, and embraces the innovative thinking and 'new generation' approach introduced in the Base Business Concepts. It adheres to and promotes the Architecture Principles and Objectives, and it utilizes the best of advanced e-business technology.

The use of a best of breed approach allows the alliance to accelerate the development effort and reduce risk by re-using proven concepts and assets. The technology assets are not only supportive of the architectural principles, but were developed specifically for re-use in a Java based e-business architecture. The program assets and concepts have been selected for consideration due to their consistency and compatibility with DCSS goals.

### 4A.3.1.5.4 Adherence to Open Standards

Embracing open standards was an imperative for all facets of the alliance's proposed solution. This has an obvious impact on architectural principles such as 'interoperability' and 'increasing vendor independence'. It also has a significant effect on development related principles like 'improve efficiency of systems development', 'reduce cost of maintenance' and 'maintainability'.

Most standards described in this section are formal, published standards produced by organizations such as American National Standards Institute (ANSI), Institute of Electrical and Electronics Engineers (IEEE), Object Management Group (OMG), World Wide Web Consortium (W3C), and X/Open, or collaborative formal standards such as Java and J2EE. Also included are de facto standards such as PDF and PostScript.

As already described, the technology standards used are founded on Java and Internet technologies. This includes J2EE, TCP/IP, HTML, HTTP and HTTPS, SSL, and XML and its related technologies (e.g., DDT, XSL). Other technology standards used include ANSI SQL, and OMG CORBA. The open source operating system Linux is also a significant part of the solution.

In terms of development standards, these are centered around OMG's Unified Modeling Language (UML), and related standards such as Unified Process Model (UPM), Meta-Object Facility (MOF), XML Metadata Interchange (XMI), and Common Warehouse Meta-Model (CWM), and will follow the Rational Unified Process (RUP) methodology.

In addition to the formal and de-facto standards mentioned above, the alliance will use industry-wide design and code patterns. A design or code pattern is a formal, published, and enforced technique. These are used to provide designers and programmers with a standard from which to produce consistent solutions. They also improve productivity by avoiding the need for developers to continually re-invent the wheel. While not official standards, patterns represent collective experience and shared best practices. They are published in various ways, such as books, periodicals, and web sites. Patterns can also be developed specifically for the project, either from scratch or by enhancing an existing pattern, assuming no existing pattern meets the specific project needs.

Using patterns allows new staff to quickly understand the application, and helps to verify the availability of appropriate skills. This can be particularly beneficial when the maintenance staff is not the same as the development staff.

### 4A.3.1.5.5 CSE Development Methodology

A number of industry standard or accepted practices, such as the common warehouse meta-model and the Rational Unified Process (RUP) component-based design process, will be part of this overall methodology.

The CSE application development environment will be based on Rational Rose for object oriented design, ErWin for database logical and physical design, and WebSphere Application Developer Studio for program code development. These primary tools will be supported by an integrated suite of tools covering requirements definition and analysis, functional and performance testing, and defect management. This toolset is consistent with the development standards described above.

The use of such a powerful and consistent toolset significantly contributes to a number of architectural principles, such as ‘improved efficiency of systems development’, ‘reduced cost of maintenance’ and ‘maintainability’.

### 4A.3.1.5.6 Common Metadata Driven Development

The use of metadata and its use in models provide a well documented, understandable description of the system at an appropriate level of abstraction. While strictly defined as ‘data about data’, the term metadata is used here to refer to object modeling information as well as pure data. Within the CSE system, the metadata will form the backbone of the various types of data use within the CSE system. This includes the OLTP application (object model and operational database), the OLAP capabilities (data warehouse, data marts and reporting/OLAP tools), and the data intake validation and transformation using Extraction, Transformation, and Loading (ETL) tools.

In addition to documenting the system’s design, given the appropriate tools and under appropriate circumstances, metadata can be used to generate implementation products (such as DDL for the database). This permits changes to be applied at the higher level of abstraction represented by the metadata and automatically applied to the implementation level, and avoids the need to make changes more than once. It automatically keeps the documentation consistent with the implementation. Where this approach is not practical, the use of appropriate tools can support reverse engineering to re-construct the model from the implementation.

The adjective 'common' is used because of the need to keep similar metadata in different tools and their repositories. While there are valid reasons for this (such as the different uses and interpretations placed on the metadata), there is also a need to keep the repositories consistent. To this end, the Metadata Object Facility (MOF) and the Common Warehouse Meta-Model (CWM) can be used to help describe and tie together the complete metadata definition and usage model for the CSE system.

### 4A.3.1.5.7 Best of Breed COTS Products

The alliance is proposing a large number of COTS products from multiple vendors to implement the new CSE system. These products have been selected for their suitability for the CSE solution. As described above, a primary selection criterion is that they support open standards. Where standards are lacking, a strong market presence and widely accepted industry leadership position is required for their inclusion. Further, the alliance has used their experience where applicable in the selection of products. The COTS products and their role in the technical architecture are fully detailed in section 4A.4 CSE System Environments.

Products such as:
- WebSphere
- SeeBeyond eXchange
- SeeBeyond eGate
- Brio Intelligence
- WebSphere MQ
- Wily Introscope
- Sitraka Jprobe
- MQ Workflow
- DB2 OLAP Analyzer

The approach to product selection, and the best of breed, multi-vendor, standards-based product set that has been assembled, contribute to principles such as increased vendor independence, interoperability and openness.

### 4A.3.1.5.8 Enterprise Application Integration (eAI) and Partner Access Management

EAI and Partner Access Management will be used to provide loose coupling between system components and with partner systems. The concepts central to eAI, such as asynchronous messaging, externally defined data transformation rules, and the ability to 'multiplex' a single logical message to multiple partners, using different data structures and protocols, all contribute to the goal of loose coupling.

Use of these techniques and products in the CSE solution contributes directly to aspects such as maintenance, interoperability, manageability, adaptability, and even security and user productivity.

### 4A.3.1.5.9 Workflow Driven

The use of a workflow driven approach and COTS workflow product allows business process knowledge to be de-coupled from the developed Java code. The Java code will be implemented to provide atomic business functions, such as create a case, update an address, or process a collection. Workflow is like a roadmap that links business functions such as these together to form business processes. A business process (such as responding to an application and establishing a new case) consists of a number of tasks that may take days or weeks to complete, and may involve a number of different people. The workflow component manages this extended series of activities and routes work to the appropriate worker or automated system function to be performed.

By de-coupling this knowledge from the developed code, and placing it into an external environment specifically geared to this capability, business processes can be defined, managed, and changed, more quickly and effectively. This contributes to principles such as 'improve user productivity', 'reduce cost of maintenance', and 'improve system manageability'.

### 4A.3.1.5.10 Externalized, Centralized Rules and Decision Data

A development pattern that will be used for the development of the CSE application is to define business rules in a manner to facilitate their identification, understanding and modification. There are a number of techniques that will be used for this. The simplest and most flexible is to store data that is used in business rule decisions (such as if arrears is greater than x dollars, or if no response is received in z days) in database tables. This allows these business rules to be altered to use new values without any code changes. Of course this has to be closely managed and controlled, but it is an effective way of providing flexibility for volatile decision data.

Another approach is to implement business rules in Java code, but to provide special 'rules objects' that are available throughout the application. This technique uses a common language and development environment for specifying the rules and the other application code, but by virtue of its organization isolates the rules for simpler manipulation.

Techniques such as these contribute to maintainability, adaptability and flexibility.

### 4A.3.1.5.11 Distributed, Multi-tiered Technical Architecture

The CSE system technical architecture is based on a distributed philosophy. Different components within the system are sited in distinct physical environments. These environments may be physical machines, or Logical Partitions (LPARS), or both. For instance the web servers, application servers and database servers are all located on different 'platforms'. Note that a distributed approach does not have to mean geographical distribution; the components may be sited in the same 'facility', but are still distinct, separate physical entities.

The distributed philosophy applies not only to the distribution of different components within the architecture, but also to distribution in the form of parallel instances of the same component. This provides the capability for load-balancing and fail-over, and provides an architectural approach that is ideally suited for horizontal scalability.

The distributed approach is supported by the technologies and products used. For instance, the use of pSeries servers allow significant variations in the physical 'structure' of the architecture, from a large number of small machines to a few very large servers. Various products such WebSphere, WebSphere MQ, and DB2 are specifically designed to facilitate distributed operation. Use of technology standards such as CORBA and RMI build a distributed capability into the core of the application.

### 4A.3.1.5.12 Security Framework

The solution will be built on a strong security framework providing application implemented security supported by COTS tools. The security framework will provide

authentication, authorization, access control, confidentiality, integrity, non-repudiation, auditing and intrusion detection. This is fully described in Section 4A.4 CSE System Environments, and is summarized below. COTS products that implement security capabilities include IBM SecureWay Policy Director, IBM HTTP Server, WebSphere Application Server, SeeBeyond eXchange, Symantec Intruder Alert, as well as the Cisco and Nokia firewalls. .

Security capabilities include the following:

- User and Role Administration. IBM SecureWay Policy Director will be used to establish and administer the system's users.
- Authentication. IBM SecureWay Policy Director also manages authentication.
- Access Control. Connectivity access control is provided by the firewalls. Access to system functional capabilities is described next under authorization.
- Authorization. This is managed, depending on use, by the application and/or COTS tools. For instance, WebSphere Application Server and DB2 can manage access to their resources based on defined users and roles. WAS can control access to the level of individual method calls, and DB2 can impose read/write/alter restrictions on resources such as tables and views. Other COTs products such as Brio Intelligence permit additional authorization controls if needed.
- Confidentiality, Integrity, and Non-repudiation. This is primarily the responsibility of the IBM HTTP Server, using SSL, to encrypt and control interactions with web or internal system users. For automated interactions with other systems, SeeBeyond's eXchange will be used, and will use technologies such as PKI.
- Audit. The application will maintain audit information about changes to data, which will identify who changed what and when.
- Intrusion detection. Symantec's Intruder Alert monitors and reports on attempted intrusion activity.

These comprehensive security capabilities apply to the architectural principle to improve security, but will also contribute to improving system manageability.

### 4A.3.1.5.13 Enterprise Management Tools

The CSE system will utilize a suite of highly capable tools which will provide extensive administrative capabilities, including system configuration, system performance monitoring, and event handling (alerts). These tools will be able to operate in the distributed, heterogeneous environment that will support the CSE system, providing consolidated, centralized management capabilities across the range of products. The monitoring capabilities will use pre-defined thresholds for a variety of metrics, including response time, resource usage (such as memory, CPU, or I/O channels) to detect system degradation. The metrics will be established based on empirical data gathered during performance testing, and can be applied at a fine level of granularity, to monitor individual components such as the web server, the application server, the network, and the database. Any degradation in performance beyond the specified thresholds can trigger alerts or other events that to initiate corrective action.

### 4A.3.1.5.14 COTS Data Intake, Validation, and Transformation Tools

All data input to the system, whether during conversion, production batch feeds, or on-line data input, is subject to consistent validation and transformation. At the heart of this capability is the CSE database, which is initially created during Phase I as a consolidation of the disparate LCSA systems' data. The database is a normalized relational database that holds entities such as Participants, Cases, Addresses, etc as distinct entities, and creates associations between them. This holds a data item in one place, so that an update applied to an entity is immediately and consistently represented regardless of the 'context' in which that entity is being used.

The Phase I conversion and consolidation process detects and eliminates potential duplicates, such as Participants, Cases and Addresses to initially establish this 'clean' environment. The solution uses the AMS/Synergy Automated Conversion System (ACS) conversion software to do the initial conversion and de-duplication. Pitney Bowes Finalist is used to validate that addresses entered are actual addresses known to the USPS. On-line update functions will be designed to follow a paradigm where existing data in the system is identified and re-used, rather than immediately 'creating' new data. These products and techniques are used to establish and maintain a high-quality, consistent, and accurate store of data.

### 4A.3.1.5.15 Centralized, Shared & Normalized Operational Database

The use of a centralized, shared & normalized operational database keeps data in one place, both geographically and logically, thus avoiding duplication and replication issues. Within the database, a data item is linked to other items, rather than copied. Data input validation occurs on the only copy of the item, avoiding problems with inconsistent data.

The data is available statewide so, where there is an overlap of subject data between LCSAs (e.g. shared cases or participants), all LCSAs see the same information, in the same state and with the same relationships to other data.

While logically a single, shared entity, the database will be physically constructed in a partitioned manner so that different tables and tablespaces can be assigned different physical characteristics, such as buffer pool sizes, to accommodate different processing characteristics.

### 4A.3.1.5.16 Segregation of Operational and Analytical Data and Processing

The alliance solution provides a comprehensive Business Intelligence capability in addition to the Child Support case management system. This is designed not only to meet the defined reporting needs, but to provide the ability to perform analytical and ad hoc queries against the CSE data. By their nature, these types of activities are ill-defined and tend to expand with time. To accommodate this nebulous requirement without running the risk of adversely impacting the transaction processing environment, the system has been structured such that the reporting and analytical activities are supported by a totally separate hardware and software environment. These use BI products such as Brio Intelligence, DB2 OLAP Server and DB2 Analyzer, executing on a dedicated p690 server running DB2 EEE. The solution also provides comprehensive tools to manage replication of operational data to the BI environment, such as Data Warehouse Manager and DPROPR.

### 4A.3.1.6 Conclusion

This section has provided a, high level introduction to the CSE System Conceptual Design. It provided a pictorial overview and brief description of the main components and features of the system. It then provided a high level functional overview of the system's capabilities, presented as the Functional Architecture. This was followed by a technical overview, presented as the Technical Architecture. Finally this section introduced the conceptual design characteristics, which are the most significant features of the solution, highlighted and explicitly identified as pivotal to meeting the business and technical requirements. These characteristics are later used in Section 4.A.3.3 CSE System Architecture Objectives, Best Practices, and Attributes as a basis for justifying solution against the requirements.

## 4A.3.2 CSE System Architecture

# 4A.3.2a Enterprise Viewpoint

***The Enterprise Viewpoint provides a viewpoint on the system and its environment that focuses on the business concerns, purpose, scope, and policies and the major system components. This viewpoint is used to organize the requirements and the requirement structure and constraints.***

### 4A.3.2a.1 Introduction

To provide a viewpoint on the system and its environment, this section provides a high level overview of the system architecture. We start by placing the *System Architecture* into context with the *Functional Architecture* introduced in Section 4A.3.1 – Overview. (Recall that the system architecture defines the business functionality that the system will provide, while the functional architecture describes the structure of the application software that will implement the system architecture.) This 'context representation' identifies the three major categories of functionality provided by the system, namely Case Management, Financial Management and Program Management.

Next we look inside each of these three categories and reveal the eleven *Business Services* provided by the system. For each of the three categories, a top-level use case diagram is provided that shows the business services and the actors that constitute that category. (A brief introduction to use case concepts and diagram conventions is included at the beginning of Section 4A.3.2 – System Architecture.)

Finally, a brief description is given for each of the business services. These business services correspond to the eleven business functions defined in the SCP. The description of each business service discusses the purpose, scope, and policies of the business service.

## 4A.3.2a.1.1 Functional Architecture

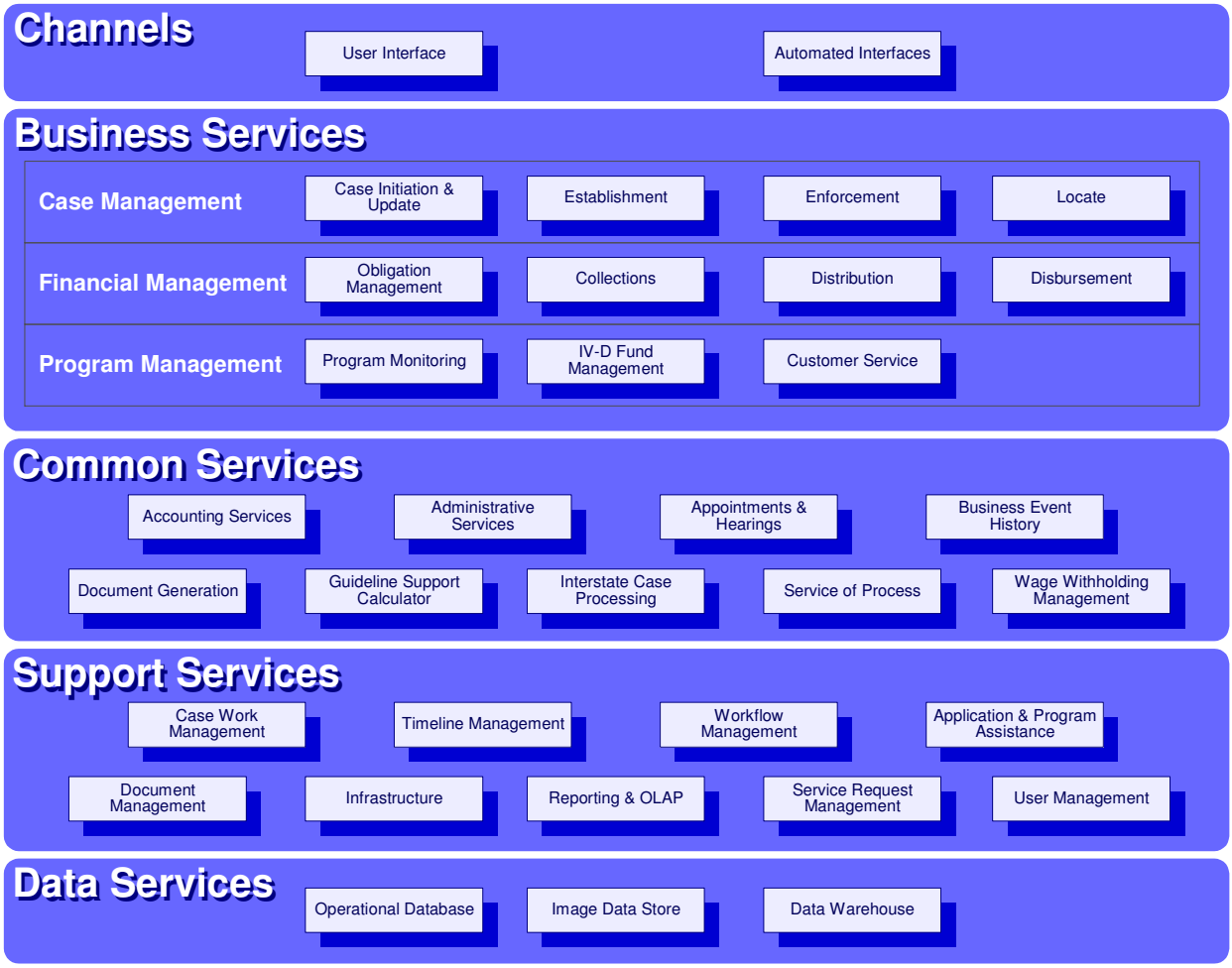



**Figure 4A.3.2a-1 Functional Architecture -** *Presents the context of the Child Support Enforcement business functions within the layered architecture.*

The functional architecture, as shown in Figure 4A.3.2a-1, is re-presented here to set the context for the rest of the system architecture description. The functional architecture was introduced in some detail in Section 4A.3.1 Overview.

## 4A.3.2a.1.2 System Architecture Context

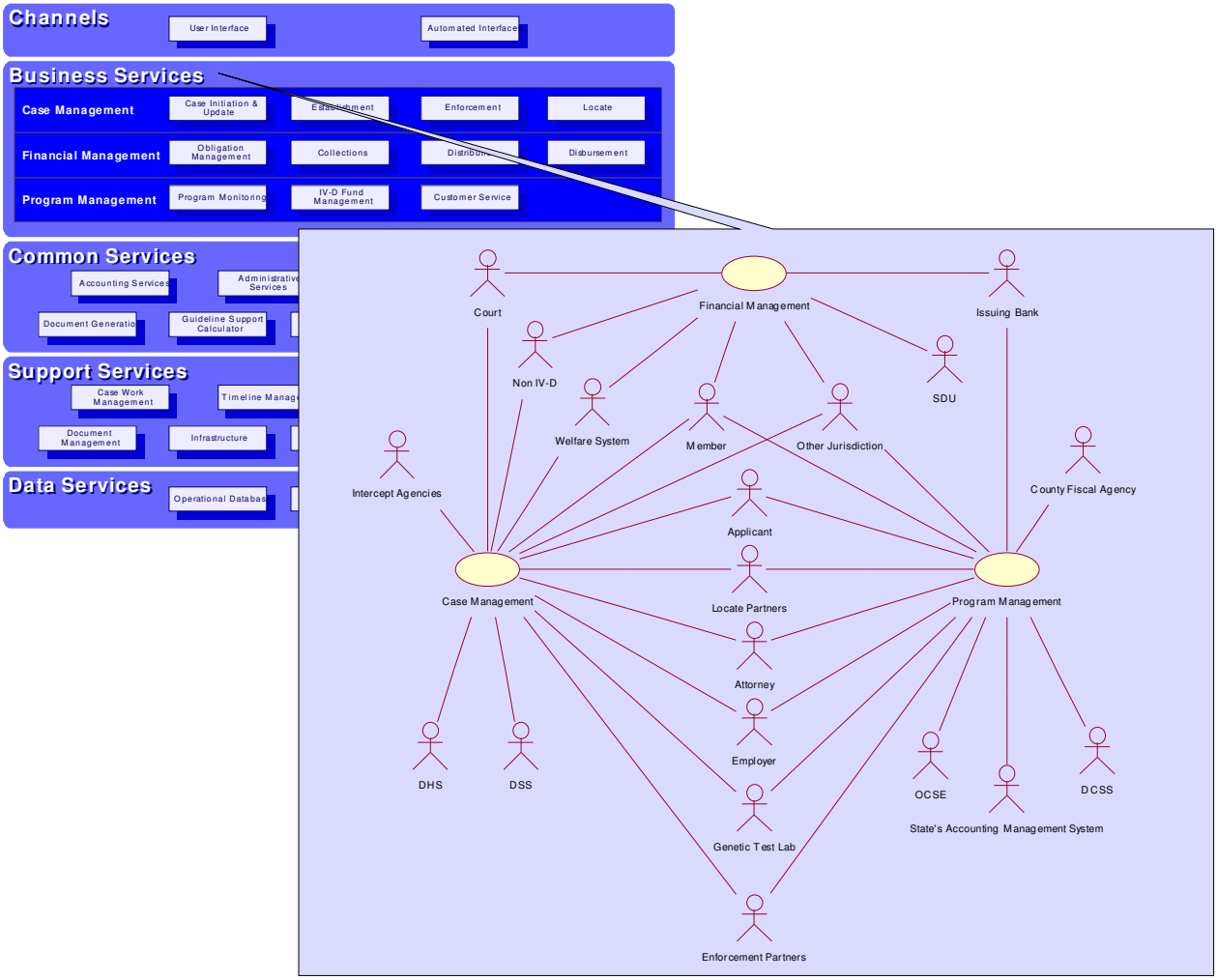



**Figure 4A.3.2a-2 System Architecture Context Diagram -** *Depicts the three major categories of Child Support Enforcement business functions and the actors that interact with those business functions.*

Figure 4A.3.2a-2 represents the context for the entire CSE System. The system is represented by the three functional categories of the CSE system Business Services. The actors show external entities (agencies, customers, partners, etc) with which the system interacts. Some of the actors represented at this level (such as 'Intercept Agencies') constitute a 'generalization' of a number of real entities. (A definition of the system actors was given in the overview to Section 4A.3.2 System Architecture.)

**The context diagram provides a perspective on the business of Child Support Enforcement and the people, businesses, and government agencies involved.**

This diagram is depicted as a callout from the Functional Architecture Diagram to highlight how the Business Services layer represents the business functionality of the

system. The use case model presented in the Enterprise Viewpoint and the Computational Viewpoint is a description of this layer.

Each of these three functional categories is now described in turn.

## 4A.3.2a.2 Case Management

The Case Management category contains four business services: Case Initiation and Update, Establishment, Enforcement, and Locate. Each business service is depicted as a use case in the following diagram, and described in the text below. Figure 4A.3.2a-3 shows the business services that are categorized as Case Management functions, and the actors associated with those business services. The use case diagram for Case Management is represented as a call-out from the Functional Architecture to highlight the relationship between the Functional Architecture diagram and the use case model.

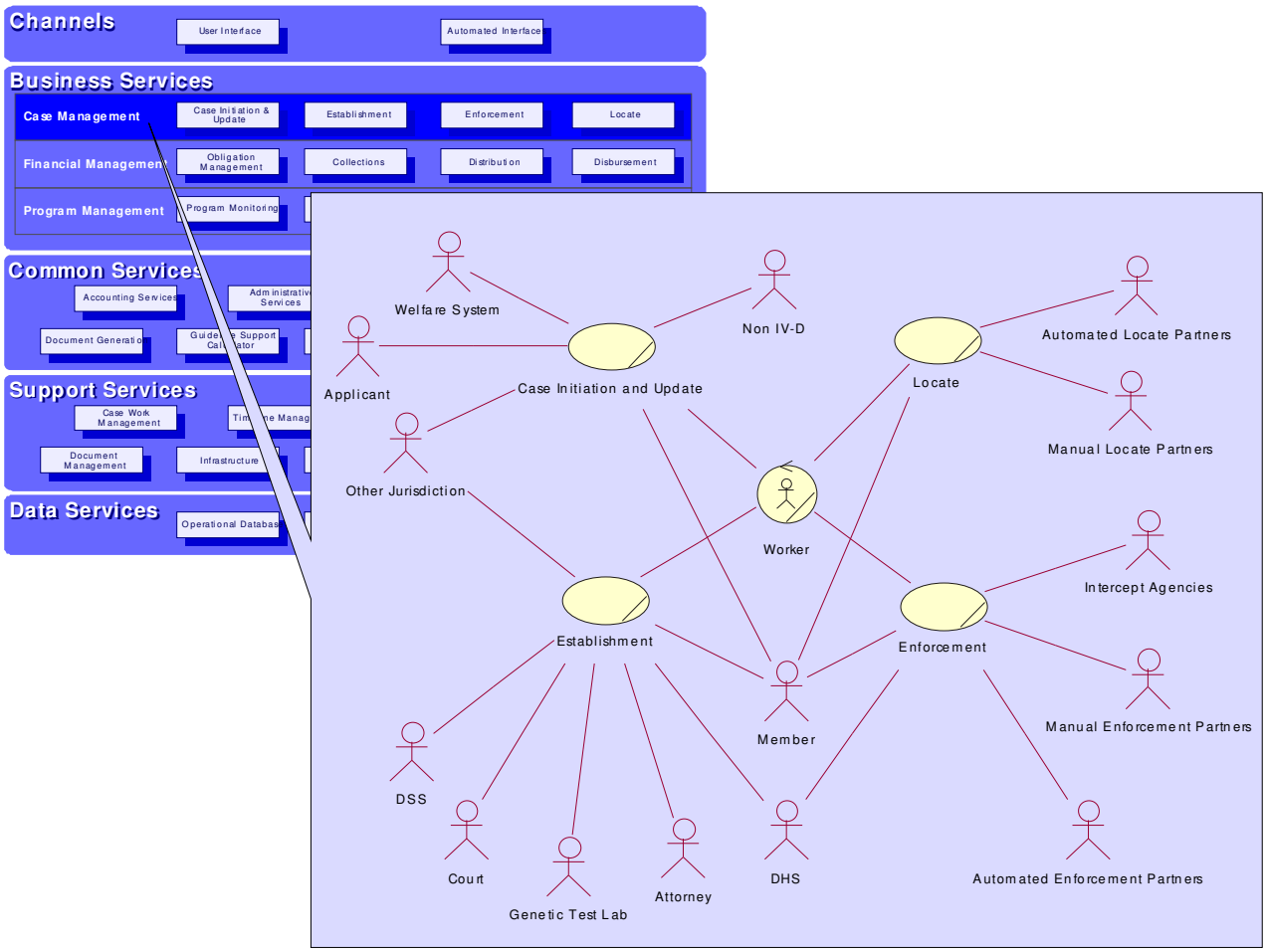



**Figure 4A.3.2a-3 Case Management** - *Case Management consists of the business services: Case Initiation and Update, Establishment, Enforcement, and Locate.*

## 4A.3.2a.2.1 Case Initiation and Update

Case Initiation and Update provides the services involved in creating or updating California Child Support Cases (CCS cases) and participants, including updates to close a CCS case.

A CCS case is created through a process commonly referred to as case initiation. A CCS case is initiated in response to one of the following:

- An application that is received from an applicant
- A referral from a State agency when cooperation with the Child Support Enforcement program is an eligibility requirement or when the payee's rights have been assigned to the State
- A referral from another jurisdiction when it is necessary for the child support agencies in the other jurisdiction and California to cooperate in providing child support services
- The filing of a non IV-D child support order

Participants are created directly within case initiation in order to support the process of assembling one or more participants into a CCS case. However, participants may also be created independent of a CCS case in order to support the provision of certain services to a participant who is not involved in an existing CCS case. The State's Base Business Concepts refers to Level 1 Services for receipting and disbursing funds. The alliance understands the need to provide services to either people or cases. For example, it should be possible for the system to create a participant during collection processing when a payment is received on behalf of a person who does not exist in the system.

A CCS case is the core structure through which Child Support services are provided in the CSE system. A CCS case provides a place to store information that is shared in common by the case members including a log of activities and services related to the CCS case. Any constraints placed on the definition of the CCS case structure must be driven by the requirements of the users in defining a workable case that enables them to deliver child support services effectively and efficiently.

The guidelines provided by OCSE are useful in providing a single definition throughout the nation for what should be counted for the purpose of Federal reporting. Without this definition, it would not be possible to oversee the program across multiple states. These guidelines should not be interpreted as constraints on the logical or physical data structures of the CSE system.

The alliance has chosen the term CCS case in order to avoid confusion in the area of IV-D and non IV-D cases. This will help us define a solution that supports both concepts with a common data structure. We believe this is important to support a consistent understanding and handling for the users and to support the transition of a case from IV-D to non IV-D status and vice versa.

A CCS case represents a mother, father, the children in common, and other custodians as appropriate. A variety of relationships are relevant throughout the life of a child support case. These relationships influence or are defined through the services provided by the child support agency.

- Mother/father/child
- Mother/alleged father/child
- Custodian/non-custodian/dependent
- Payee/payer/beneficiary
- Obligee/obligor/beneficiary

The Informational Viewpoint reflects the modeling of these relationships independently of the CCS case structure. This model will support providing the users multiple views of the case members and their relationships and will help the system to focus the user on the appropriate information based on the functional need. For instance, the association of obligation groups and assistance cases with the CCS case accommodates the payee/payer/beneficiary relationship and unreimbursed public assistance processing. The combination of these structures not only supports the user's functional needs, but also supports the current Federal requirements for reporting and collection of unreimbursed public assistance.

The mother of a child requiring paternity services may name multiple alleged fathers for the child. The CCS case will support combining these related participants into a single case in order to provide a workable case structure and a concise historical perspective.

Over the lifecycle of a CCS case, the case and its case members may be influenced by external cases that are under the domain of external systems. Examples include Court cases, Welfare cases, Foster Care cases, and Other State cases. These cases may have a direct impact on a CCS case, but they may be related to more than one CCS case. To provide the most flexibility in managing the CCS case, and presenting alternate views of the data, the CSE system model recognizes the independence of these cases and presents an approach for maintaining unduplicated records for these external cases within the CSE system.

The CSE system will provide services to assist the users in maintaining unduplicated cases and participants.

The alliance has experience in building interfaces between IV-A and IV-D systems on a statewide basis. We will leverage this experience to build an efficient interface with the California welfare systems.

Interfaces will be implemented to facilitate communication between the CSE system and the State's Welfare system(s). This interface has been challenging to implement in other states, and it will be particularly challenging in California with more than one welfare system to communicate with. The alliance will apply the lessons learned from other states and the knowledge of welfare systems gained through these experiences to overcome these challenges and build an efficient interface to the California welfare systems that improves LCSA efficiency and customer service.

The Child Support Enforcement Network (CSENet) will also provide referral and update transactions related to interstate cases. CCS cases initiated and processed as a result of interstate requests must conform to the same rules and standards as domestic CCS cases. To the extent possible, the user will not need to know whether they are operating

on a domestic case, or an interstate case. The system will automatically produce the appropriate CSENet transaction, or other communication.

Due to the requirement for the State to implement an SDU, it is desirable to have the IV-D and non IV-D cases in a single repository to support the accurate and efficient disbursement of collections. The specific data elements required to support processing requirements for non IV-D cases must be defined.

During the process of clearing a member, it will be possible to access a broad range of participant records in an attempt to identify a match and retrieve as much existing information as possible. FTB's INC application provides a model for building a large repository of participants from a wide range of sources. Data from the sources is examined and cleansed to build a single representation of each unique person with the information that has been provided to each of the source systems. The ability to "pull" a new member from a pool of participants collected from systems throughout the State will provide the most information possible at the time of Case Initiation and should help to avoid delays caused by the need to locate new members.

Information update encompasses the CCS case and case member updates that occur outside of the context of completing a specific IV-D function (i.e., Establishment). These are updates that are received by DCSS or the LCSA from an external source. DCSS or the LCSA may be required to react to the update, or it may result in the need for additional child support services.

The CSE system will provide the ability to transfer a CCS case from one LCSA to another. This will be accomplished through Information Update by changing the value of the responsible LCSA.

Case Closure begins when a CP or another State requests that a case be closed, or when a case meets closure criteria. Specific closure criteria are defined by business rules established by DCSS regulations.

## 4A.3.2a.2.2 Establishment

Establishment provides the services involved in obtaining the legal basis (judgment) for the determination of paternity, and the obligation to provide financial support and health insurance for a child that has not reached the age of emancipation. Establishment is a child support service that is provided to IV-D cases only.

Establishment is the pre-requisite service that must be provided to IV-D Cases in order to create the legal basis and the obligations that will subsequently be enforced. Establishment typically follows Case Initiation, but also occurs throughout the lifespan of the case as circumstances change and obligations need to be modified. The CSE system use case model presents Paternity, Support, and Health Insurance establishment as distinct use cases. Frequently, all three occur in a singular process. However, it may also be necessary to address these issues distinctly.

The CSE system maintains an unambiguous view of the paternity relationships to avoid imposing unnecessary constraints on the CCS case.

For paternity, the key relationships to know are the relationship between an alleged father and a child, and the relationship between the mother and the child. These relationships are focused on the paternity of a single child. To highlight the significance of these relationships, the CSE system model introduces the concept of a Paternity Group. This information pertains to a particular child or paternity determination. The definition of a CCS case should not necessarily be constrained by these relationships. The process of establishing paternity will change the relationship of an alleged father and a child to the relationship of a father and a child.

For support establishment, the key roles are defined by the order and its obligations. The obligation identifies the following:

- Payer – the party required to pay support
- Payee – the party to whom the support is to be paid
- Beneficiary – the party on whose behalf the support is paid (may be multiple)

The CSE system maintains an unambiguous view of the obligation roles. By using explicit relationships and roles, the system will avoid using custodial relationships to implicitly define obligation roles.

These roles are closely aligned with the custodial relationships commonly maintained in child support enforcement systems. The Non-custodial parent (NCP) typically becomes the Payer. The Custodial parent (CP) typically becomes the Payee. And the Child typically becomes the Beneficiary. However, when more complicated custodial scenarios are introduced, the correlation is affected. This is especially true in situations where the children are living in different custodial situations, or where the CP assigns their right to support. To highlight the significance of these roles and the relationships between the participants, the CSE system model introduces the concept of an Obligation Group. This information pertains to a common set of relationships that are true for one or more obligations. The definition of a CCS case should not necessarily be constrained by these roles and relationships. A CCS case may have more than one obligation group in situations where there is more than one payee.

Given the quasi-judicial nature of the processes, it is necessary for the LCSA to interact with Courts, Case Members, and their Attorneys throughout the execution of these use cases. In order to streamline the process, and avoid burdening the Courts with a large caseload, attempts to obtain stipulations from the parties play a significant role. A stipulation can save valuable Court time and simply requires the signature of a judicial officer to provide the same legal basis as an order issued during a court hearing.

Communication between the LCSA and the Court plays a significant role in the performance of the child support program. The LCSA files legal documents with the Court and schedules court hearings. The Court files documents and returns them to the LCSA, manages the docket for the courts, and conducts hearings. The alliance understands the importance of the relationship between the LCSA and the local court, and will focus on providing tools to make this communication channel as efficient as possible.

To obtain accurate and current information and support efficient workflow during the establishment process, we plan to develop interfaces with State agencies to gather paternity evidence in the form of Birth Certificate records and voluntary acknowledgements of paternity. Making this information available in a timely manner will help the program improve performance in the area of establishment by avoiding delays in determining the next appropriate action.

The process of establishing paternity is often dependent upon genetic testing to provide evidence of paternity. The alliance understands the importance of this relationship with genetic testing labs, and will focus on providing tools to efficiently work with genetic testing labs in scheduling and capturing the results of genetic tests.

## 4A.3.2a.2.3 Enforcement

Enforcement provides the services involved in collecting past due support obligations and obtaining compliance with health insurance obligations. Enforcement includes both enforcement of delinquent obligations, and intercept tools used to collect past due support. Enforcement is a child support service that is provided to IV-D cases only.

Enforcement Activities are applied against delinquent obligors in response to a failure to make payments as ordered. The Enforcement Activities consist of automated tools or interfaces with other entities, and manual tools that require more intervention on the part of the caseworker, or another external source. The effectiveness of any single Enforcement Activity is influenced by the circumstances of the delinquent obligor and the quality of the information that is known about the obligor. Federal regulations, State statute, and DCSS policy will be taken into consideration in defining business rules to drive the execution of the Enforcement Activities.

Intercept tools are employed to collect past due balances regardless of the payer's current delinquency status.

Intercept Activities are applied against obligors who have accumulated balances in the arrears and interest sub-accounts, regardless of the obligor's delinquency status. The obligor is "certified" with external agencies that may produce a one-time income stream to the obligor (e.g., IRS tax refunds, State tax refunds, lottery winnings, and State pension distributions). The certification process typically involves aggregating the eligible obligation balances across the obligor's cases and reporting the maximum amount that should be intercepted from any payments to the obligor. Updates are made periodically to synchronize the certified balances with the actual balances. Intercepted payments are processed through the Collections use case and then processed in this use case to record the amount that was intercepted

The Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) requires that child support agencies enforce health insurance obligations. The ability to detect non-compliance with an obligation to provide health insurance is directly affected by the availability of quality information. This requirement has changed the information needs of the child support program. In order to effectively enforce health insurance obligations it is necessary to know which case members are obligated to provide health insurance for other case members, and further to know if they are providing the required coverage. Increasing the number of children covered by private health insurance can reduce the dependency on Medicaid and other public health care programs.

Enforcement decisions and the application of specific tools can be influenced by information received from the payer. The objective of Enforcement is to increase compliance with the obligations. Sometimes, the LCSA may determine that suppressing a particular tool will provide better results than arbitrarily applying it. Or a payer may be able to make payments in a lesser amount than the ordered amount during periods of unemployment, or under-employment. The ability to defer enforcement actions based on a negotiated payment plan can mean the difference between partial compliance and full non-compliance.

The solution supports a threshold-based approach to providing automated enforcement. We will explore whether thresholds should be viewed as static dollar amounts, or whether it is more appropriate to view the arrearage in context with the regular periodic amount due. For example, one obligor who owes $1000 per month and is one-month behind schedule is $1000 in arrears. Another obligor may owe $100 per month, but is 10 months behind schedule. The first obligor's debt may be due to a one-time mistake or late payment, while the second obligor's debt may indicate an unwillingness to pay. It may be appropriate to pursue different enforcement activities for each obligor.

Alternative payment plans or deferred enforcement actions do not have a bearing on the ordered obligations. Arrearages continue to accrue at the ordered rate, but users are able to work their caseload more effectively by allowing the system to monitor the alternative payment plan rather than the original obligation.

When Enforcement is no longer necessary, the CSE system will have the ability to stop any enforcement actions in progress, and restore the obligor's status to "compliant" with the appropriate enforcement partner.

## 4A.3.2a.2.4 Locate

Locate provides the services involved in resolving issues concerning a person's identity, whereabouts, and economic resources. Locate obtains information from other sources (primarily automated systems) and makes that information available to the CSE system processes and users. Locate will be used when information is not available in the CSE system, or when it is appropriate to refresh the information in the CSE system in order to make decisions based on the information currently available. Locate is a child support service that is provided for non-custodial and custodial case members in IV-D cases only (with exceptions made on a pay-per-request basis).

Locate starts with the assessment of a participant's locate status. A locate status indicates the type of information that is needed for the participant - their identity, physical whereabouts, income, and assets. A participant remains in a particular locate status until information is obtained (and verified) and triggers a reassessment of the locate status.

Locate activities include both automated processes and manual efforts to obtain the highest quality data possible. A Participant Locate Status is used to focus requests for information in an efficient manner. Rather than applying a "shotgun" approach and requesting information from every available source, business rules are applied to identify a hierarchy of sources based on the type of information required, the reliability of the

source, and any costs of the service. Although desirable sources can be contacted in parallel, sources are not necessarily contacted at the same time. The specific entities considered to be locate partners are presented in the Computational Viewpoint, and the description of actors provided in Section 4A.3.2.

Because a person may remain in a locate status for a long period of time, the process also supports resubmitting locate requests to sources on a periodic basis. The timing of the resubmission will be defined for each source. It may be desirable to resubmit a request to EDD - Wage Reporting on a quarterly basis because of the relatively static nature of the data, while DMV may have a more frequent resubmission policy.

Locate is also responsible for managing data match submissions and requests for verification of data. Data matches are requested when a functional process would benefit from having the most current information possible (e.g., Enforcement, Review & Adjustment). There is no need to resubmit data match requests, but the format and function are similar to locate requests. Certain key information must be verified for accuracy. Examples include: SSN, DOB, Address, and Employment. Verification may be accomplished by contacting the referenced organization directly, or by cross matching the data with another reliable automated source.

# 4A.3.2a.3 Financial Management

The Financial Management category contains four business services: Obligation Management, Collections, Distribution, and Disbursement. Each business service is depicted as a use case in the following diagram, and described in the text below. Figure 4A.3.2a-4 depicts the business services that are categorized as Financial Management functions, and the actors associated with those business services. The use case diagram for Financial Management is represented as a call-out from the Functional Architecture to highlight the relationship between the Functional Architecture diagram and the use case model.

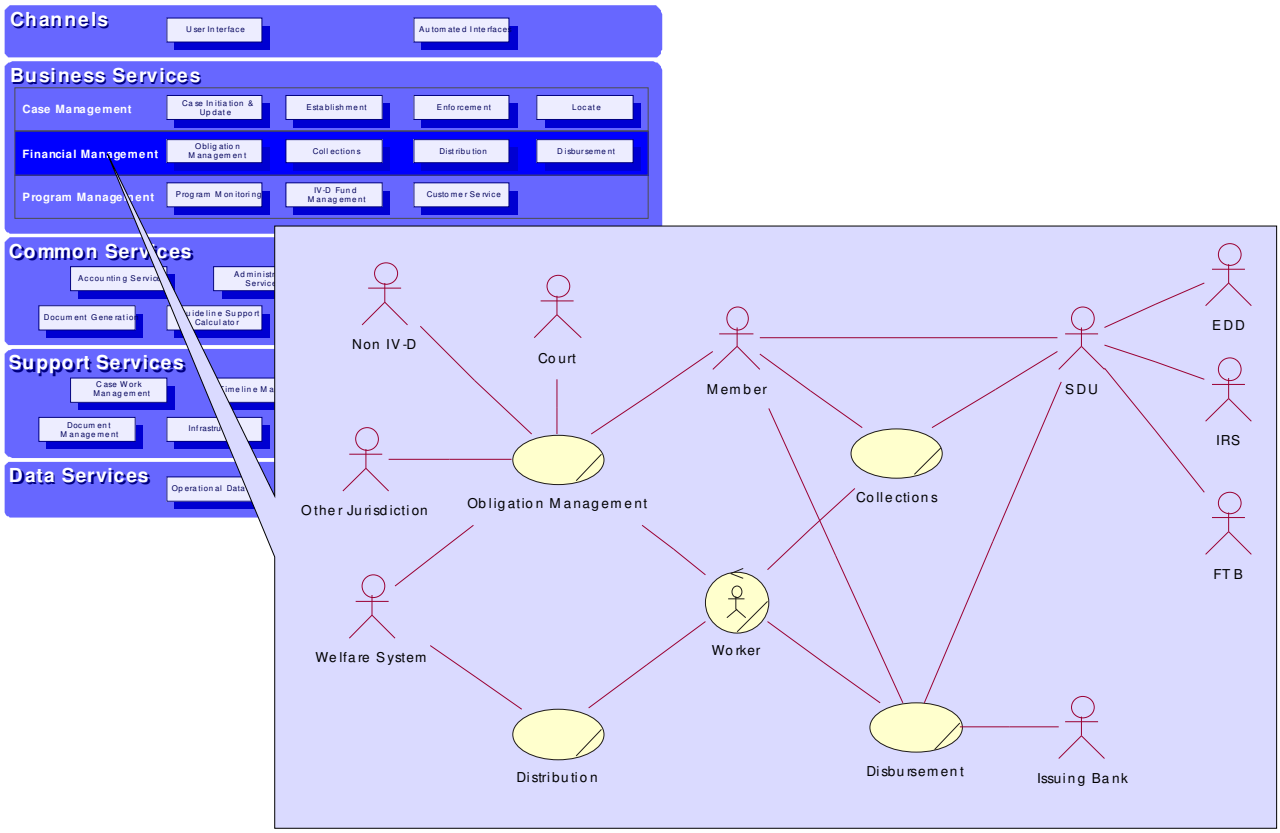



**Figure 4A.3.2a-4 Financial Management** - *Financial Management consists of the business services: Obligation Management, Collections, Distribution, and Disbursement.*

## 4A.3.2a.3.1 Obligation Management

Obligation Management provides the services involved in managing court ordered support (financial and non-financial) obligations. It includes the Review and Adjustment process. Obligation Management includes services that are provided to IV-D cases only, and services that are provided to cases.

Obligation Management provides the services and functions necessary to administer both the financial and non-financial activity related to court orders and their obligations. Although the primary focus is on financial obligations, the administration and monitoring of non-financial obligations is included within Obligation Management. The only

significant non-financial obligation that must be tracked and monitored is the obligation for the provision of health insurance for the children.

The accounts receivable functions are a significant component of any Child Support Enforcement system. Financial obligations can require that the obligor pay specific amounts toward current support, and any other balance due, each month. Tracking the obligations (accounts receivable) is a critical function in maintaining accurate and reliable data and providing quality services to the parties involved.

Detecting non-compliance with obligations is the first step in providing enforcement services for IV-D cases. The CSE system will monitor obligations in IV-D cases and apply consistent business rules to the application of automated enforcement tools and recommendations for any manual enforcement activity.

The CSE system will provide the account history for a CCS case in a readily accessible and understandable format.

Providing the account history for a CCS case is a fundamental requirement for providing quality customer service to case members. The CSE system will provide this information in a format that can be readily understood by case members, their attorneys, judicial officers, and LCSA and DCSS staff. The alliance understands the importance of making this information available to the appropriate parties in an accessible and understandable format. By designing and developing self-service access points for case members, we will provide the ability to request and obtain this information without user involvement.

Periodic Review and Adjustment of obligations provides the framework for a statewide Child Support Program that is fair and equitable to the parties. The CSE system will keep the case members informed of their right to request a review, automatically detect CCS cases that should be reviewed based on substantial changes in income, and provide a streamlined review process to help CSA staff in making the determination to proceed with an adjustment.

Monthly statements are also produced through this business service. Billing statements are produced to keep payers informed about the status of their obligations, payments received, and payments due. Support statements are produced to keep payees informed about the collections that have been received on their behalf and the disposition of those collections.

## 4A.3.2a.3.2 Collections

Collections provide the services necessary to accept and post support collections. With the State Disbursement Unit (SDU) in place, support collections will be processed by the SDU. The SDU will send collection information to the CSE system in an electronic format. This collection information will be posted to the appropriate payer, or researched until the appropriate payer is identified. Collections is a service that is provided to IV-D and non IV-D cases.

The CSE system supports the practice of accepting payments before a support order exists.

Even with the SDU in place, collections will be received that cannot be posted to an existing payer. The alliance understands the importance of researching these collections and disposing of them as quickly as possible.

Services will also be provided to support collection adjustments: handling checks that are returned by the bank (NSF Collections), handling collections that have been posted to the wrong person in error, and handling adjustments that are received from the IRS.

Although payers will be instructed to send support payments to the SDU, there will be situations when the LCSA will need to process walk-in payments. To support this function, the CSE system will provide services to capture the walk-in payment data and send that data to the SDU. The SDU will then process the information and include the collection in the standard collection information stream. Cash handling practices and procedures will have to be defined by DCSS and the SDU vendor to apply appropriate security and accounting measures.

Collections also include a service that will be made available to payers. If the payer elects to enroll in the automatic withdrawal service, they must provide a valid deposit account that will be accessed on a periodic basis to withdraw funds and pay them to the SDU. This service will support maintenance of the payer's data and the periodic generation of requests for EFT transactions to transfer money from the payer's account to the SDU. The requests for EFT transactions will be routed to the SDU where they will be transformed into debit EFT transactions and sent to the financial institution.

### 4A.3.2a.3.3 Distribution

Distribution provides the services involved in applying support collections to the payer's obligations. This is a service that is provided to IV-D and non IV-D cases.

The process of distributing a collection applies the funds to support obligations that are owed by the payer. Allocation rules and the obligation hierarchy may vary by collection source. Ultimately, the distribution process reduces the payer's outstanding obligation and identifies the payee(s) to whom the funds should be disbursed.

The CSE system supports tracking and satisfying support obligations under the payer account. By avoiding the dependency on a case, the system provides a more streamlined cash flow and reduces the constraints on the definition of case construct.

In addition to applying funds to support obligations, distribution may be required to recover funds from a support collection to satisfy an obligation at the payer level or the payee level that was caused by an adjustment.

This business service is also responsible for maintaining the Unreimbursed Public Assistance (UPA) for participants who are receiving or have received assistance. This involves tracking ongoing grant information and applying assigned support collections to satisfy the UPA obligation.

## 4A.3.2a.3.4 Disbursement

Disbursement provides the services involved in producing the physical disbursements to the payees. It is also responsible for managing the disbursement register to maintain an accurate representation of the status of the disbursements produced. This service is provided for the IV-D and non IV-D cases.

Disbursement instructions are created to disburse funds to a participant or third party. They are sent to the SDU for processing. After producing a disbursement, the SDU provides a response containing the confirmation, check number, and print date.

Disbursements payable to participants are produced immediately following the distribution of a support collection. Disbursements to other state agencies may be produced via electronic funds transfer (EFT). These disbursements may be sent daily or less frequently. Disbursements to other agencies within the state are typically produced once a month. The CSE system will support flexibility and the alliance will work with the State to define the most efficient disbursement frequencies.

Services will also be provided to support disbursement adjustments: canceling checks that have been written.

Disbursement also provides payees with the ability to enroll in a service that will produce electronic disbursements (EFTs) that are automatically deposited to the payee's checking account.

Information will be obtained from the SDU or the bank to update the disbursement status and support account reconciliation. When research is necessary to track collections and their disbursement, it is important to identify whether a disbursement has cleared the bank.

# 4A.3.2a.4 Program Management

The Program Management category contains three business services: Program Monitoring, IV-D Fund Management, and Customer Service. Each business service is depicted as a use case in the following diagram, and described in the text below. Figure 4A.3.2a-5 depicts the business services that are categorized as Program Management functions, and the actors associated with those business services. The use case diagram for Program Management is represented as a call-out from the Functional Architecture to highlight the relationship between the Functional Architecture diagram and the use case model.

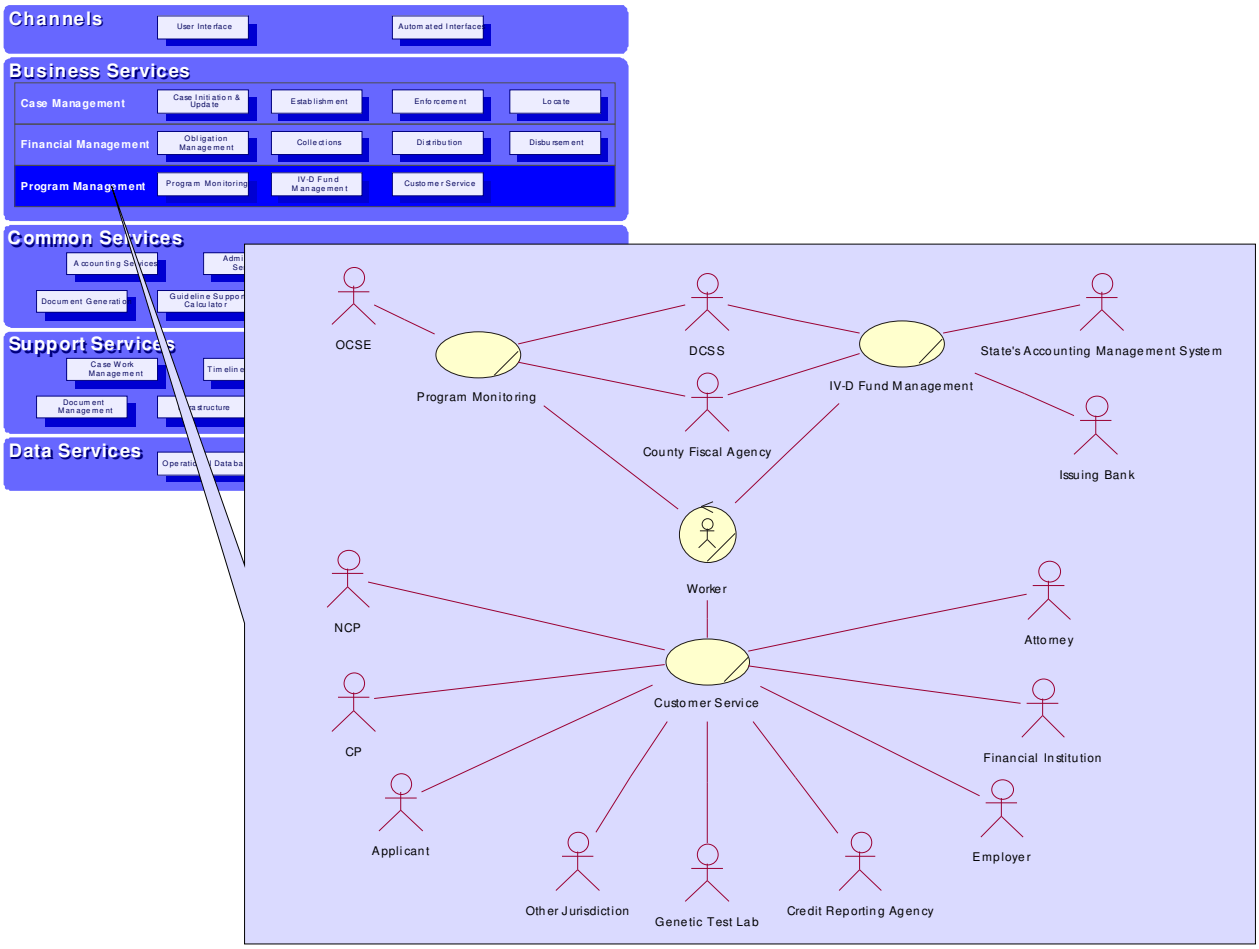



**Figure 4A.3.2a-5 Program Management -** *Program Management consists of the business services: Program Monitoring, IV-D Fund Management, and Customer Service.*

## 4A.3.2a.4.1 Program Monitoring

Program Monitoring provides the service involved in observing and monitoring the operation and business effectiveness of the Child Support program as a whole. (It does not encompass the systems management activities that monitor the technical operation and performance of the system.)

Review Compliance is the process of evaluating the Child Support Program's compliance with Federal and state timeframe requirements and standards. The Program's compliance is reviewed on a periodic basis by analyzing the data within the CSE system and measuring the level of compliance with requirements and standards.

Evaluate Performance Measures is the process of evaluating the Child Support Program's ability to deliver services efficiently and effectively. The Performance Measures are reviewed on a periodic basis by analyzing data within the CSE system, measuring the Program's performance, and comparing the current performance to the performance in prior periods.

Compile Activity Statistics is the process of capturing, and gathering statistical information to support the generation of the OCSE-157 and other reports used for program forecasting, pilot project monitoring and legislative inquiries.

## 4A.3.2a.4.2 IV-D Fund Management

IV-D Fund Management provides the services involved in accounting for Federal, state and local child support program funds. This includes Federal and state fund management and administrative expenditure information.

Manage State & County Expenditures and Estimates is the process of recording financial information in the CSE system to support production of the OCSE-396A report. Expenditure information will be provided by the state's accounting management system and DCSS. Estimates, or budget information, will be provided by DCSS.

Manage State & County Incentive Payments is the process of recording the FMAP rate for the State, and the Estimated Incentive Payment data. This information is received from Health and Human Services each year. This use case also calculates and records the distribution of the State incentive payment to each of the counties.

## 4A.3.2a.4.3 Customer Service

Customer Service provides the services involved in effectively managing relationships with the case members, business partners, and internal users of the CSE system.

Customer Service focuses on providing high quality services to the CSE system case members (customers). Improving this relationship requires streamlined communications with both CPs and NCPs. LCSAs must be able to get information from these parties as efficiently as possible. The CSE system must be able to provide information to them in an efficient and easily understood manner.

The CSE system will provide a single repository of information about the business partners that DCSS and the LCSAs depend on to get their jobs done.

The LCSAs are dependent upon a number of business partners in providing high quality services to their constituents. These partners include employers, genetic test labs, process servers, credit reporting agencies, and financial institutions. Managing communications efficiently

is an important component in maintaining a good working relationship with these partners. The CSE system will provide a single repository of information about these parties. Our customer service solution will also provide a single point of contact for these partners for child support related matters.

With the number of users that will be dependent on the CSE system in performing their daily activities, User Relationship Management will be crucial in achieving and maintaining success. The user community must be kept informed and provided a forum to give feedback and recommendations

A significant feature of improving communication and visibility into the CSE system for the varied user community will be the availability of these services over multiple channels and the use of self-service mechanisms. A user will be able to select from the Internet, IVR, or a call center service according to their preference and the type of service they require.

# 4A.3.2b Informational Viewpoint

***The Informational Viewpoint provides a viewpoint on the system and its environment that focuses on the kinds of information handled by the system and constraints on the use and interpretation of that information. This viewpoint is used to specify the set of information objects and their static attributes and associations among other objects. It captures the schema of the data from other system viewpoints, identifies constraints (e.g., at interfaces, data access) and is central to the other viewpoints.***

## 4A.3.2b.1 Introduction

In this section, the Informational Viewpoint is presented. The informational viewpoint is presented in this section at the level of detail of entity objects. A lower level of detail is contained in Section 4A.5 Appendix D. The material in this section "focuses on the kinds of information handled by the system and constraints on the use and interpretation of that information", and is used to "specify the set of information objects, their static attributes and associations among other objects".

**Section Structure:**

The section starts with an entity relationship diagram showing the entity objects, see Figure 4A.3.2b-1. These are the high-level, business domain entities that are fundamental to the CSE system. Following the diagram, each entity object in turn is described. The description includes the major attributes of the object, its relationships with other entity objects, and invariants and constraints on the object.

An invariant is an attribute of relationship of the object that will never change its value, from when the object is first created, until it is destroyed (if applicable). A key used to identify an object is an example of an invariant. Date of Birth is an invariant for a person, although it may not be modeled as such in the system. Business rules may determine that it is acceptable to create a Participant object when the date of birth is not known, or allow the system to change the date of birth in case it was originally entered incorrectly.

A constraint is a business rule that is applied to the object. The object must always be in a state consistent with the constraint.

# 4A.3.2b.2 Entity Objects Relationship Diagram

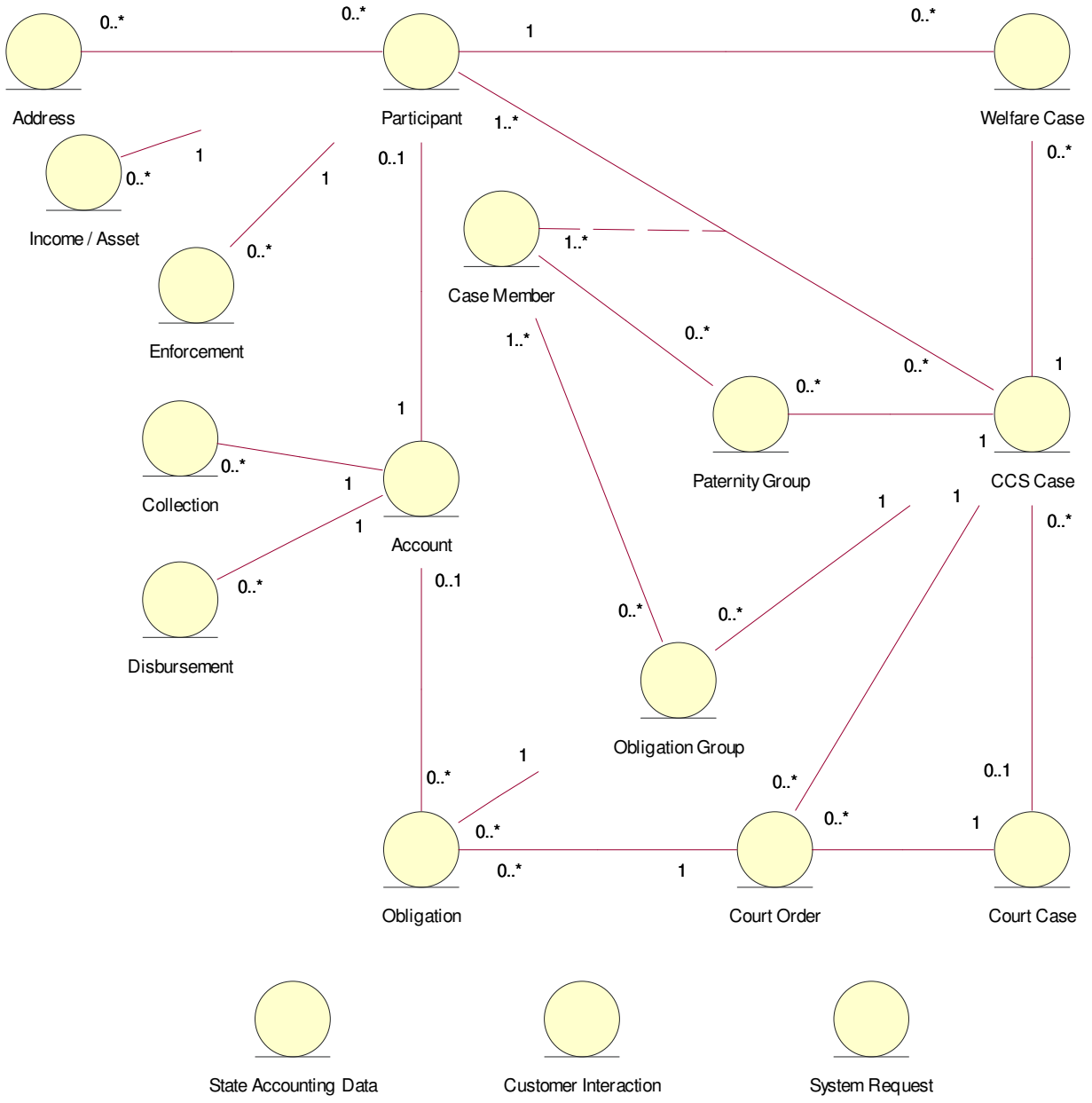



**Figure 4A.3.2b–1 Informational Viewpoint –** *The entity objects are the high-level, business domain entities that are fundamental to the CSE system.*

## 4A.3.2b.3 Detailed Entity Object Descriptions

The following section provides a table specification for each of the entity objects.

### 4A.3.2b.3.1 CCS Case

| **CCS Case** | | |
|---|---|---|
| **Description** | California Child Support Case; A group of people associated with a particular child(ren), including a Custodial Parent (CP), and Non-custodial Parent (NCP) or an Alleged Father (AF). | |
| **Attributes** | **Cardinality** | **Examples** |
| Source<br>• The origin of the request for child support services that caused a CCS case to be created. | One or more | Application, Welfare Referral, Interstate Referral, Court Order Referral |
| Owner<br>• The California Child Support Agency with responsibility for providing child support services to the CCS case. | One and only one | Sacramento County Child Support Agency |
| Other State Case<br>• A child support case that is managed by a State other than California. | Zero or more | Information about the case that is managed by another state. |
| **Relationships** | | |
| A CCS Case is associated with one or more Case Members<br>A Case Member belongs to one and only one CCS Case | | |
| A CCS Case is associated with one or more Participants<br>A Participant may be associated with zero or more CCS Cases. | | |
| A CCS Case may be associated with zero or more Paternity Groups<br>A Paternity Group is associated with one and only one CCS Case. | | |
| A CCS Case may be associated with zero or more Obligation Groups.<br>An Obligation Group is associated with one and only one CCS Case. | | |
| A CCS Case may be associated with zero or one Court Case<br>A Court Case may be associated with one or more CCS Cases | | |
| **Invariants** | Must have a date created<br>Must have a Case identifier<br>Cannot be deleted | |
| **Constraints** | Must have “Other State Case” if source is Interstate<br>Can only be updated by authorized users | |

### 4A.3.2b.3.2 Participant

| **Participant** | | |
|---|---|---|
| **Description** | Participant represents a person who is of interest to the system. This might be a case member, an applicant (who does not yet have a case), or someone who makes a payment that is otherwise unknown to the system. | |
| **Attributes** | **Cardinality** | **Examples** |
| Demographics<br>• Identifying information about a participant | One or more | Name, SSN, Date of Birth |
| Medical Insurance<br>• Information regarding health insurance carried by the participant. | Zero or more | Medical, Dental, Vision, Prescription |
| **Relationships** | | |
| A Participant may have zero or more Addresses.<br>An Address may belong to zero or more Participants. | | |
| A Participant may have zero or more Income/Assets<br>An Income/Asset may have one and only one Participant. | | |
| A Participant may have zero or more Welfare Cases<br>A Welfare Case belongs to one and only one Participant. | | |
| A Participant may be associated with zero or more CCS Cases<br>A CCS Case is associated with one or more Participants. | | |
| A Participant may be involved in zero or more Enforcements<br>An Enforcement involves one and only one Participant. | | |
| A Participant possesses one and only one Account<br>An Account may be owned by zero or one Participant | | |
| **Invariants** | Must have a date created<br>Must have a unique identifier | |
| **Constraints** | There can only be a single occurrence of a participant (participant not to be duplicated)<br>Must have at least a partial name | |

### 4A.3.2b.3.3 Case Member

| **Case Member** | | | |
|---|---|---|---|
| **Description** | An instance of a Participant playing a role in a CCS Case; custodial parent (CP), non-custodial parent (NCP), child | | |
| **Attributes** | | **Cardinality** | **Examples** |
| Family Relationship<br>• The relationship of the participant to the child in the CCS case | | One and only one | Mother, Father, Child |
| Status<br>• The state of involvement in the CCS Case | | One and only one | Active, Inactive |
| **Relationships** | | | |
| A Case Member is involved in one and only one CCS Case<br>A CCS Case involves one or more Case Members. | | | |
| A Case Member may be involved with zero or more Paternity Groups<br>A Paternity Group involves one or more Case Members. | | | |
| A Case Member may be involved with zero or more Obligation Groups<br>An Obligation Group involves one or more Case Members. | | | |
| A Case Member is associated with one and only one Participant<br>A Participant may be zero or more Case Members. | | | |
| **Invariants** | Must have date create<br>Must have status<br>Must have Family Relationship<br>A case member must have a relationship to a CCS Case and a Participant. This relationship cannot be changed. | | |
| **Constraints** | A case member cannot have multiple family relationships in a single case. | | |

### 4A.3.2b.3.4 Paternity Group

| **Paternity Group** | | |
|---|---|---|
| **Description** | A group of participants with a paternity relationship to a child. A paternity group consists of a mother, child and an alleged father. | |
| **Attributes** | **Cardinality** | **Examples** |
| Paternity Evidence<br>• Facts documenting the relationship of a father to a child. | Zero or one | Date of Marriage, Date of Divorce, Conceptive Period Dates |
| Paternity Establishment Method<br>• The method by which paternity was determined | Zero or one | Adjudication, Acknowledgment |
| **Relationships** | | |
| A Paternity Group involves one or more Case Members<br>A Case Member may be involved with zero or more Paternity Groups. | | |
| A Paternity Group is associated with one and only one CCS Case<br>A CCS Case may be associated with zero or more Paternity Groups | | |
| **Invariants** | Must have unique Paternity Group Identifier | |
| **Constraints** | A paternity group cannot exist without a relationship to a Case Member or CCS Case | |

### 4A.3.2b.3.5 Obligation Group

| **Obligation Group** | | |
|---|---|---|
| **Description** | A group of participants associated with an obligation. An obligation group contains one payee, one payer and one or more beneficiaries. | |
| **Attributes** | **Cardinality** | **Examples** |
| Obligation Group Member<br>• One of the participants in the obligation group. | One and only one | Payee, Payer, Beneficiary |
| **Relationships** | | |
| An Obligation Group is associated with one and only one CCS Case<br>A CCS Case may be associated with zero or more Obligation Groups | | |
| An Obligation Group may have zero or more Obligations<br>An Obligation is associated with one and only one Obligation Group. | | |
| An Obligation Group is associated with one or more Case Members<br>A Case Member may be associated with zero or more Obligation Groups. | | |
| **Invariants** | Must have Unique Obligation Group Identifier | |
| **Constraints** | Obligation Groups have the NCP in the CCS case as the payer. | |

### 4A.3.2b.3.6 Court Order

| **Court Order** | | |
|---|---|---|
| **Description** | A legally binding edict issued by a court of law. A child support order may establish the amount and frequency of support to be paid, an arrearage balance, and/or health insurance coverage. | |
| **Attributes** | **Cardinality** | **Examples** |
| Issuing Jurisdiction<br>• The State that was responsible for issuing the order. | One and only one | California, Florida, New York |
| Order Method<br>• The method by which the order was obtained | One and only one | Adjudicated, Default, Stipulation |
| **Relationships** | | |
| A Court Order may have zero or more Obligations<br>An Obligation has one and only one Court Order | | |
| A Court Order is associated with one and only one CCS Case<br>A CCS Case may have zero or more court orders. | | |
| A Court Order has one and only one Court Case<br>A Court Case may have zero or more Court Orders | | |
| **Invariants** | Must have Start Date<br>Must have End Date | |
| **Constraints** | None identified | |

### 4A.3.2b.3.7 Court Case

| **Court Case** | | | |
|---|---|---|---|
| **Description** | A group of individuals involved in a legal proceeding before the Court. | | |
| **Attributes** | | **Cardinality** | **Examples** |
| Court Branch<br>• The Judicial Division within a County | | One and only one | Sacramento Superior Court |
| Court Case Number<br>• A unique number assigned by the Court | | One and only one | n/a |
| **Relationships** | | | |
| A Court Case is associated with one or more CCS Cases<br>A CCS Case is associated with one and only one Court Case | | | |
| A Court Case may have zero or more Court Orders<br>A Court order has one and only one Court Case. | | | |
| **Invariants** | Must have a unique Identifier | | |
| **Constraints** | None identified | | |

### 4A.3.2b.3.8 Obligation

| **Obligation** | | |
|---|---|---|
| **Description** | A financial or non-financial court ordered responsibility placed on a participant | |
| **Attributes** | **Cardinality** | **Examples** |
| Support Type<br>• Identifies the type of support | One and only one | Child Support, Family Support, Spousal Support, Non-financial Support |
| Obligation Type<br>• Identifies the type of obligation | One and only one | Current Support, Arrears, Health Insurance |
| **Relationships** | | |
| An Obligation is associated with one and only one Obligation Group.<br>An Obligation Group is associated with zero or more Obligations. | | |
| An Obligation Group has one and only one Court Order<br>A Court Order has zero or more Obligations. | | |
| An Obligation may be associated with zero or one Accounts<br>An Account may have zero or more Obligations. | | |
| **Invariants** | Must have a Start Date<br>Must have an End Date | |
| **Constraints** | An obligation must have a relationship with an Obligation Group | |

### 4A.3.2b.3.9 Welfare Case

| **Welfare Case** | | |
|---|---|---|
| **Description** | Welfare Case refers to a group of individuals that are receiving services through another program - Welfare, Medicaid, or Foster Care. One of the individuals is the "primary person " receiving the service; typically the custodial parent that receives welfare or Medicaid, or a child that has been placed in foster care | |
| **Attributes** | **Cardinality** | **Examples** |
| Assistance Type<br>• The type of assistance received by the CP or child. | One or more | TANF, Medical Assistance, Foster Care |
| Assistance Eligibility<br>• Detail regarding the time period and status of a participant's eligibility for welfare, Medicaid or Foster Care | One of more | Start and end date of assistance eligibility |
| Welfare Agency<br>• An agency responsible for the administration of public assistance or foster care placement. | One and only one | Sacramento County IV-A Agency |
| **Relationships** | | |
| A Welfare Case is associated with one and only one Participant (the "primary person")<br>A Participant may be associated with zero or more Welfare Cases. | | |
| **Invariants** | Must have eligibility start date<br>Must have assistance type | |
| **Constraints** | A welfare case must have a relationship with a Participant | |

### 4A.3.2b.3.10 Income/Asset

| **Income / Asset** | | |
|---|---|---|
| **Description** | An asset or employment that produces money; i.e.; wages, rent, commission, interest. A possession of value owned by a participant, including income or income producing property. | |
| **Attributes** | **Cardinality** | **Examples** |
| Source<br>• The source of income or the holder of the asset | Zero or one | Employer, Unemployment Compensation Agency, Financial Institution |
| Type<br>• The type of income or asset | One and only one | Wage, investment account, rental property |
| Income Amount<br>• The amount of income produced or the wages generated | Zero or one | $3,000 |
| Income Frequency<br>• The frequency at which the income amount is produced | Zero or one | Monthly, weekly, annually |
| Asset Value<br>• The current market value of the asset | Zero or one | $100,000 |
| Start Date<br>• The date the income began or the date the asset was acquired | One and only one | 2/28/2002 |
| End Date<br>• The date the income ended or the date the asset was disposed of | Zero or one | 2/28/2002 |
| **Relationships** | | |
| Income / Asset may belong to one and only one Participant<br>Participant may possess zero or more Income(s) / Asset(s) | | |
| **Invariants** | None identified | |
| **Constraints** | Incomes and assets cannot produce negative income | |

### 4A.3.2b.3.11 Address

| **Address** | | |
|---|---|---|
| **Description** | Formatted data describing the location of an entity. For Participants a variety of Addresses may be recorded including a history of mailing addresses. Of primary importance is the mailing address. It is also useful in many situations to store partial addresses to reflect what limited information is available. International addresses must also be supported. For mailing purposes, postal standards must be adhered to in maintaining mailing addresses. | |
| **Attributes** | **Cardinality** | **Examples** |
| Street Number<br>• Unique number/identifier for a location on a particular street | One and only one | 3775, 1215 |
| Street<br>• The street name that the address identifies | One and only one | N. Freeway Blvd., K St |
| City<br>• The city in which the address is located | One and only one | Sacramento |
| State<br>• The state in which the address is located | One and only one | CA |
| Country<br>• The country in which the address is located | One and only one | USA |
| Postal Code<br>• The zip code or postal code identifying the address | One and only one | 95833-1234 |
| **Relationships** | | |
| Address may describe location or delivery instructions of zero or more Participants<br>Participant may live at or utilize zero or more Addresses | | |
| **Invariants** | Must have start date<br>Must have City<br>Must have State | |
| **Constraints** | A person may have only one current verified mailing address<br>A person may have only one current verified residence address | |

### 4A.3.2b.3.12 Account

| **Account** | | | |
|---|---|---|---|
| **Description** | Accounts are used to record and track financial activity in the CSE system. Each participant who plays a role of NCP, CP, Other has a financial Account to track the flow of funds through the system. System control accounts are also used for Accounts Receivable, Accounts Payable, and Cash handling purposes. A positive balance in a cash account reflects funds that must be processed in order to disburse them. | | |
| **Attributes** | | **Cardinality** | **Examples** |
| Account Number<br>• A unique identifier | | One and only one | n/a |
| Type<br>• Identifies the type of Account | | One and only one | Participant, System |
| Balance<br>• The amount of money in the account | | One and only one | $500.00 |
| **Relationships** | | | |
| Participant may have zero or one Account<br>Account may be owned by zero or one Participant | | | |
| **Invariants** | Must have a unique identifier (same as Participant identifier) | | |
| **Constraints** | Cannot have a negative balance | | |

### 4A.3.2b.3.13 Collection

| **Collection** | | |
|---|---|---|
| **Description** | The receipt of money paid by, or on behalf of, an obligor. | |
| **Attributes** | **Cardinality** | **Examples** |
| Collection Date<br>The date the collection was received | One and only one | 02/28/2002 |
| Amount<br>The collection amount | One and only one | $250.00 |
| Source<br>The source of the collection | One and only one | Payer Paid, Wage Withholding, IRS, FTB Intercept |
| Designation Instruction<br>Directive of the payer regarding application of the collection to support obligations | Zero or more | "Apply to arrears" |
| Distribution Detail<br>The application of the collection (or part of it) to meet a specific support obligation or debt | Zero or more | n/a |
| **Relationships** | | |
| Collection is applied to one and only one (Participant) Account<br>A (participant) Account may have zero or more collections | | |
| **Invariants** | Must have a collection date<br>Must have a collection amount<br>Must identify a payer account (unidentified payer is acceptable) | |
| **Constraints** | Cannot be deleted<br>Cannot have a future collection date<br>Amount is stated in US Dollars | |

### 4A.3.2b.3.14 Disbursement

| **Disbursement** | | |
|---|---|---|
| **Description** | Specific information on the "paying out" of the child support collection. | |
| **Attributes** | **Cardinality** | **Examples** |
| Disbursement Date<br>• The date the disbursement was produced | One and only one | 02/28/2002 |
| Disbursement Amount<br>• The amount of the disbursement | One and only one | $250.00 |
| Payee<br>• The person or organization to whom the disbursement is payable | One and only one | Jane Smith |
| Address<br>• The address to which the disbursement was sent | One and only one | 123 Main St<br>Sacramento, CA 95816 |
| Disbursement status<br>• The status of the disbursement | One and only one | Cleared, Outstanding, Cancelled |
| **Relationships** | | |
| Disbursement may be payable to Zero or One Account<br>An Account may have Zero or more disbursements | | |
| **Invariants** | Must have a disbursement date<br>Must have a disbursement account | |
| **Constraints** | Verified address must be available for check disbursements | |

## 4A.3.2b.3.15 Enforcement

| **Enforcement** | | |
|---|---|---|
| **Description** | Actions applied against delinquent obligors in response to a failure to make child support payments as ordered. | |
| **Attributes** | **Cardinality** | **Examples** |
| Data match<br>• The submission of a payer for matching to an external agency to identify "asset" information in order to proceed with enforcement activities | Zero or more | License suspension, financial account seizure |
| Asset / Tax Intercept<br>• A request to an external agency to forward money for payment of child support instead of to the participant | Zero or more | State tax intercept (FTB), Federal tax intercept (IRS) |
| Bond<br>• A sum of money held towards future payment of child support obligations | Zero or more | Case surety bond |
| Property Lien<br>• An attachment to real property (real estate) | Zero or more | Real estate lien |
| **Relationships** | | |
| Enforcement involves one and only one Participant<br>A participant may be involved in zero or more Enforcements. | | |
| **Invariants** | None Identified | |
| **Constraints** | The participant must have an obligation to be involved in Enforcement | |

### 4A.3.2b.3.16 State Accounting Data

| **State Accounting Data** | | | |
|---|---|---|---|
| **Description** | State Accounting Data includes the expenditure and budget information for DCSS and each of the LCSAs. Estimated incentive payments and their allocation to LCSAs are also included. The FMAP rate is also considered to be state accounting data. | | |
| **Attributes** | | **Cardinality** | **Examples** |
| Estimated incentive payment<br>• The payment amount to be given to a county designated as an incentive | | One and only one | n/a |
| **Relationships** | | | |
| None Identified | | | |
| **Invariants** | None identified | | |
| **Constraints** | None identified | | |

### 4A.3.2b.3.17 Customer Interaction

| **Customer Interaction** | | | |
|---|---|---|---|
| **Description** | Contacts with case members, employers, partners, and users are tracked to provide documentation of the interaction and information that can be used in refining customer service and other service delivery areas. Mechanisms are also available to track the status of outstanding tickets and refer work/research to other staff members. | | |
| **Attributes** | | **Cardinality** | **Examples** |
| Date<br>• The contact date | | One and only one | 02/28/2002 |
| Description<br>• The question, complaint, or request that was the subject of the contact | | One and only one | n/a |
| Responsible User<br>• The user currently assigned to the ticket | | One or more | n/a |
| Resolution<br>• The action(s) taken to resolve the ticket | | Zero or more | n/a |
| **Relationships** | | | |
| None identified | | | |
| **Invariants** | Must have Contact Date<br>Must have Description<br>Must have Responsible User | | |
| **Constraints** | None identified | | |

### 4A.3.2b.3.18 System Request

| System Request | | | |
|---|---|---|---|
| **Description** | Internal users will initiate system requests. A system request may relate to a problem with the software/hardware, or it may initiate a change request. | | |
| **Attributes** | | **Cardinality** | **Examples** |
| Date<br>• The date of the System Request | | One and only one | 02/28/2002 |
| **Relationships** | | | |
| None Identified | | | |
| **Invariants** | Must have Request Date<br>Must have Description<br>Must have Responsible User | | |
| **Constraints** | None identified | | |

# 4A.3.2c Computational Viewpoint

***The Computational Viewpoint provides a viewpoint on the system that focuses on the functional decomposition of the system into a set of entities that interact at interfaces, thus enabling system distribution. It identifies components, interactions, and constraints. This viewpoint is used to specify entities that offer an interface across which an interaction with another entity can occur. The computational viewpoint is concerned with the structuring of applications and is independent of both how the computational entities are distributed and the type of computers and networks that are used to support them.***

## 4A.3.2c.1 Introduction

In this section, the Computational Viewpoint is presented. This serves to tie together the functionality introduced in the Enterprise Viewpoint with the entity objects presented in the Informational Viewpoint. It also takes the functional descriptions to a lower level of detail, and begins the decomposition process that will be continued during the formal requirements analysis process.
The computational viewpoint presented in this section is at the level of detail of Use Cases and Use Case diagrams, and Robustness Analysis diagrams with Boundary, Control and Entity Objects.
A lower level representation using Collaboration diagrams and Sequence diagrams is attached in Appendix D.
This section is consistent with the definition of the computational viewpoint in that it:

- "Provides a viewpoint on the system that focuses on the functional decomposition of the system into a set of entities that interact at interfaces enabling system distribution; identifies components, interactions, and constraints."
- "Specifies entities that offer an interface across which an interaction with another entity can occur", and "is concerned with the structuring of applications and is independent of both how the computational entities are distributed and the type of computers & networks."

The entities are the boundary, control and entity objects, and later the classes decomposed from these objects. Each provides a formal, well-defined interface across which an interaction can occur. The representation is independent of physical considerations such as location and mechanism of interaction.
The section is structured as follows:
For each of the Business Services Categories in turn, a sub-section is provided that consists of the following:

- A Context diagram, which re-introduces the category in context with the Functional Architecture, and shows the top-level use case diagram for that category

- For each Business Service within the category, a use case diagram is provided that shows the use cases within that Business Service
- For each use case within the Business Service a use case description is provided. This consists of
  - One Robustness Analysis (RA) diagram. This is used to depict a greater level of detail about the interaction between actors and the system than the use case model provides. The RA model specifies the type or types of interface used by each actor in its interaction with the system, and the information objects used by the use case
  - A narrative description of the use case's functionality
  - A brief text description of each of the operations identified for the use case

# 4A.3.2c.2 Business Service Descriptions

## 4A.3.2c.2.1 Case Management

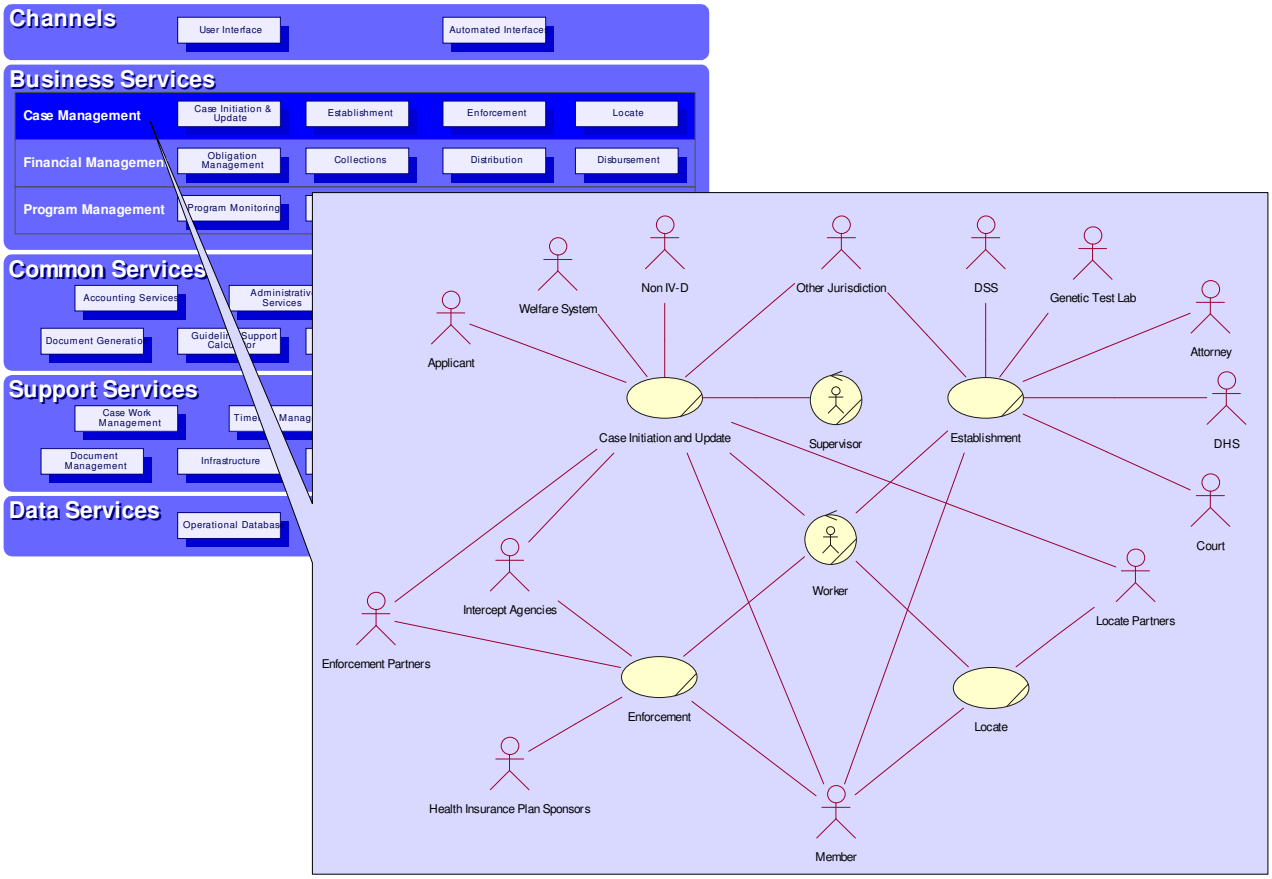



**Figure 4A.3.2c-6 Case Management Context Diagram -** *Case Management is one of three categories of CSE functions. The four business services within Program Management are highlighted in the functional architecture and displayed as use cases in the context diagram.*

Case Management is made up of four business services: Case Initiation and Update, Establishment, Enforcement, and Locate. These business services provide the tools and capabilities necessary so that California's children have paternity determined, the appropriate support ordered, and efficient tools available to collect delinquent support.

### 4A.3.2c.2.1.1 Business Service: Case Initiation and Update

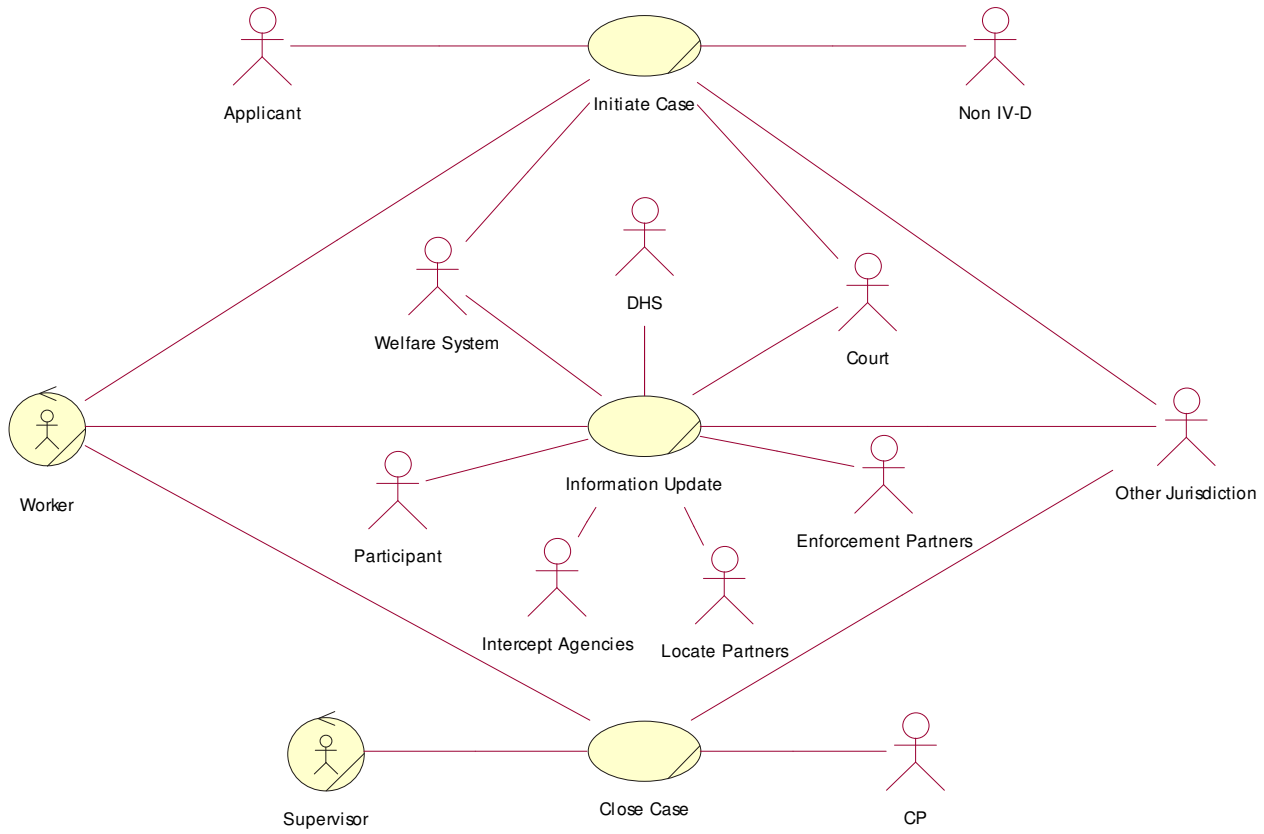



**Figure 4A.3.2c-7 Case Initiation and Update Use Case Diagram**

Case Initiation and Update is defined by three major use cases: Initiate Case, Information Update, and Close Case.

### *4A.3.2c.2.1.1.1 Use Case: Initiate Case*

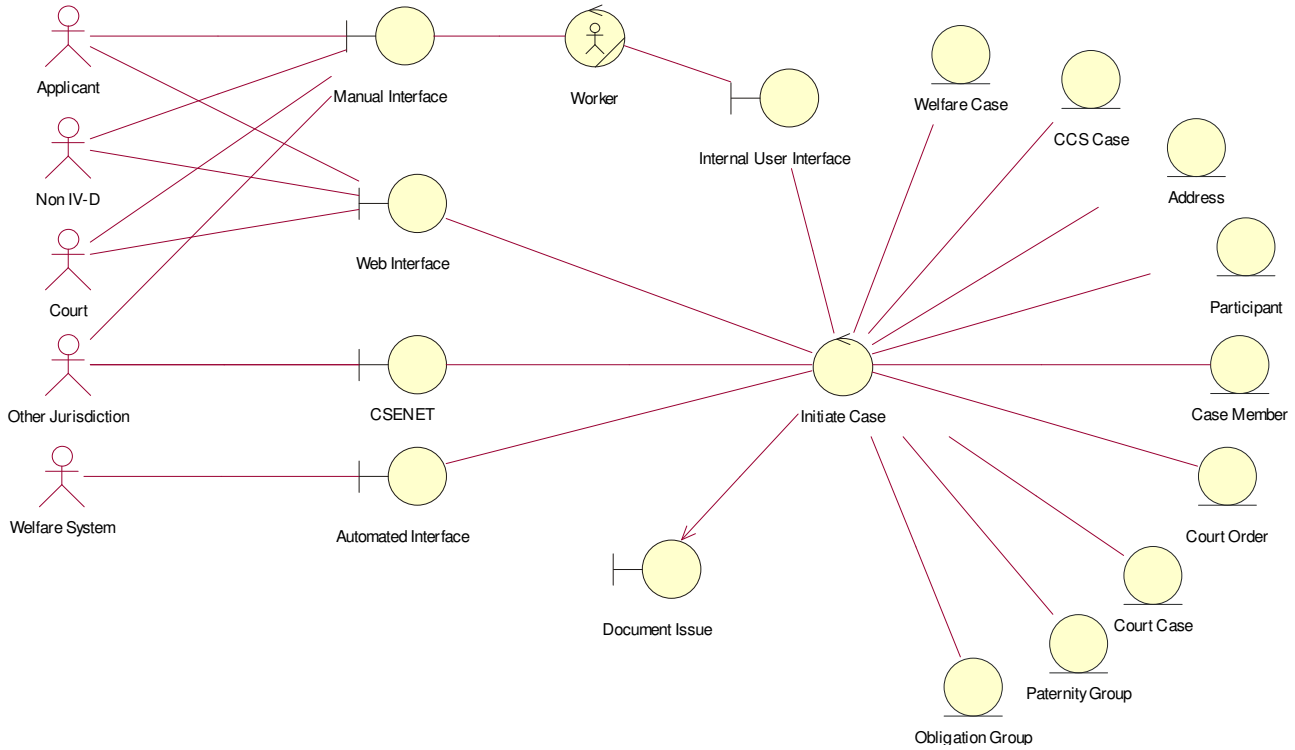



**Figure 4A.3.2c-8 Initiate Case –** *Robustness Analysis Diagram*

### *Overview*

Initiate Case involves creating child support cases and members. When a request for child support services is received from an applicant, welfare or another jurisdiction, or when a non IV-D order is received from the Court, the Initiate Case use case is invoked. A case created when a non IV-D order is received from the court does not receive child support services. Initiate Case ends when a case has been created. At completion, the CCS Case, Participant, and Court Order components are created or updated.

### *Description*

A CCS Case may be initiated by a worker, or by an automated interface with one of the referral agencies. Applicants will also be provided the ability to complete an application through the web interface. The e-application will then be processed by the CSE system to initiate a CCS Case. Note: the request for an application is addressed in the Customer Service component.
Initiating a CCS Case is a significant unit of work. A minimum amount of data must be provided to create a case. The Initiate Case process will accept as much relevant data as possible. The more high-quality information that can be obtained during this process, the better the CSE system can determine the services that are appropriate for the CCS Case and assist the responsible worker in determining the next appropriate action. The process must be flexible in enabling the capture of whatever data is available (assuming it meets the minimum requirements), and moving the CCS Case into the workflow as efficiently as possible. Information can be added later in the lifecycle of a case, as it becomes available.

The concept of a Case Member supports the Base Business Concepts by allowing a single Participant to be involved in multiple cases.

The Initiate Case process requires information to be entered for each of the people for which the CCS Case is being created. This includes the CP, the father (or alleged father or fathers), and one or more children. Each person will become a participant in the CSE system. Each participant is first 'cleared' in the CSE system to try to prevent a duplicate participant from being created. This process involves entering as much identifying data as possible for the person to determine if an existing participant record already exists. If it is determined that the person already exists in the CSE system, the existing participant record is selected for inclusion in the new CCS Case. If it is determined that the person does not exist in the CSE system, a new participant record is created from the data provided, and used for inclusion in the new CCS Case. Next the person's role in the CCS Case is determined. For each Participant, the Participant is linked to the CCS Case as a Case Member and the case roles and family relationships are specified.

The concept of a Paternity Group supports the Base Business Concepts by permitting multiple potential fathers to be identified.

When it is necessary to record information about a child's paternity, a Paternity Group is created. A Paternity Group is a specific structure used to identify a child, mother, and father (or alleged father). A separate Paternity Group is created for each alleged father that is named for the child. The Paternity Group is used to record and document evidence supporting the paternity status of the child, and the information about the paternity establishment method(s).

Health Insurance information is recorded if information about health insurance for the child(ren) is available. Obligations to provide Health Insurance on behalf of the children cannot be enforced reliably unless accurate information is maintained about the policies held by the NCP and the dependent coverage provided under those policies. Health Insurance carried by the CP can also be useful in processing the case.

After processing each of the people in the CCS Case, the case itself is processed. During the process of clearing each participant, if the participant is found to already exist in the system, any existing cases associated to the participant are reviewed to assist in identifying the case participants, as well as to determine if an appropriate CCS Case already existed. If an appropriate CCS Case does already exist in the CSE system, the CCS Case is selected for update and the case is reviewed to determine if any participants need to be added, or if any updates are necessary. For example, a previously closed case may be reopened. Otherwise, a new CCS Case is created and the relationships to the case members are created.

When initiating a welfare referral case, in order to maintain a reliable communication link with the welfare agency, the CSE system will build a representative case (assistance case) for the welfare case in the other system. The assistance case is linked to one participant in the CSE system: in welfare cases, the primary person or recipient of aid is linked to the assistance case; in foster care cases, the child is linked to the assistance case. To maintain an accurate perspective of the assignment status of the primary person (the CSE system CP), a detailed history of the eligibility for welfare benefits will be maintained. The eligibility history will provide who is/was eligible for which programs. This data in turn is used to determine whether any, or all, of a CP's CCS Cases should be assigned (or should have been during a specific period).

This process also supports identifying or creating the Court Case(s) that is related to the CCS Case. Court Cases are managed under judicial processes and play a significant role in providing services to CCS Cases. However, the court case is independent of the CCS Case and this relationship can change over time.
Court Order information is recorded when information about the Court Order and its Obligations is obtained. The Court Order specifies financial and non-financial obligations that must be satisfied in order to stay in compliance. Each obligation will have an obligor/payer who is required to fulfill the obligation, an obligee/payee who receives the benefit of the obligation, and a beneficiary(ies) on whose behalf the obligation is established.

***Operations***

*Receive request for child support services*

This operation is invoked to process an application for child support services. It creates a IV-D CCS Case.
Actors: Applicant, Welfare System, Other Jurisdiction

*Receive non IV-D Order*

Receive Non IV-D Order is invoked to process a referral from a court. It creates a non IV-D CCS Case.
Actors: Non IV-D, Court

### *4A.3.2c.2.1.1.2 Use Case: Information Update*

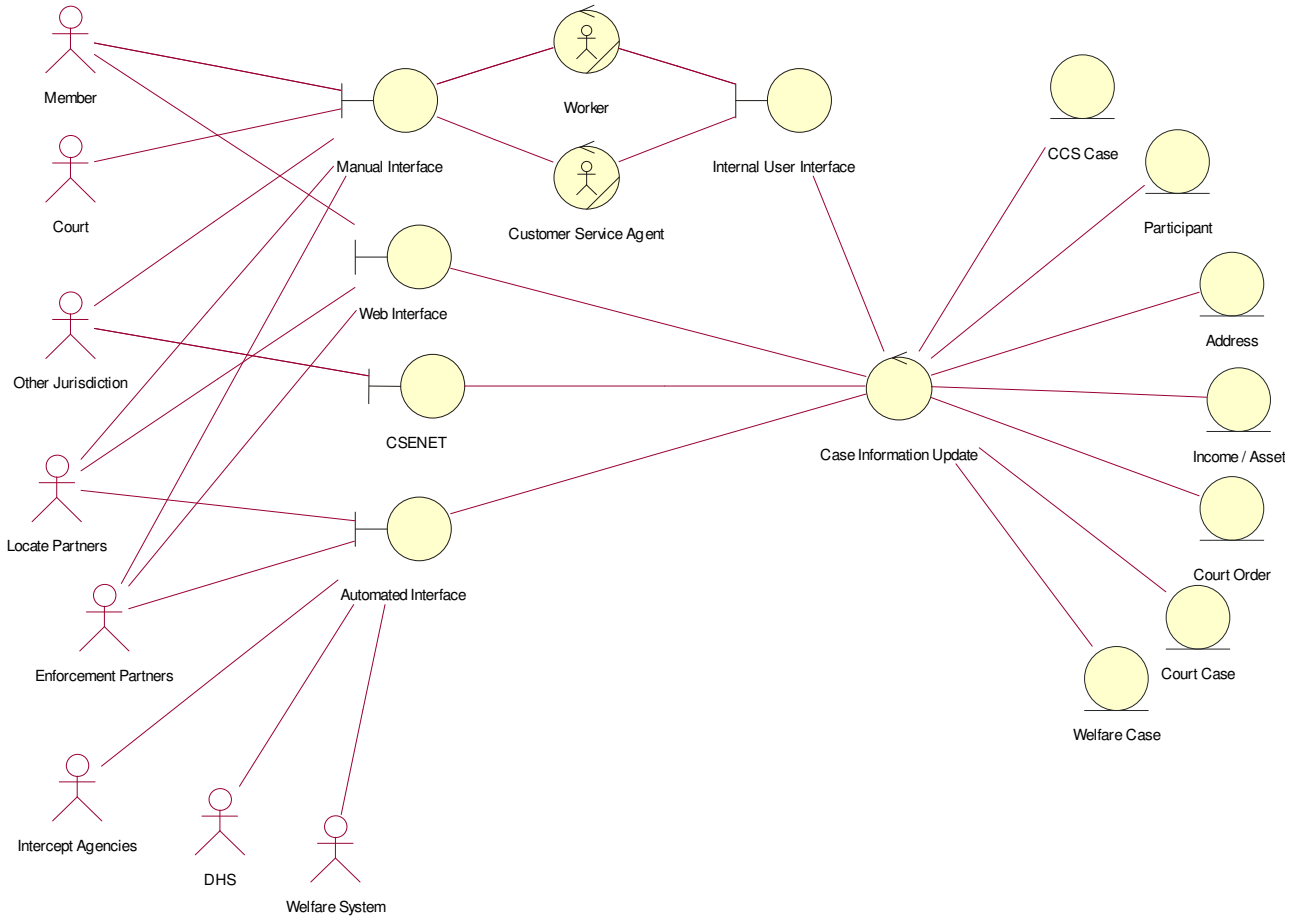



**Figure 4A.3.2c-9 Information Update –** *Robustness Analysis Diagram*

### *Overview*

Information Update involves updating the information about a specific participant or case. When participant or case information is received from external sources, the Information Update use case is invoked. Information Update ends when the appropriate information has been updated. At completion, the case and participant components are created or updated.

### *Description*

The ability to provide efficient, high quality Child Support Enforcement services is dependent upon the quality of the data available to the caseworker and the CSE system. The lifespan of a CCS Case can be just as long as the Case Members' and our ability to stay current with their situation over the life of the CCS Case directly affects our ability to provide services in an efficient manner. Throughout the life of a CCS Case the caseworker and the CSE system are in a constant state of information gathering. Information is received by the Child Support Agency through solicited and unsolicited channels. During certain processes, it is necessary for the CSA to request specific information so that determinations will be based upon current data. At times, the CSA is

dependent upon informed and cooperative parties to provide information about significant changes. These parties can be the Case Members themselves, employers, welfare agencies, law enforcement agencies, or child support agencies in other states. When information is received by the CSA it must be analyzed and handled appropriately. The information must be applied to the correct participant to avoid taking action against the wrong party. Precautions must also be taken to protect against applying duplicate information to the system. Reliability of information affects the users' confidence in the CSE system and the service provided to its clients. To the extent possible, the accuracy of the information must be ascertained. The source of the information can often provide valuable insight into its accuracy. The users should also be able to trust that once they identify data as inaccurate, or obsolete, they will not be prompted to evaluate the same information again even if it is provided again in the future.
The accuracy of some information is so important to the CSA that the information must be verified before action can be taken. Types of information that require verification are: addresses, employment, social security numbers, dates of birth, and assets. Information that requires verification is stored in the CSE system with the original source identified. After the information is verified, the verification source is also reflected. The process of verifying information will be accomplished without user intervention in most situations. The Social Security Administration electronic interface will be used to verify social security numbers. Other reliable sources of data can be accessed electronically to provide a secondary source indicating verification. Addresses may also be verified via postmaster verification letters. Employment may be verified directly with the employer via the employment verification letter. The CSE system will provide a web portal for both postmasters and employers to complete and submit the requested information electronically. Determination of the need to obtain verification and the method of verification will be accomplished via the Case Work Management control service. Maintaining an accurate history of an NCP's addresses, employment, and assets will improve the quality of many of the services provided. It can also assist in locating the NCP in the future. The historical references can also assist in avoiding the repetitive update of old information from other sources.
The CSE system will simplify the process of transferring a case from one county to another within California. Once a determination has been made according to DCSS policy that the case should be transferred, the owning jurisdiction will simply update the Child Support Agency to whom the CCS Case is assigned. The CSE system will then determine the appropriate status and worker within the new CSA for the CCS Case.

***Operations***

*Get Participant Information*

Get Participant information is invoked when there is a request for participant information. The information may be presented to the requestor via the Internal User Interface or in some instances via the Web Interface.
Actors: Customer Service, Welfare, Other Jurisdiction, FCR, Case Member

*Get Case Information*

Get Case Information is invoked when there is a request for case information. The information may be presented to the requestor via the Internal User Interface or in some instances via the Web Interface.
Actors: Customer Service, Welfare, Other Jurisdiction, FCR, Case Member

*Receive Participant Information*

This operation is invoked when participant information is received. It updates a Participant.
Actors: Welfare, Other Jurisdiction, Case Member, Court, Locate Partners, Intercept Agency, Enforcement Partners

*Receive Case Information*

This operation is invoked when case information is received. It updates the CCS Case.
Actors: Welfare, Other Jurisdiction, FCR, Case Member, DHS, Court

### *4A.3.2c.2.1.1.3 Use Case: Close Case*

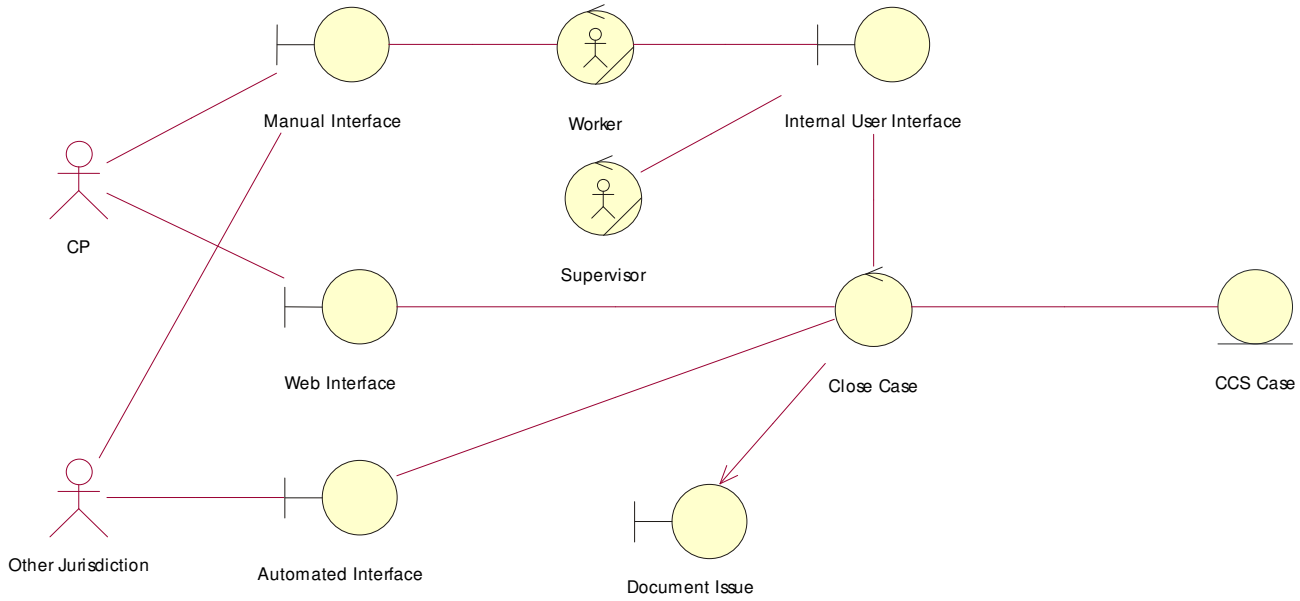



**Figure 4A.3.2c-10 Close Case** – *Robustness Analysis Diagram*

#### ***Overview***

Close Case involves stopping child support services and closing the CCS Case. When a request to close the Case is received from a Case Member or Other Jurisdiction, or it is detected that the case meets closure criteria, the Close Case use case is invoked. Close Case ends when the case is updated from an “open” status to a “closed” status. At completion, the CCS Case is updated.

#### ***Description***

A CP may request that the CCS Case be closed if the CCS Case has no assigned obligations due. If at least one obligation is still in effect, the CCS Case will be changed to a non IV-D CCS Case. In effect, this closes the IV-D case and reopens the case as a non IV-D case.
In an interstate scenario, a CCS Case may be eligible for closure when the jurisdiction that initiated the case requests that the California case be closed.
Before the closure process is completed, a notice is sent to the CP to inform them of the reason for closure and that if no additional information is provided, the CCS Case will be closed. Information provided by the CP in response to this notice may cause the CCS Case to be ineligible for closure. Otherwise, the CCS Case is referred to a supervisor for final closure.
A closed CCS Case may be reopened, rather than requiring the creation of a new case.

#### ***Operations***

*Receive request to Close Case*

When a request is received from another Jurisdiction or a Case Member to close a case, the CSE system worker or supervisor closes the CCS Case via the Internal User

Interface, or in some instances via the Web Interface. For interstate cases, the other State may close a case via an automated interface.
Actors: Other Jurisdiction, Case Member

*Detect Case that Meets Closure Criteria*

When it is determined that a CCS Case meets Closure Criteria, the CCS Case is closed by a worker or supervisor via the Internal User Interface.
Actors: Internal Operation

### 4A.3.2c.2.1.2 Business Service: Establishment

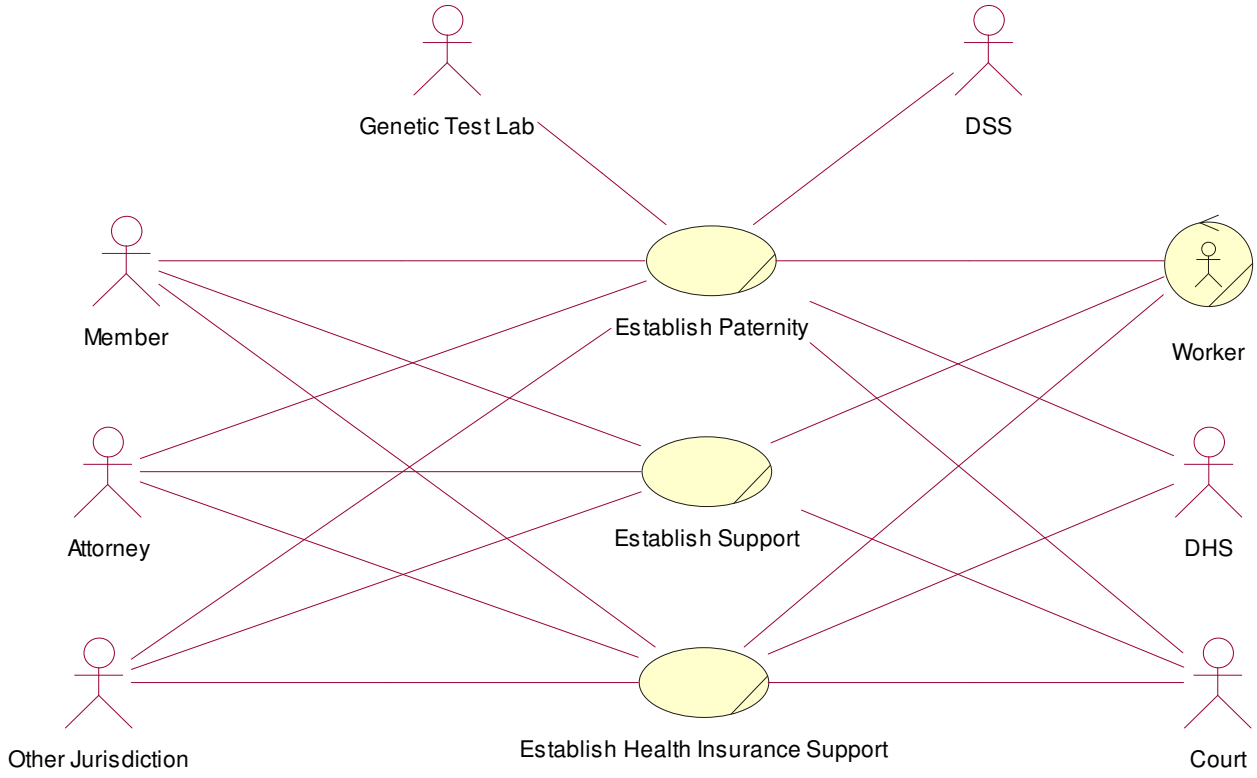



**Figure 4A.3.2c-11 Establishment –** *Use Case Diagram*

Establishment is defined by three major use cases: Establish Paternity, Establish Support, and Establish Health Insurance. In the following use case descriptions, an attorney represents the case members. Establishment services may be provided to or requested from another jurisdiction. Establishment services are provided to IVD cases only, not non IV-D cases.

### *4A.3.2c.2.1.2.1 Use Case: Establish Paternity*

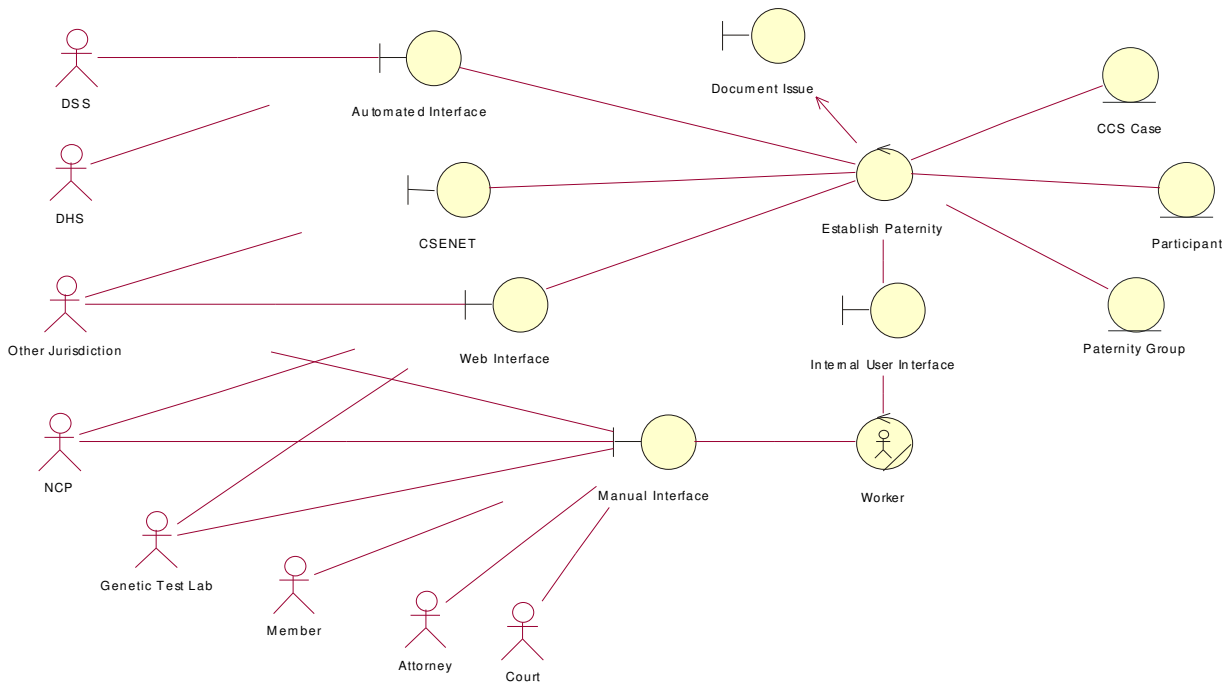



**Figure 4A.3.2c-12 Establish Paternity** – *Robustness Analysis Diagram*

#### ***Overview***

Establish paternity is the process of determining the legal parentage of a child born out of wedlock. When it is determined that a child in a CCS Case younger than the age of emancipation has paternity at issue, the Establish Paternity use case is invoked. In this use case paternity evidence is gathered and genetic test results are received. It ends when paternity is resolved by voluntary acknowledgment, or Court adjudication. At completion, the CCS Case, Participant, and Court Order components are created or updated.

#### ***Description***

The concept of a Paternity Group supports the Base Business Concepts by permitting multiple potential fathers to be identified.

The child's paternity status is tracked using the Paternity Group construct. A Paternity Group identifies a mother, child, and a father or alleged father. A separate Paternity Group is required for each of the child's alleged fathers. At least one alleged father is needed to proceed with paternity establishment. Evidence of paternity is linked to each Paternity Group.

Initial Paternity Evidence is gathered during Case Initiation when possible and may provide sufficient proof to bypass the Establish Paternity process altogether. For example, a child may have been born in wedlock, and therefore, paternity was never at issue, or a CCS Case may be initiated after paternity was determined without the involvement of the Child Support Agency (CSA).

If insufficient proof of paternity was gathered during Case Initiation an attempt is made to gather additional paternity evidence through communication with the CP, or the mother (if the mother is not the CP), and via automated interfaces with the State's Paternity Opportunity Program (POP) database maintained by DSS, and the Birth Certificate records maintained by DHS. A CP's non-compliance with gathering paternity evidence may result in a non-cooperation referral to the welfare agency. Any evidence gathered is recorded in the CSE system. If sufficient proof of paternity is found, the child's paternity status is updated to 'paternity established'. The paternity establishment method(s) is documented and the use case stops.

When paternity remains at issue, an attempt is made to allow the alleged father to stipulate before proceeding with the judicial process. If the father does stipulate then this is recorded in the Paternity Group, the child's paternity status is updated to 'paternity established', and the use case stops.

The judicial process begins when a court action is initiated. Legal documents are prepared by the caseworker to initiate the court action and support the establishment process.

The legal documents are prepared using the Document Generation service and filed with the appropriate Court. The Court returns the documents and filing information to the LCSA.

Information from the filed documents is entered into the system to record the court case and filing information in the CSE system. A copy is mailed to the CP. Service of Process is invoked to serve the alleged father/NCP with the documents, along with a request that he stipulate that he is the father or submit to a genetic test.

If the alleged father/NCP is successfully served with the documents but fails to respond, or responds but refuses to stipulate (contests paternity), a court hearing is scheduled. The court hearing may establish paternity based on the evidence presented, or by admittance of paternity by the alleged father, or it may determine that the alleged father is not the parent. In cases where this cannot be determined, the court may order a genetic test to be performed. A default judgment may be issued if the NCP fails to participate in the Court hearing. Legal documents reflecting the order of the Court are produced and filed with the court. The filed legal document(s) are returned to the LCSA, where the caseworker records the court case, paternity, and order/obligation information into the CSE system and the use case stops. (The order / obligation information may be available as part of the court judgment.)

If a genetic test to determine parentage of the child was ordered by the Court, or the alleged father agreed to submit to the test, then the caseworker schedules an appointment to obtain genetic samples with the appropriate parties. A Genetic Test Lab conducts the test and sends the results to the LCSA. Test results determine that the alleged father is the child's father, or determine that the alleged father is not the father. If the alleged father is not the child's father, the alleged father is excluded and paternity remains at issue. This use case will be repeated for another alleged father if one exists. If another alleged father does not exist then an attempt is made to gather additional paternity information from the CP or the mother.

If the Genetic Test provides proof that the alleged father is the child's father, the test results are communicated to the alleged father and another opportunity to stipulate is provided. If the alleged father again refuses to stipulate then another court hearing is scheduled. This follows the same procedure as above.

A web page will be provided for Genetic Test Labs to interface with the CSE system and coordinate information. Labs will be able to enter test results via the web page and the test results will be automatically applied to the CSE system.

If during the above, the attempt to serve process was not successful then this use case remains active.

***Operations***

*Receive Birth Certificate Evidence*

Receive Birth Certificate Evidence is an Internal User Interface that allows paternity information to be entered into the CCS Case.
Actors: DHS, Case Member, Other Jurisdiction

*Receive Additional Paternity Evidence*

Receive Additional Paternity Evidence is an Internal User Interface that allows paternity information to be entered into the CCS Case.
Actors: Case Member, Other Jurisdiction, DSS (POP)

*Receive Filed Court Case Documents*

Receive Filed Court Case Documents is an Internal User Interface that allows a worker to enter information about the court case.
Actors: Court

*Receive Service of Process Results*

Receive Service of Process Results is both an Internal User Interface and a Web Interface that allows a worker or the service of process agent to enter the results of the service of process. Actors: Process Server

*Receive NCP Response*

Receive NCP Response is an Internal User Interface that allows a worker to enter details from a response received from an NCP about a proposed judgment.
Actors: NCP, Attorney

*Receive Genetic Test Results*

Receive Genetic Test Results is both an Internal User Interface and a Web Interface that allows a worker or the genetic test lab to enter the results of a DNA test.
Actors: Genetic Test Lab

*Receive Paternity Judgment*

Receive Paternity Judgment is an Internal User Interface that allows a worker to enter the result of a court case hearing.
Actors: Court, Other Jurisdiction

*Send Paternity Judgment Information*

Send Paternity Judgment Information allows paternity information to be sent to external sources. Actors: DHS, Case Member, Attorney, Other Jurisdiction

### *4A.3.2c.2.1.2.2 Use Case: Establish Support*

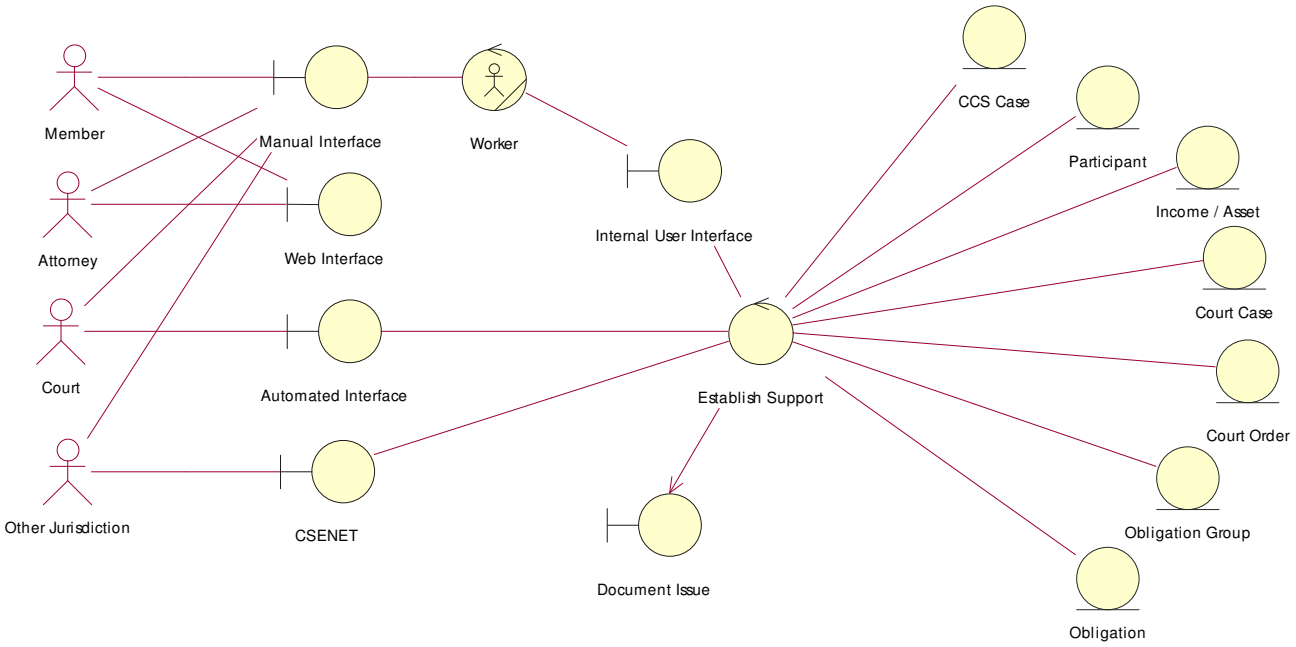



**Figure 4A.3.2c-13 Establish Support –** *Robustness Analysis Diagram*

### *Overview*

Establish Support involves obtaining a court order for the financial support of a child who has not reached the age of emancipation. When it is determined that a child younger than the age of emancipation has no current court order for financial support, the Establish Support use case is invoked. At completion, the CCS Case, Participant, and Court Order components are created or updated.

### *Description*

Income and Asset information is gathered through communication with the CP and the NCP, and via automated interfaces with a variety of sources as described in the Locate Assets use case. The Income and Asset information is verified and is used to determine the appropriate support amount.
A court action is initiated by the caseworker filing legal documents with the Court. The legal documents are prepared using the Document Generation service. The documentation includes a Proposed Judgment using the amount determined by the Guideline Support Calculator. The documents and filing information are returned by the Court to the LCSA and are entered into the system to record the court case and filing information in the CSE system. A copy is mailed to the CP. Service of Process is invoked to serve the NCP with the documents.
The NCP may choose to stipulate at this time to accept the terms of the proposed judgment, without a need for a court hearing. Legal documents reflecting the stipulation are produced, signed and filed by the Court. The order is entered into the system. The use case then stops.
If the NCP is successfully served with the documents but fails to respond, or refuses to stipulate, a court hearing is scheduled.

The court hearing will determine the amount of the support payment and payment details. A default judgment may be issued if the NCP fails to participate in the Court hearing. Legal documents reflecting the order of the Court are produced and filed with the court. The filed legal document(s) are entered into the system to record the court case, and order/obligation information in the CSE system. The use case then stops.

The concept of an Obligation Group supports the Base Business Concepts by permitting multiple payees and beneficiaries within a CCS case

Court Orders and Obligations are stored in relation to the CCS Case, the Court Case in which they are filed, and the Obligation Group specifying the case members' roles in regard to the obligations. The Obligation Group identifies the payer who is required to fulfill the obligation, the payee who receives the benefit of the obligation, and the beneficiary(ies) on whose behalf the obligation is established. Although the CCS Case will have only one NCP, multiple CPs are allowed to reflect changes in physical custody/placement of the child(ren). Therefore, it is possible to have multiple Obligation Groups within the same CCS Case where each Obligation Group identifies a different payee (e.g., Mother, Aunt, and Foster Care). It is also possible to have multiple Obligation Groups within the same CCS Case where each Obligation Group identifies a different Beneficiary (i.e., per child Obligation Groups). The combination of obligation groups and assistance cases associated with the CCS case support current Federal reporting requirements.
If during the above, the attempt to serve process was not successful then this use case remains active.

***Operations***

*Receive Income Information*

Receive Income Information is an Internal User Interface that allows a worker to enter income/asset information.
Actors: Locate Partners, Case Members, Other Jurisdiction

*Receive Filed Court Case Documents*

Receive Filed Court Case Documents is an Internal User Interface that allows a worker to enter information about the court case.
Actors: Court

*Receive Service of Process Results*

Receive Service of Process Results is both an Internal User Interface and a Web Interface that allows a worker or the service of process agent to enter the results of the service of process. Actors: Process Server

*Receive NCP Response*

Receive NCP Response is an Internal User Interface that allows a worker to enter details from a response received from an NCP about a proposed judgment.
Actors: NCP, Attorney

*Receive Support Judgment*

Receive Support Judgment is an Internal User Interface that allows a worker to enter the result of a court case hearing.
Actors: Court, Other Jurisdiction

*Send Support Judgment Information*

Send Support Judgment Information allows support order information to be sent to external sources.
Actors: Case Member, Attorney, Other Jurisdiction

### *4A.3.2c.2.1.2.3 Use Case: Establish Health Insurance*

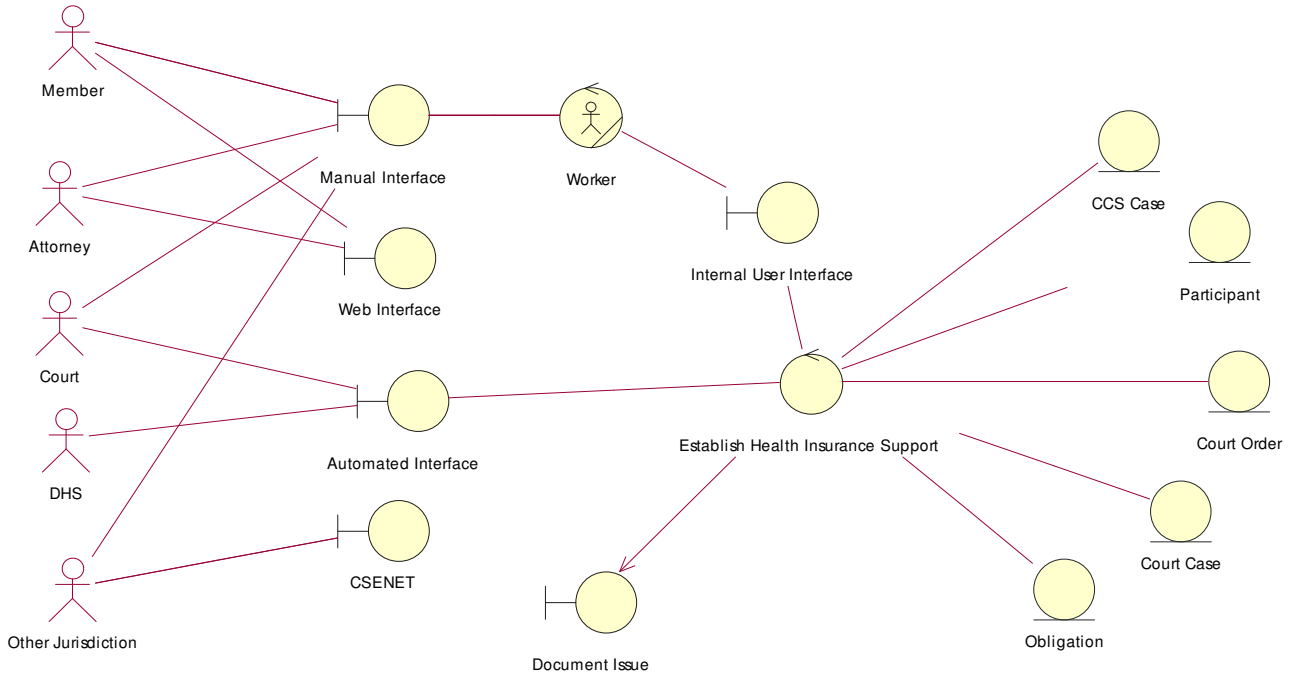



**Figure 4A.3.2c-14 Establish Health Insurance** – *Robustness Analysis Diagram*

### *Overview*

Establish Health Insurance involves obtaining an order for health insurance coverage for a child who has not reached the age of emancipation. When it is determined that a child younger than the age of emancipation has no current order for health insurance, the Establish Health Insurance use case is invoked. At completion, the CCS Case, Participant, and Court Order components are created or updated.

### *Description*

When it is necessary to establish health insurance coverage, a court action is initiated by the caseworker filing legal documents with the Court. The legal documents, including a Proposed Judgment are prepared using the Document Generation service. The documents and filing information are returned by the Court to the LCSA and are entered into the system to record the court case and filing information in the CSE system. A copy is mailed to the CP. Service of Process is invoked to serve the NCP with the documents.

If the NCP fails to respond, or refuses to stipulate, a court hearing is scheduled. A judicial officer presides over the hearing. Legal documents reflecting the order of the Court are produced and filed with the court. A default judgment may be issued if the NCP fails to participate in the Court hearing. The filed legal document(s) are used to record court case, and order/obligation information in the CSE system.

The obligation to provide Health Insurance for the children is tracked within the system as a Non-Financial Obligation within the Court Order.

***Operations***

*Receive Health Insurance Information*

Receive Health Insurance Information is an Internal User Interface that allows a worker to enter the health insurance information.
Actors: DHS, Case Members, Other Jurisdiction

*Receive Filed Court Case Documents*

Receive Filed Court Case Documents is an Internal User Interface that allows a worker to enter information about the court case.
Actors: Court

*Receive Service of Process Results*

Receive Service of Process Results is both an Internal User Interface and a Web Interface that allows a worker or the service of process agent to enter the results of the service of process. Actors: Process Server

*Receive NCP Response*

Receive NCP Response is an Internal User Interface that allows a worker to enter details from a response received from an NCP about a proposed judgment.
Actors: NCP, Attorney

*Receive Support Judgment*

Receive Support Judgment is an Internal User Interface that allows a worker to enter the result of a court case hearing.
Actors: Court, Other Jurisdiction

*Send Health Insurance Information*

Send Health Insurance Information allows health insurance information to be sent to external sources.
Actors: DHS, Case Member, Attorney, Other Jurisdiction

### 4A.3.2c.2.1.3 Business Service: Enforcement

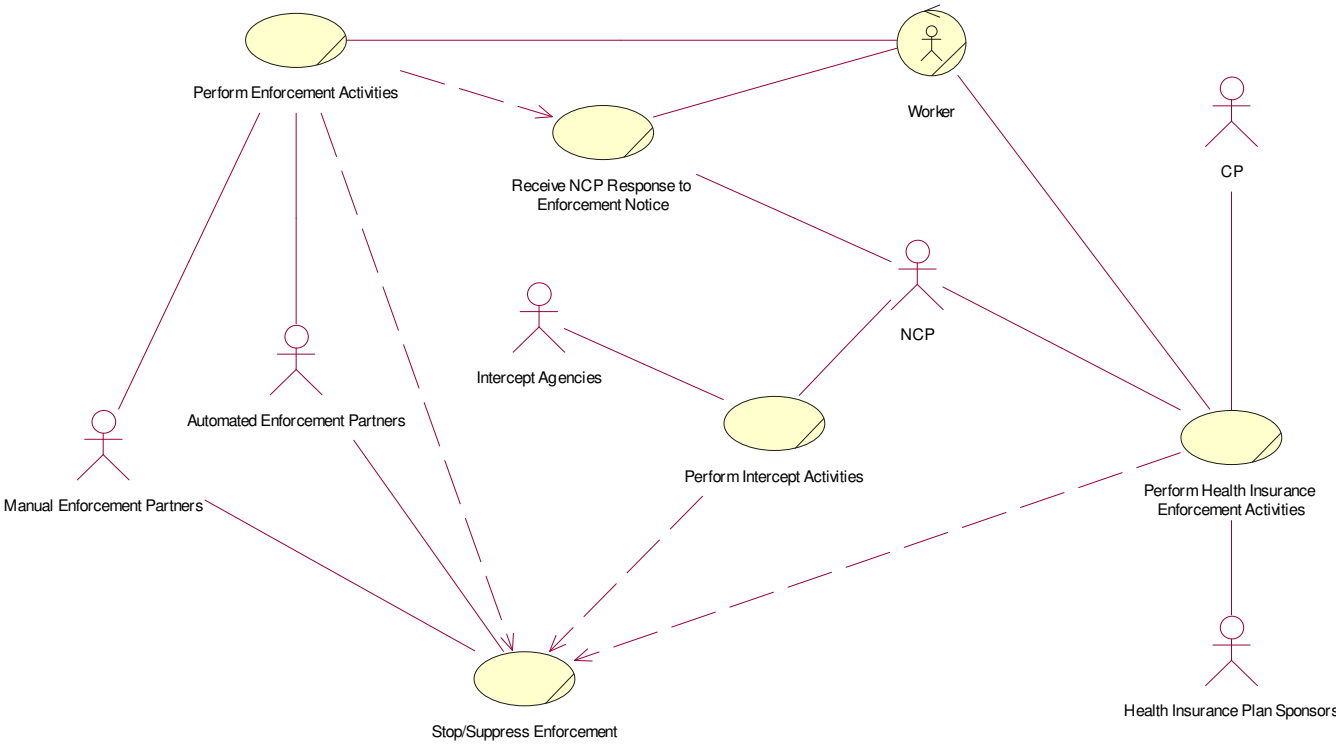



**Figure 4A.3.2c-15 Enforcement** – *Use Case Diagram*

Enforcement is defined by five major use cases: Perform Enforcement Activities, Perform Intercept Activities, Perform Health Insurance Activities, Receive NCP Response to Enforcement Notice, and Stop Enforcement. Enforcement is a child support service that is provided to IV-D cases only; not non IV-D cases.

### *4A.3.2c.2.1.3.1 Use Case: Perform Enforcement Activities*

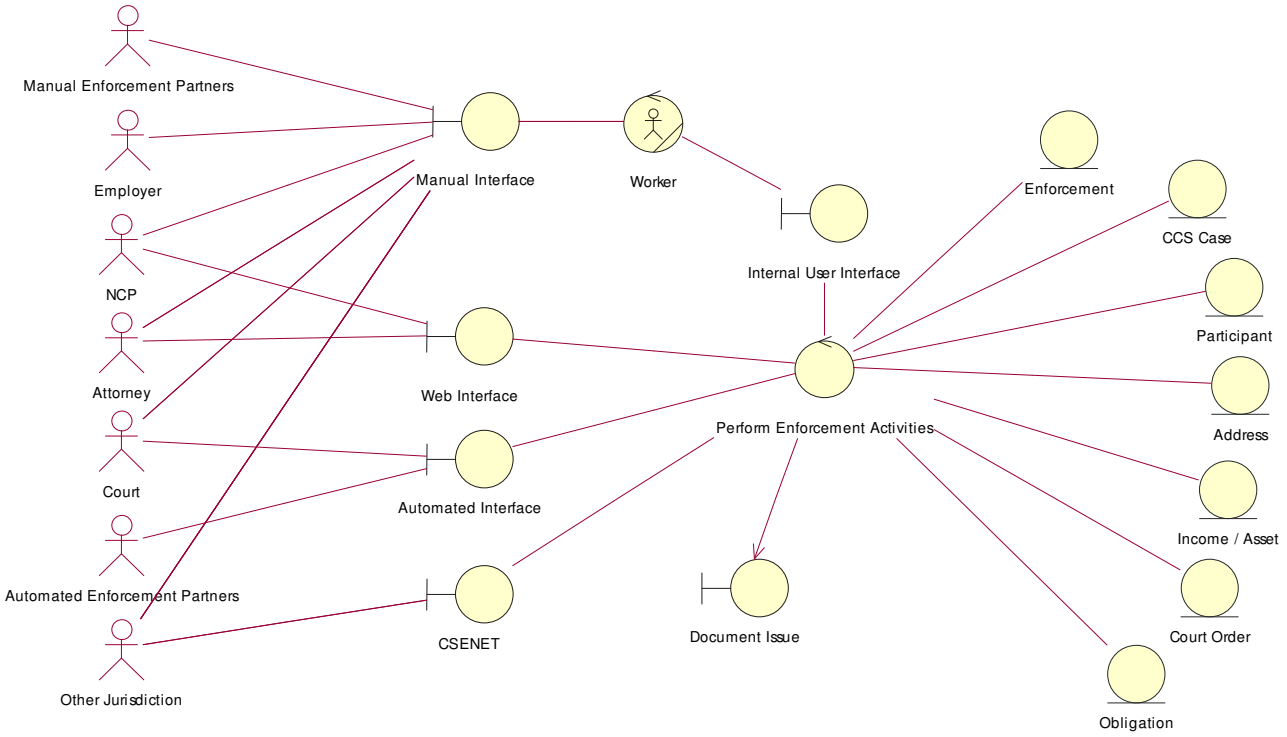



**Figure 4A.3.2c-16 Perform Enforcement Activities** – *Robustness Analysis Diagram*

### *Overview*

Perform Enforcement Activities involves the determination of whether to enforce compliance with an order and if so what remedies to pursue. When the use case Monitor Compliance with Obligations detects any change that may impose a need to enforce, the Perform Enforcement Activities Use Case is invoked. Enforcement Activities are applied against delinquent obligors in response to a failure to make payments as ordered. When the enforcement activity is stopped or suppressed, the Perform Enforcement Activities Use Case ends. At completion, the CCS Case and Participant are updated and Enforcement components are created or updated.

### *Description*

The Perform Enforcement Activities Use Case applies business rules (based on State and Federal requirements) to determine whether to enforce the Case and if so what remedies to pursue. These rules may apply to the NCP (who is the payer) in the Case. This person may be the NCP in multiple Cases. Some of the business rules apply to the NCP across the Cases.
The business rules evaluate the amount of delinquency and arrearage. They determine the enforcement actions based on delinquency thresholds (expressed as a percentage = delinquency / obligation). The enforcement action is expected to be an escalating series of actions depending on the delinquency threshold.

The NCP's obligation may be reported to the three national Credit Bureaus (Trans Union, Equifax and Experian). Once this process has been initiated, the Credit Bureaus are updated periodically to synchronize the actual balance with the reported balance.
The NCP's passport may be suspended or a future application denied. This is achieved by sending a request to the United States Department of State via the Financial Management Services (FMS) file for IRS tax intercepts.
Financial assets held by the NCP may be frozen and subsequently seized. The full delinquency amount is obtained (if available) from the NCP's financial assets.
Licenses held by the NCP may be restricted, suspended or denied. Business rules will govern when and how the decision to suspend licenses is made, and which order or precedence (if any) is to be applied.
A lien may be placed on personal and real property owned by the NCP. Liens are filed with the court and may be filed against personal property, real property, civil suits, and estates in probate. Personal property liens are filed with the Secretary of State. Real property liens are filed with the County Recorder's Office. Subsequently, the property may be seized to satisfy the delinquency.
Judicial processes to compel the NCP to satisfy the delinquency may be pursued. Civil contempt of court may result in contempt orders with purge conditions and jail sentences. The NCP may be referred to the county's District Attorney for criminal non-support prosecution that may result in a prison sentence and/or probation and parole.
Cash surety bonds may be used in situations where wage withholding is not effective (self-employed, or frequent changes in employment), the obligor is known to have the financial resources necessary to secure a bond, and the delinquency has reached an appropriate threshold.
IRS Full collection may be pursued after applying the other enforcement activities and the results have been unsuccessful. A case is submitted for IRS Full Collection by sending a request to OCSE. The case must be removed from the IRS and FTB tax intercept certifications. A fee must be paid for each case submitted regardless of the success of the effort.
When it is necessary to apply enforcement activities against an NCP who resides in another state, a request for enforcement activities may be sent to the IV-D Agency in the state where the NCP resides. Procedures and guidelines are defined in the Uniform Interstate Family Support Act (UIFSA). If the other state is not successful in its enforcement efforts, the LCSA may request the services of the US Attorney in further attempts to collect the delinquent obligations. If the other state is not cooperative and fails to respond to numerous requests for enforcement services, the LCSA may request assistance from the US District Court through the Office of Child Support Enforcement (OCSE).
When a delinquency is identified for a payer with wage withholding in effect, the employer (or other income source) is contacted to notify them of the lack of payment. An information update is requested. Enforcement may be pursued against the employer. Enforcement actions may include automated payment from the employer's account or contempt of court.

### ***Operations***

*Detect Delinquency*

When a payer fails to make payments as ordered and is considered to be delinquent, Perform Enforcement Activities is invoked. An enforcement action is initiated.
Actors: Internal operation

*Submit Request for Enforcement*

When a need for enforcement has been determined, a request for enforcement may be submitted to an external enforcement partner. An enforcement action is initiated.
Actors: Enforcement Partners, NCP, Attorney, Other Jurisdiction, Employer, Court

*Receive Enforcement Response*

After receiving a request for enforcement, an external Enforcement Partner responds to the request.
Actors: NCP, Attorney Enforcement Partners, Other Jurisdiction

### *4A.3.2c.2.1.3.2 Use Case: Perform Intercept Activities*

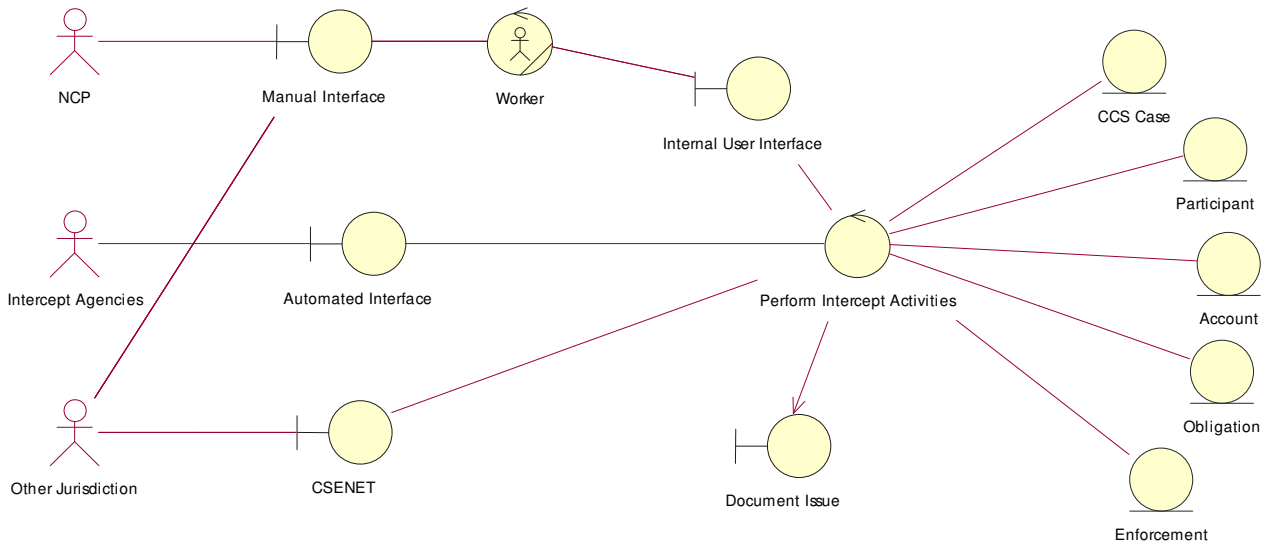



**Figure 4A.3.2c-17 Perform Intercept Activities** – *Robustness Analysis Diagram*

#### *Overview*

Perform Intercept Activities involves intercepting money payable to the NCP from an external agency. When Monitor Compliance with Obligations determines that an NCP has a child support arrearage, the Perform Intercept Activities Use case is invoked. Note that a state of delinquency does not have to exist for this use case to be applied. This use case ends when there are no certifiable arrears. At completion, the CCS case, Participant, and Enforcement components are created or updated.

#### *Description*

Intercept Activities are applied against obligors who have accumulated balances in the arrears and interest sub-accounts, regardless of the obligor's delinquency status. The obligor is "certified" with external agencies that may produce a one-time income stream to the obligor (e.g., IRS tax refunds, State tax refunds, lottery winnings, and State pension distributions). The certification process typically involves aggregating the eligible obligation balances across the obligor's cases and reporting the maximum amount that should be intercepted from any payments to the obligor. Updates are made periodically to synchronize the certified balances with the actual balances.
There are different criteria applied 'by agency' to determine whether to intercept, and which dictate the frequency of requests or updates to these agencies.

#### *Operations*

*Detect Arrearage:*

When a child support arrearage is detected, Perform Intercept Activities is invoked. An enforcement action is initiated.
Actors: Internal Operation

*Provide Certification for Intercept*

Provide Certification for Intercept provides a request to intercept the payer's monies.
Actors: Intercept Agency

*Provide Updates to Certifications for Intercept*

Provide Updates to Certifications for Intercept provides updated information to the certification request.
Actors: Intercept Agency

*Receive Certification Response*

Receive Certification Response returns information from the intercept agency.
Actors: Intercept Agency

*Receive Appeal Request*

Receive Appeal Request provides an opportunity for the payer to contest the certification for intercept.
Actors: NCP, Attorney, Other Jurisdiction

### *4A.3.2c.2.1.3.3 Use Case: Perform Health Insurance Enforcement Activities*

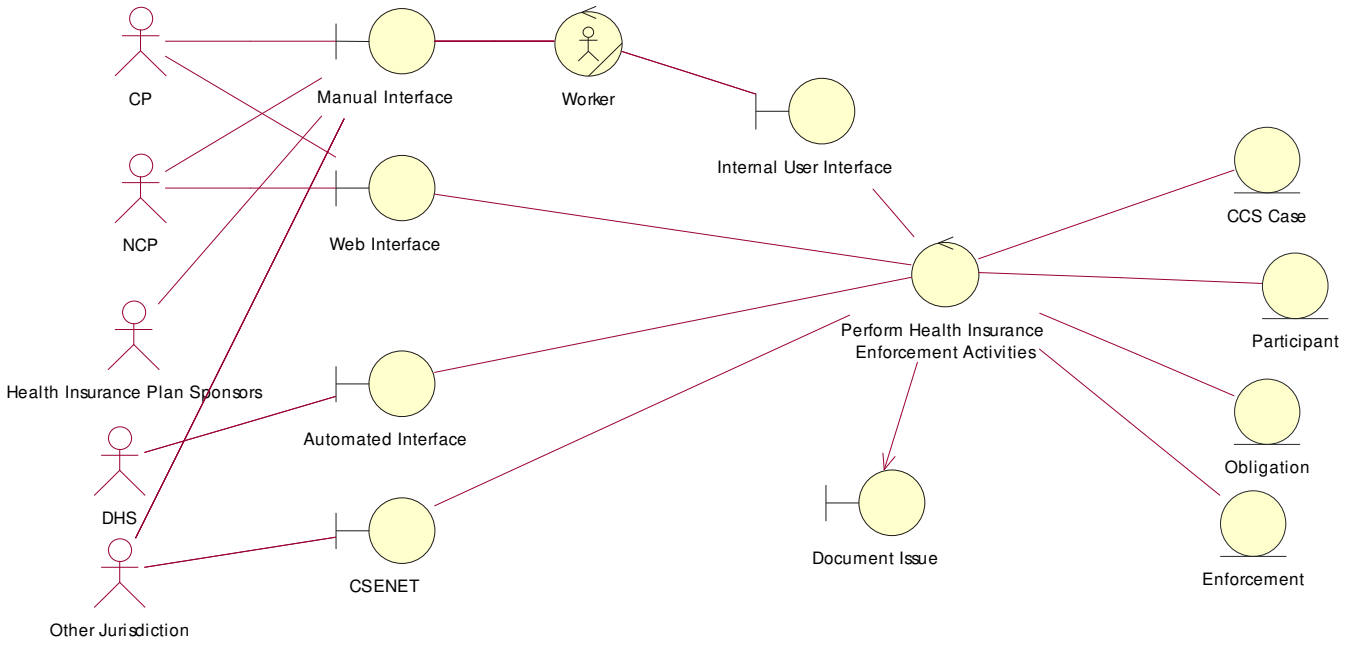



**Figure 4A.3.2c-18 Perform Health Insurance Enforcement Activities** - *Robustness Analysis Diagram*

### *Overview*

Perform Health Insurance Enforcement Activities involves actions to enforce compliance with an obligation to provide health insurance. When Monitor Compliance with Obligations detects an NCP to be non-compliant with an obligation to provide health insurance, the Perform Health Insurance Enforcement Activities use case is invoked. At completion, the CCS Case, Participant, are updated and Enforcement is created or updated.

### *Description*

The LCSA must determine whether insurance is available, and if so, compel the obligor to obtain coverage for the child(ren). The obligor is typically compelled to do so by providing notice to health insurance plan sponsor (the employer, or other entity, through whom the insurance is available). The health insurance plan sponsor is required to enroll the obligor and dependent(s) with or without the cooperation of the obligor. The plan sponsor is also required to provide information about the insurance coverage to the LCSA.
If insurance is not immediately available, it is necessary to periodically reassess the availability of health insurance to the obligor.
Failure to cooperate, on the part of the obligor or the health insurance plan sponsor, is subject to penalties imposed by the court.

### *Operations*

*Detect Need to Enforce Health Insurance*

Detect Need to Enforce Health Insurance is invoked when there is no health insurance coverage for a dependent.

Actors: Internal Operation

*Receive Health Insurance Information*

Receive Health Insurance Information provides information about a dependent's health insurance coverage.
Actors: Case Member, Other Jurisdiction, DHS, Health Insurance Plan Sponsors

### *4A.3.2c.2.1.3.4 Use Case: Receive NCP Response to Enforcement Notice*

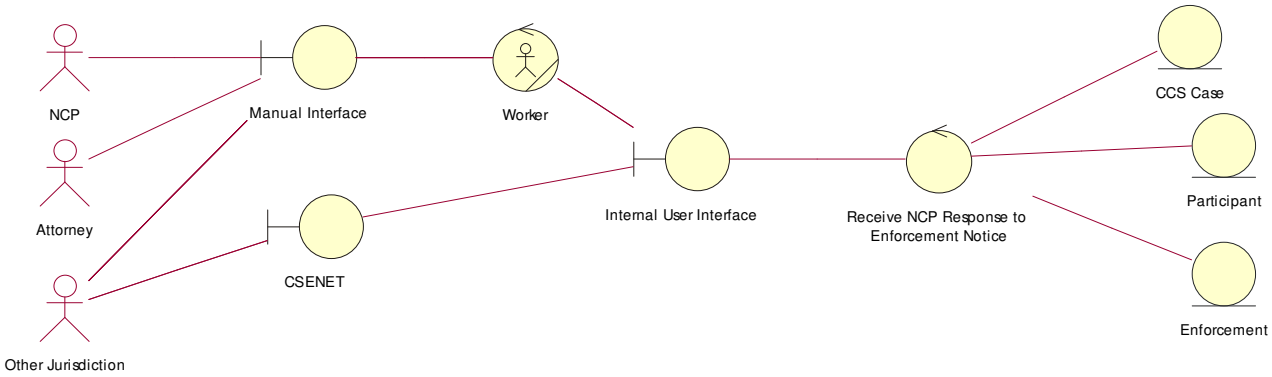



**Figure 4A.3.2c-19 Receive NCP Response to Enforcement Notice** - *Robustness Analysis Diagram*

#### ***Overview***

Receive NCP Response to Enforcement Notice starts when the NCP contacts the LCSA in response to an Enforcement Notice. When a response is received from the NCP, the Receive NCP Response to Enforcement Notice use case is invoked. The use case ends when the next appropriate action has been taken. At completion, the CCS Case, and Participant are updated and Enforcement is created or updated.

#### ***Description***

The LCSA reviews the response from the NCP and determines the appropriate action. The response may result in a request for review or an appeal. The response may result in administratively agreeing to suppress an enforcement action(s).

#### ***Operations***

*Receive Response to Enforcement Notice*

Receive Response to Enforcement Notice is a reaction from the NCP about a specific enforcement activity.
Actors: NCP, Attorney

*Receive Notice of Bankruptcy*

Receive Notice of Bankruptcy impacts the availability of enforcement activities.
Actors: NCP, Attorney, Other Jurisdiction

### *4A.3.2c.2.1.3.5 Use Case: Stop/Suppress Enforcement*

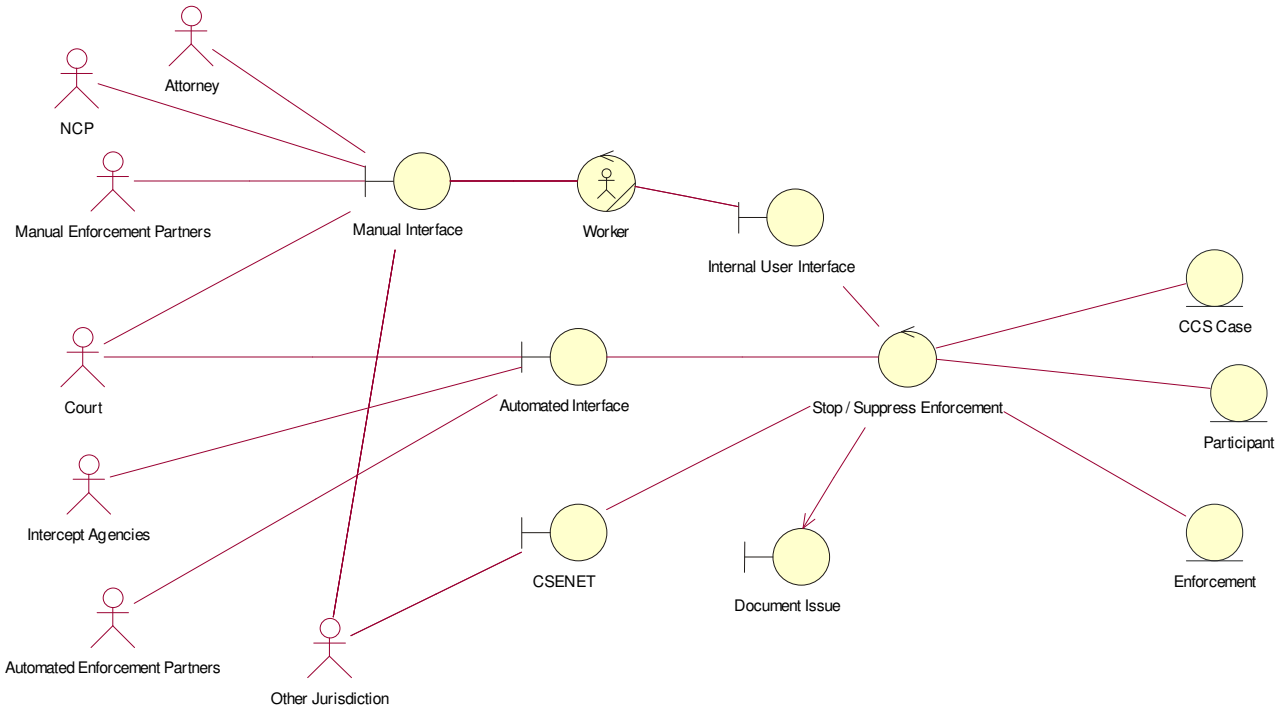



**Figure 4A.3.2c-20 Stop/Suppress Enforcement Activities** – *Robustness Analysis Diagram*

### *Overview*

Stop/Suppress Enforcement involves stopping one or more enforcement activities after they have been initiated. When the NCP satisfies the delinquency, files a bankruptcy claim, reaches an agreement with the LCSA or by order of the Court, the Stop/Suppress Enforcement use case is invoked. The use case ends when one or more enforcement activities have been stopped. At completion, the CCS Case, Participant or Enforcement components are updated.

### *Description*

Licenses that have previously been restricted, suspended or denied will be re-instated. The appropriate external agency is notified to take the action.
The NCP's suspended or denied passport will be reinstated. This is achieved by sending a request to the State Department via the Financial Management Services (FMS) file for tax intercepts.
Financial assets that have been frozen, but not seized will be released. This is achieved by sending a request to the Financial Institution.
The derogatory report in the NCP's Credit Bureau records will be removed. This is achieved by sending a request to the three Credit Bureaus.
The NCP's property that was seized, but not liquidated will be returned.
The balance of the bond that was posted by the NCP will be returned.
A lien against personal or real property owned by the NCP will be released.
Pending court actions against the NCP will be cancelled.

***Operations***

*Detect Satisfaction of Delinquency*

Actors: Internal Operation

*Receive Notice of Bankruptcy*

Receive Notice of Bankruptcy may cause an enforcement action to be suppressed or stopped.
Actors: NCP, Attorney, Other Jurisdiction
Provide Notice of Stop/Suppress Enforcement gives notice that the enforcement action has been stopped or suppressed.
Actors: NCP, Attorney, Other Jurisdiction, Enforcement Partners, Intercept Agencies

### 4A.3.2c.2.1.4 Business Service: Locate

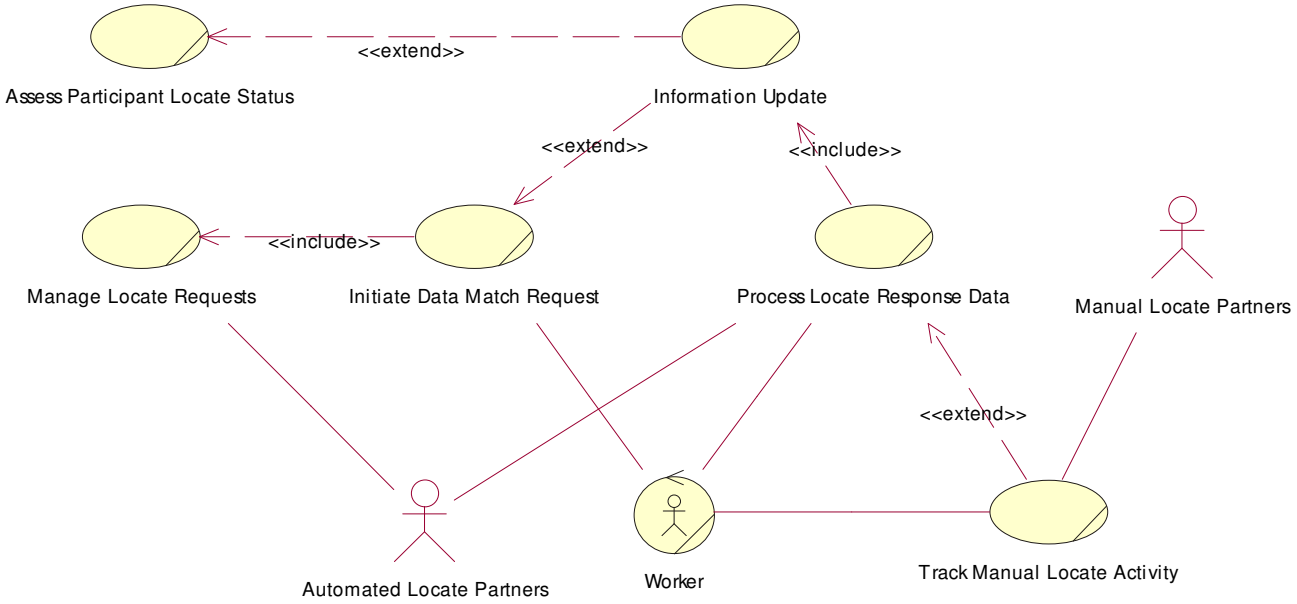



**Figure 4A.3.2c-21 Locate –** *Use Case Diagram*

Locate is defined by five major use cases:

- Assess Participant Locate Status
- Manage Locate Requests
- Initiate Data Match Request
- Process Locate Response Data
- Track Manual Locate Activity

### *4A.3.2c.2.1.4.1 Use Case: Assess Participant Locate Status*

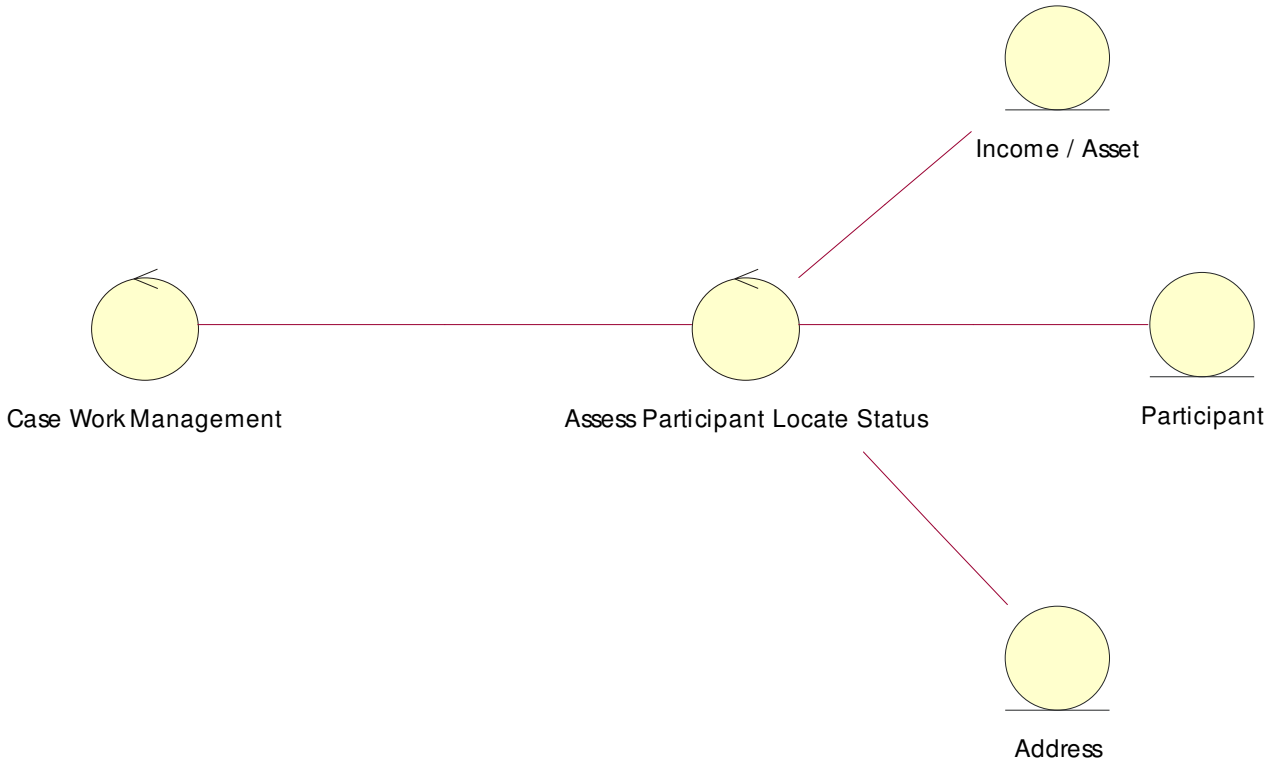



**Figure 4A.3.2c-22 Assess Participant Locate Status** – *Robustness Analysis Diagram*

#### ***Overview***

Assess Participant Locate Status involves determining the appropriate locate status for the participant. The locate status indicates the type of information that is needed for the participant (e.g., identity, whereabouts, employment/income). When there is a change in verified information regarding a participant's identity, whereabouts, or employment/income, the Assess Participant Locate Status Use Case is invoked. At completion, the Participant component is updated.

#### ***Description***

A participant remains in a particular locate status until there is a change in verified information. This could be new verified information that is received, existing information that becomes verified, or previously verified information that becomes unverified (e.g., it could become obsolete). Any of these events will trigger a reassessment of the locate status. (Verifiable information is certain types of information such as SSN, address, or income that needs to be verified for accuracy.)

The focus of locate on the Participant and not the CCS Case supports the Base Business Concepts by recognizing that Participants may be involved in multiple cases, and that multiple Participants in one case may need to be located.

Note that it is the participant that is the target of the locate effort, and so a distinct Locate Status is assigned to each participant. In other words, the CCS Case is not "assigned" a Locate Status, and Locate is not a functional status. This separation reflects the fact that a participant (NCP or CP) may need to be located, and at the same time, one or more of the CCS Cases they are involved in has a functional status of Enforcement. Determining the next appropriate action usually requires information about both the CCS Case functional status, and the Participant's Locate Status (in addition to other information, such as recent actions taken).

If new verified information is received, or existing information becomes verified, and the participant was in a locate status for that type of information, then the participant will move out of locate status for that type of information. If previously verified information becomes unverified, then the action depends on a number of factors:

- The need for information about a participant is driven by the role the participant plays in a CCS Case(s). If the participant is an NCP in at least one CCS Case, the availability of current, verified data is assessed to determine the locate status. If there is other verified information available (such as another address), then there may be no need to alter the locate status. If not, then the participant will be moved into the locate status appropriate to the type of information.
- If the participant is not an NCP in any CCS Case, but is a CP in at least one CCS Case, the locate status will be set if there is a need to locate the CP's whereabouts. This will be subject to DCSS business rules, but an example would be if the system needs to disburse funds to the CP, but there is no verified mailing address. In this case it is necessary to locate a current address for the CP.

Once the appropriate locate status has been determined and the participant updated to reflect this, the use case ends.

### *Operations*

#### *Receive New or Changed Verified Locate Information*

Receive New or Changed Verified Locate Information is an operation that invokes Locate Assessment. The appropriate locate status is assigned to the participant.
Actors: Internal Operation

#### *Change of Verified Locate Information to Unverified*

Change of Verified Locate Information to Unverified is an operation that invokes Locate Assessment. The appropriate locate status is assigned to the participant.
Actors: Internal Operation

### *4A.3.2c.2.1.4.2 Use Case: Manage Locate Requests*

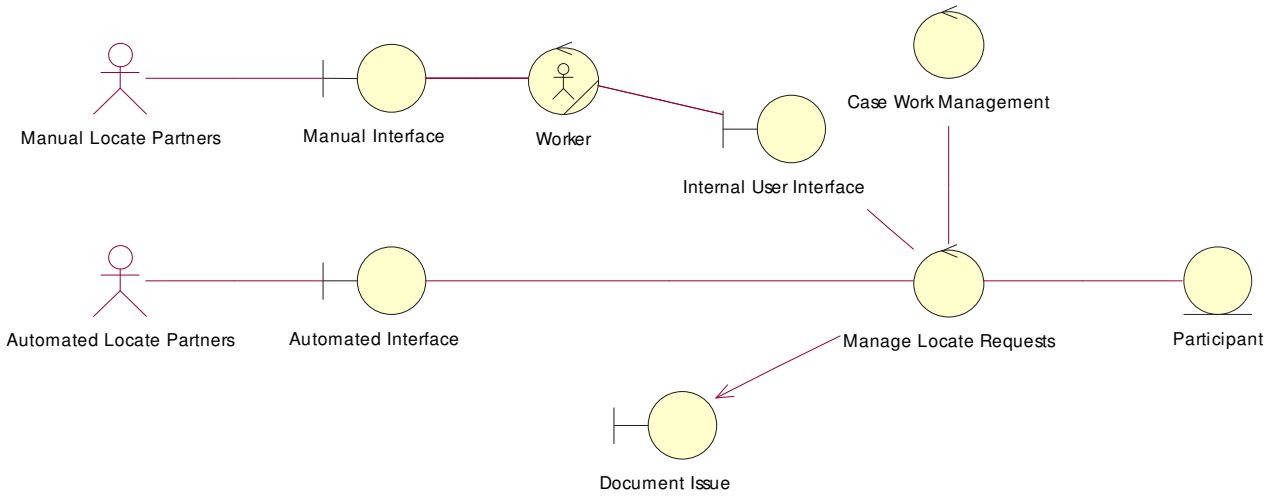



**Figure 4A.3.2c-23 Manage Locate Requests** – *Robustness Analysis Diagram*

#### ***Overview***

Manage Locate Requests is used to request that a locate source provide any relevant data for the participant we are attempting to locate. When a participant receives a new locate status, when a need to request a data match is identified, or when a request needs to be resubmitted to a locate source, the Manage Locate Requests Use Case is invoked. Manage Locate Requests ends when the request for locate information has been sent to the locate source. At completion, the Participant component is updated.

> The hierarchical locate process improves efficiency and effectiveness.

#### ***Description***

When a new locate status is set, by the Assess Participant Locate Status use case, a hierarchical process is triggered that will result in one or a series of communications to be initiated which will request information from various locate sources. The hierarchy that decides when a particular source is accessed is determined by:

- The type of data required (e.g., locate whereabouts or assets)
- The quality of the data that source provides
- The interface mechanism used

High quality, quick turn-around sources are accessed first in order to provide a more efficient model where less reliable/less automated sources are not accessed unless it is absolutely necessary. Some sources may have requests resubmitted at a later date if the participant's locate status remains unchanged. The sources used depend on the type of locate service needed.

***Locate Identity*** is used to provide a positive identification for the NCP. To be fully 'identified', an NCP must have a verified SSN, Name and Date of Birth. The primary objective in positively identifying the NCP is to obtain a Social Security Number (SSN) and verify it with the Social Security Administration (SSA). Also contributing to positively

identifying the NCP are verified Name, and Date of Birth. DCSS policy will drive the definition of 'verified' for these data elements. Frequently, this information is received in a verified form through the application process. In situations where the Name is known, but the date of birth is not 'verified', another state database can usually provide verification. In fact, DMV is typically thought to provide verified date of birth data, because of the reliability of the data. DHS can also provide verified data, as well. The CSE system process of clearing members will result in a higher number of NCPs with virtually immediate verification of key demographic data elements.
The process is driven by the amount and quality of the data available for the NCP. The less that is known about the NCP, the more labor intensive this process becomes. Without positive identification of the NCP, Establishment and Enforcement services cannot be provided
***Locate Whereabouts*** is used to identify a physical address where the Participant can be found. When an NCP does not have a verified address, this use case attempts to obtain a verified mailing or residence address for the Participant. It may also be necessary to apply this use case to CPs when checks or mail have been returned as undeliverable.
For a participant with this status, a request is sent to the automated locate partners who provide reliable address or employment information. The request contains the key identifiers that are available in the CSE system, including the unique id. For each source the minimum data elements required to obtain a useful match must be defined. For automated locate processing it may not be useful to receive twenty responses to a request because the request only identified a person's name. The matching logic performed with the key identifiers must also be defined with each locate source. It should be noted that it is not necessary for a participant to "step" through each locate source. One source may be contacted for a participant in locate identity which returns information that confirms the participant's identity, address, and employment.
It is possible to proceed with certain IV-D services under this status. If service of process is necessary, and the NCP's employment location is known, it is possible to proceed without a mailing or residence address.
***Locate Employer/Income*** is used to identify the NCP's employment, or source(s) of income. The need for a verified employer and participant income directly affects the quality of the IV-D services provided. Although establishment and enforcement can proceed when the LCSA does not have this data, the quality of the orders and the efficiency of enforcement actions are greatly improved when the LCSA is informed. A verified employer is necessary for implementation of wage withholding.
***Locate Assets*** is used to identify the NCP's assets. This is used when the identification of participant assets would benefit the establishment or enforcement of a support obligation. Asset information can improve the quality of the IV-D services provided. Income producing assets may be used when establishing an NCP's support obligation. Other assets, (financial, property, licenses) may be used when enforcing an NCP's support obligation. The type of source depends on the type of asset to be located:

- For financial assets, the identifying info for the NCP is sent to Method 2 Financial Institutions using the standard FIDM format. The Financial Institutions match with their records and return matches in standard FIDM format (includes the account number and current balance).
- For method 1 Financial Institutions, their account lists have been provided according to a regular schedule as described in use case Receive Method 1 Files. The NCP identifying info is matched against these lists.

- In addition to one of the FIDM methods above, the NCP is also submitted for Multi-state FIDM via the IRS Tax Refund Intercept submission.
- Real property is residential or commercial real estate or land. Personal property could be any tangible asset of value (car, boat, jewelry, art works, coin collections, antiques, etc). This information is largely obtained through manual means. For real property, the information may be obtained manually from the local registrar of deeds, the BoE property tax exemption file, and the county assessor's office.
- Information on vehicles is obtained from DMV via an automated interface.
- Information on other tangible assets can be received via interview with the CP, credit reports (identify loans), direct observation, etc.
- Licenses held by the NCP in the State of California are located. These include professional and occupational licenses (doctor, lawyer, teacher, etc), driver's licenses and recreational licenses (hunting, fishing, etc).
- Most professional & occupational license information is obtained from SLMS via an automated interface.
- Information on real estate, legal and teacher licenses is obtained from the State Department of Real Estate, California State Bar and Commission on Teacher Credentialing, each of which has its own data center.
- Driver's license information is obtained from the DMV via an automated interface.
- Recreational license information is obtained from the State Department of Fish & Game via an automated interface with SLMS.

As part of the locate process, the system will accumulate statistics such as the success rate and responsiveness of a particular source. These will be used over time to tailor the hierarchical process to improve effectiveness, and perhaps to improve the quality of the service provided by a particular source.

When a data match request is initiated by the Initiate Data Match Request use case, one or more requests for data matches are submitted to the appropriate source(s) based on the nature of the data that is required. For example, if it is necessary to obtain the most current employment data, the system will check sources that cover employment (e.g., EDD Wage, New Hire, etc.). The Initiate Data Match Request use case provides a trigger to this use case that is handled differently than the participant's locate status. In response to a data match request, a locate request is sent out one time. The appropriate sources are contacted at the same time for a data match request. The locate source does not need to know the difference between a standard locate request and a data match request.

To improve the quality of data returned, so that it can be automatically processed in most situations, specific criteria must be defined for each locate source/interface in order to identify at least two identifiers that will be used for matching purposes. If a Participant in the CSE system does not have two identifiers populated, they will not be submitted to automated locate sources. Participants who cannot be located via automated interfaces must be located manually. This may involve accessing some of the same sources and using search capabilities provided by the source to isolate and screen potential matches.

### *Operations*

#### *Detect Need to Locate*

Detect Need to Locate is an internal operation that initiates a series of requests for information to external locate partners.
Actors: Internal Operation

#### *Detect Need to Resubmit Locate Request*

Detect Need to Resubmit Locate Request is an internal operation that determines that a request for information needs to be resubmitted to an external locate partner.
Actors: Internal Operation

#### *Provide Locate Request Information*

Provide Locate Request Information submits specific criteria to an external locate partner that will be used for matching purposes.
Actors: Locate Partners

### *4A.3.2c.2.1.4.3 Use Case: Initiate Data Match Request*

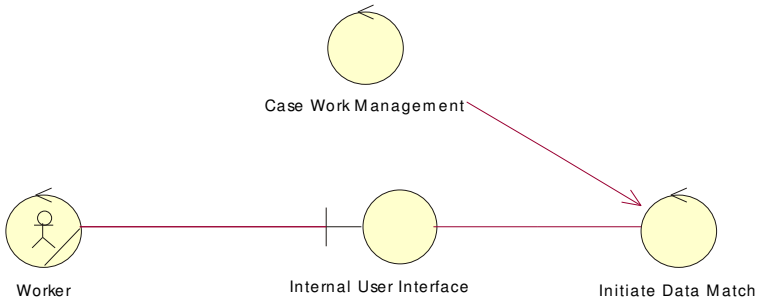



**Figure 4A.3.2c-24 Initiate Data Match Request** – *Robustness Analysis Diagram*

#### ***Overview***

Initiate Data Match Request is used to initiate data matching activity. When there is a functional need within case processing due to a process being applied to the case, or detected independently by a worker, the Initiate Data Match Request use case is invoked. At completion, the participant component is updated

#### ***Description***

Data Match Request initiates a one-time search for the information that is needed for a specific functional process. For example, income for establishment, licenses for license suspension, etc. A request may also be initiated to verify information that has been received from another source.

#### ***Operations***

*Initiate Data Match Request*

Initiate Data Match Request provides a one-time search for information that is needed for a specific functional process.
Actors: Internal Operation

### *4A.3.2c.2.1.4.4 Use Case: Process Locate Response Data*

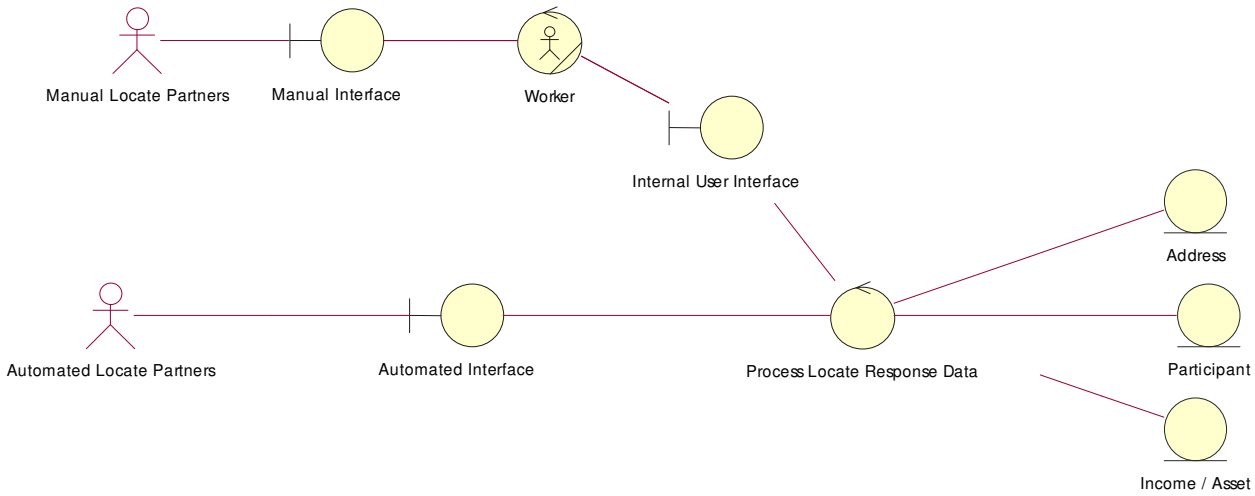



**Figure 4A.3.2c-25 Process Locate Response Data –** *Robustness Analysis Diagram*

#### ***Overview***

Process Locate Response Data is used to determine the appropriate action for the response received from the locate source. When a response is received from a locate source, the Process Locate Response Data use case is invoked. At completion, the Participant component is updated.

#### ***Description***

When the locate source provides a single matching response, the data provided by the source is automatically processed in the Information Update use case where the participant is updated and verification requests are created. It is anticipated that the majority of locate responses will be processed automatically, without user intervention. When the locate source provides information for multiple individuals who potentially match the target Participant, the data will be reviewed by the worker in order to determine which data should be updated in the system.

#### ***Operations***

*Receive Single Matching Locate Response*

Receive Single Matching Locate Response is an operation that automatically processes data provided in the locate response. The Information Update is invoked to update the Participant.
Actors: Locate Partners

*Receive Multiple Matching Locate Responses*

Receive Multiple Matching Locate Responses provides information for more than one potential match to the worker for review to determine if a participant's information should be updated.
Actors: Locate Partners

### *4A.3.2c.2.1.4.5 Use Case: Track Manual Locate Activity*

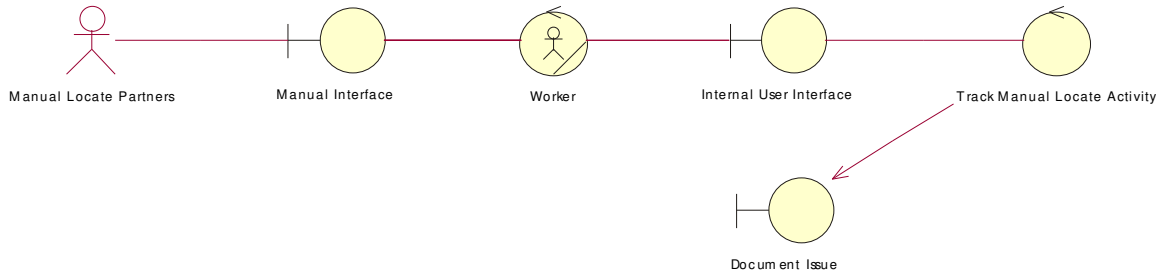



**Figure 4A.3.2c-26 Track Manual Locate Activity** – *Robustness Analysis Diagram*

#### ***Overview***

Track Manual Locate Activity is used to record manual attempts to locate data for the participant, and the results of those attempts. When a participant has insufficient information to be submitted to an automated locate source (e.g., no date of birth or SSN), or as a supplement to automated locate attempts, the Track Manual Locate Activity use case is invoked. At completion, the Participant component is updated.

#### ***Description***

Manual locate activity is initiated by a child support worker. Activities include actions such as a search of local phone books, newspapers, interviews at local establishments, and other investigative techniques. These manual locate attempts and the results must be recorded to document that the manual locate activity took place. Recording the actions also allows the worker to keep track of what locate attempts have been taken.

#### ***Operations***

*Track Manual Locate Activity*

Track Manual Locate Activity provides the ability to record manual locate attempts and the results of each attempt.
Actors: Internal Operation

## 4A.3.2c.2.2 Financial Management

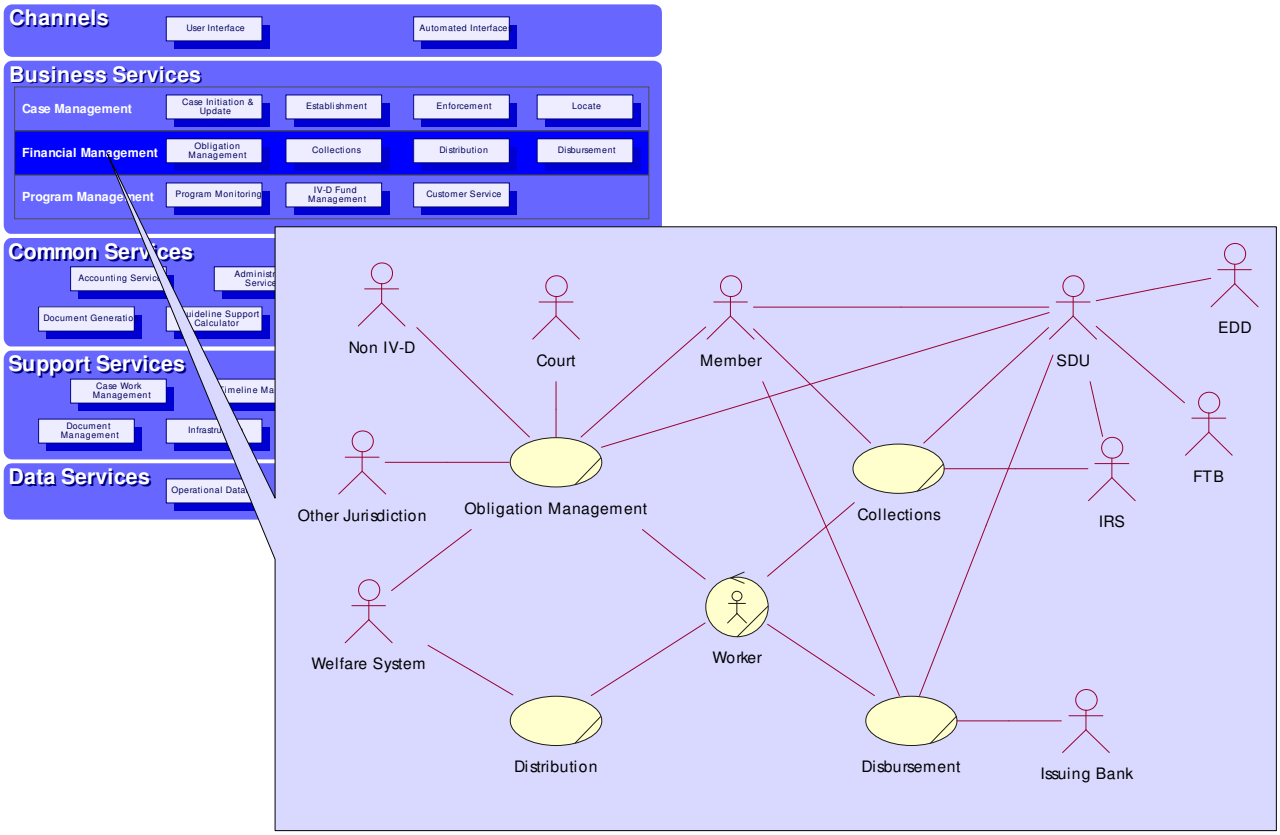



**Figure 4A.3.2c-27 Financial Management Context Diagram --** *Financial Management is one of three categories of CSE functions. The four business services within Financial Management are highlighted in the functional architecture and displayed as use cases in the context diagram.*

Financial Management is made up of four business services: Obligation Management, Collections, Distribution, and Disbursement. These business services provide the tools and capabilities to accurately manage the accounts receivable and perform the cash handling of receipting and disbursing support collections.

### 4A.3.2c.2.2.1 Business Service: Obligation Management

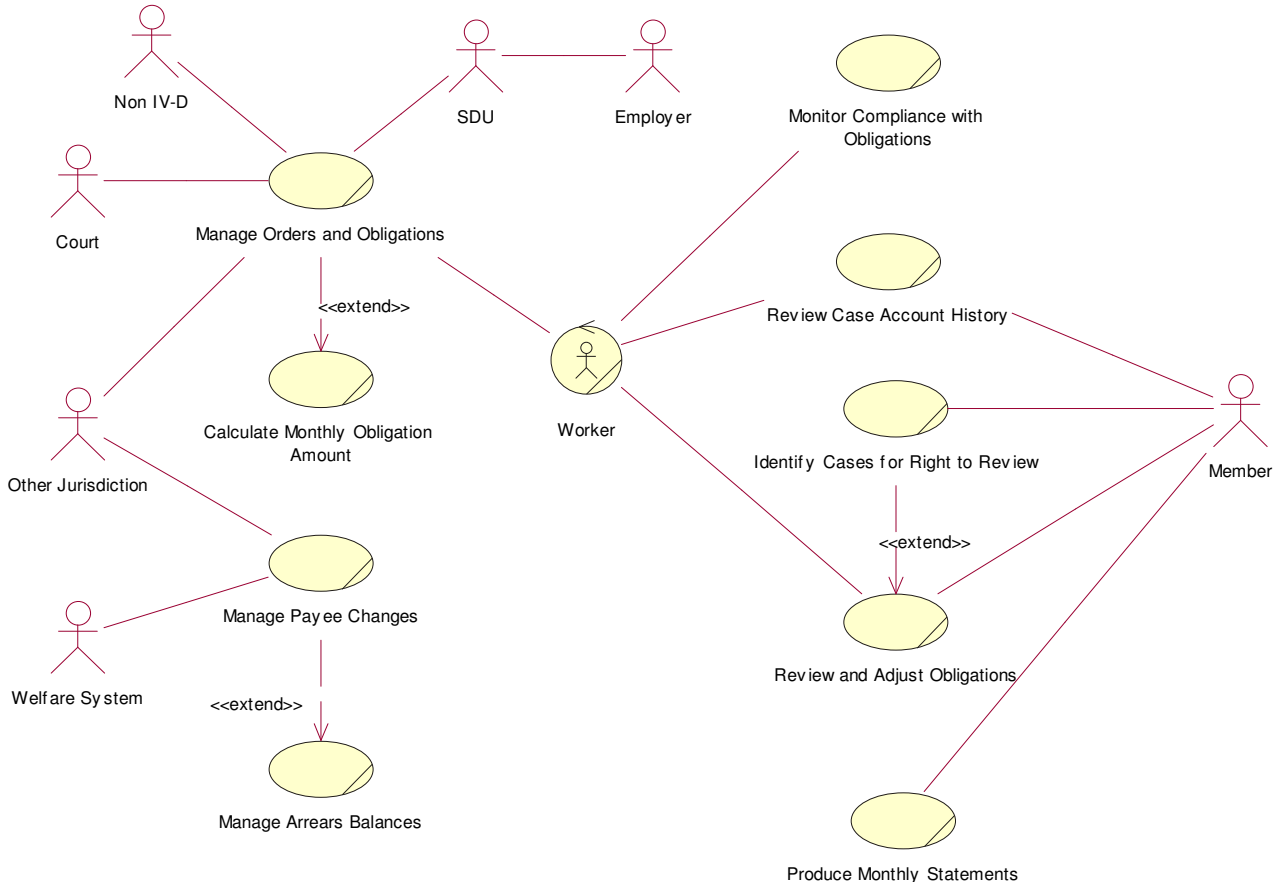



**Figure 4A.3.2c-28 Obligation Management** - *Use Case Diagram*

Obligation Management is defined by nine use cases: Manage Order/Obligation Modifications, Calculate Monthly Obligation Amount, Manage Payee Changes, Manage Arrears Balances, Monitor Compliance with Obligations, Review Case Financial History, Identify Cases for Right to Review, Review & Adjust Obligations, and Produce Monthly Statements.

### *4A.3.2c.2.2.1.1 Use Case: Manage Orders and Obligations*

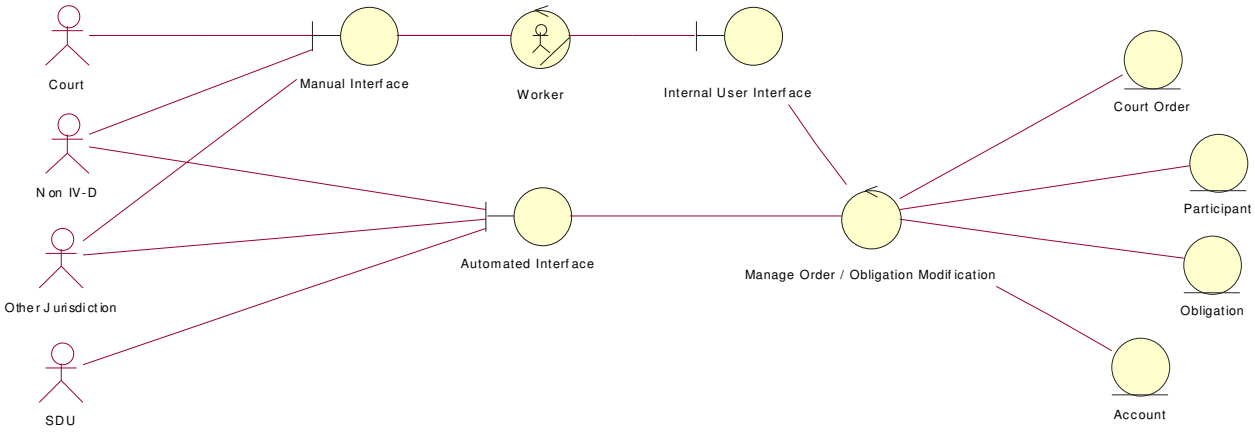



**Figure 4A.3.2c-29 Manage Orders and Obligations –** *Robustness Analysis Diagram*

### *Overview*

Manage Orders and Obligations is the process of recording support orders and obligations in the CSE system. When an order and its obligations are received, the Manage Orders and Obligations use case is invoked. In this use case, order and obligation information is recorded in the CSE system. At completion, the Order and Obligation information is created and the Accounting Services common service may be invoked to create the appropriate transaction(s) and update the appropriate sub-accounts.

### *Description*

This use case begins when a new or modified order is received, or an obligation reaches its end date or effective date.
This information can be received from the Court after the order has been filed, from another jurisdiction in interstate cases, or it can be received from a non IV-D member, or from an employer. Non IV-D orders may be received from the employer in the form of a copy of the wage assignment that is returned with the child support payment. This information is provided to the SDU which, in turn, passes it on to the CSE system.
This information is recorded in the CSE system when it is received by the LCSA. The Order and Obligation information is updated and the system creates or updates the sub-account corresponding to the updated obligation. If an obligation is entered with a current or past effective date, the Calculate Monthly Obligation Amount use case is triggered in order to determine the amount due for the current month.
For obligations entered with a past effective date, the CSE system will provide the option of calculating the amount due, arrearage accruals, and interest accruals and automatically applying this information to the appropriate sub-accounts.
This use case also monitors end dates and effective dates for obligations to detect changes that must be applied, such as a future obligation becoming effective or an existing one expiring (e.g., seasonal payment terms, future obligation).
This use case ends when the order and obligation information has been updated and current obligations have been synchronized with the sub-accounts.

***Operations***

*Receive Order / Obligation*

When a valid order and its obligations are received by the LCSA, the information is recorded in the CSE system. The CCS Case is updated to reflect the terms and conditions of the order and its obligation(s).
Actors: Case Member, Court, Other Jurisdiction

*Detect expiring obligation*

When an obligation's end date is reached, it is no longer considered a current obligation. The obligation and related sub-account are updated so that the obligation does not accrue beyond the end date.
Actors: Internal operation

*Detect newly effective obligation*

When a future obligation's effective date is reached, it is now considered to be the current obligation. The obligation and related sub-account are updated so that the terms of the newly effective obligation are used from the effective date forward.
Actors: Internal operation

### *4A.3.2c.2.2.1.2 Use Case: Calculate Monthly Obligation Amount*

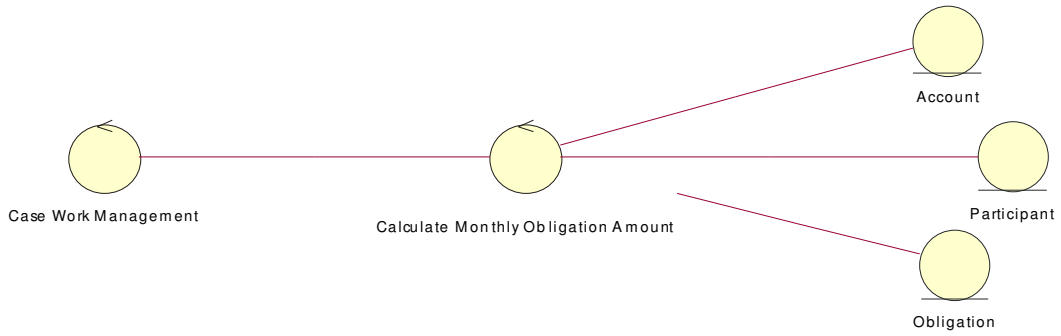



**Figure 4A.3.2c-30 Calculate Monthly Obligation Amount –** *Robustness Analysis Diagram*

#### *Overview*

Calculate Monthly Obligation Amount is the process of determining the current accounts receivable balances based on the obligations of record. In this use case, obligation and sub-account information is analyzed to determine the monthly obligation amount for the new period. At completion, the obligations and sub-accounts are updated and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate sub-accounts.

#### *Description*

This use case begins when the monthly obligation amount needs to be calculated for the next monthly 'cycle', or when a change in obligation terms occurs.
The monthly obligation amount is the required amount to be paid by the NCP for the month.
The monthly obligation amount may change each month based on the billing cycle (number of payments due in the month) and/or seasonal adjustments.
This use case ends when the monthly obligation amount has been calculated and updated on the sub-account.

#### *Operations*

*Calculate Monthly Obligation Amount*

Calculate Monthly Obligation Amount is an operation that determines the payer's monthly obligation amount based on the ordered obligation. Obligation terms that affect this calculation include payment amount, payment frequency, and the effective date and end date of the obligation.
Actors: Internal operation

### *4A.3.2c.2.2.1.3 Use Case: Manage Payee Changes*

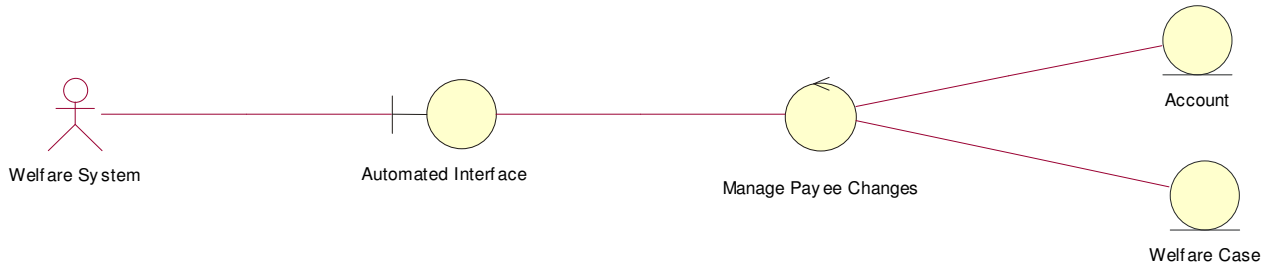



**Figure 4A.3.2c-31 Manage Payee Changes –** *Robustness Analysis Diagram*

#### ***Overview***

Manage Payee Changes is the process of recording the effect of welfare and foster care episodes on the CCS Case and its members. When a referral is sent from the welfare system to the CSE system, the Manage Payee Changes use case is invoked. In this use case, welfare and foster care episode information is recorded in the CSE system. At completion, the welfare and foster care episode information is created or updated and the appropriate obligations and sub-accounts are updated to reflect the assignment or its release.

#### ***Description***

This use case begins when changes are detected that indicate either the beginning or end of an assistance episode that assigns the payee's rights to support.
For the beginning of an assistance episode, the system updates sub-accounts as appropriate to assign payments to the State. For termination, sub-accounts are updated to re-assign current support payments to the Court ordered payee.
Assistance Episodes can include: California Welfare & Foster Care cases, or other state Welfare & Foster Care cases.
The use case ends when the sub-accounts have been updated.

#### ***Operations***

*Receive welfare referral (opening)*

The welfare opening is received from the welfare system. This information identifies the primary person for the welfare case that is being opened, the welfare case, and the programs (types of assistance) for which the welfare case is eligible. The sub-accounts that must be assigned to the State based on the payee's welfare eligibility are updated to reflect the change in payee.
Actors: Welfare System

*Receive welfare update (closing)*

The welfare closing is received from the welfare system. This information identifies the primary person for the welfare case that is being closed, the welfare case, and the programs (types of assistance) for which the welfare case is closing. The sub-accounts that are no longer assigned to the State based on the payee's welfare eligibility are updated to reflect the change in payee. Actors: Welfare System

### *4A.3.2c.2.2.1.4 Use Case: Manage Arrears Balances*

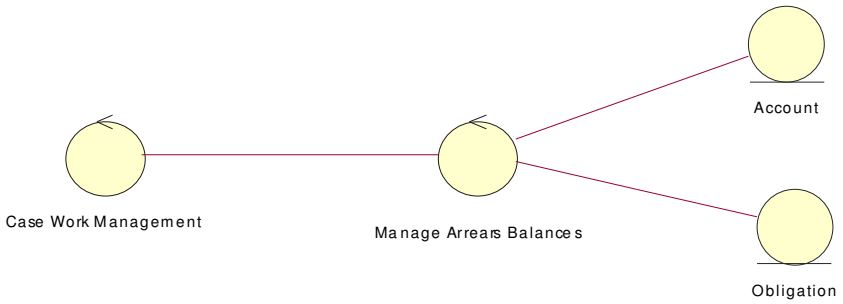



**Figure 4A.3.2c-32 Manage Arrears Balances –** *Robustness Analysis Diagram*

#### ***Overview***

Manage Arrears Balances is the process of accumulating arrears and interest based on a payer's failure to satisfy the ordered obligation. When it is necessary to determine the current arrears balance, the Manage Arrears Balances use case is invoked. In this use case, unpaid support obligations are accumulated as arrears and interest is charged on outstanding balances. At completion, the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate arrears and interest sub-accounts.

#### ***Description***

The Manage Arrears Balances use case begins when the monthly arrears accumulation needs to be determined.
Calculating and accruing the interest due on the existing arrears balance, and then accruing any unpaid current support resulting from the current period determine the arrears. In this model, interest is charged before accruing arrears, to provide a "grace period" for the newly accumulated arrears.
This use case also assigns arrears for potential re-imbursement of welfare payments based on the custodial parent's UPA balance. (Unreimbursed Public Assistance).

#### ***Operations***

*Calculate Monthly Arrears Accumulation*

Calculate Monthly Arrears Accumulation is an operation that determines the amount of a current support obligation that was not paid and transfers the unpaid support to an arrears sub-account. Actors: Internal operation

*Calculate Interest*

Calculate Interest is an operation that determines the amount of interest that should be charged for an arrears obligation for a specific period of time.
Actors: Internal operation

*Arrears Rollover*

Arrears Rollover is an operation that transfers arrears and interest balances from one categorization to another. Assignment of rights during a welfare episode can change the categorization of existing arrears.
Actors: Internal operation

### *4A.3.2c.2.2.1.5 Use Case: Monitor Compliance with Obligations*

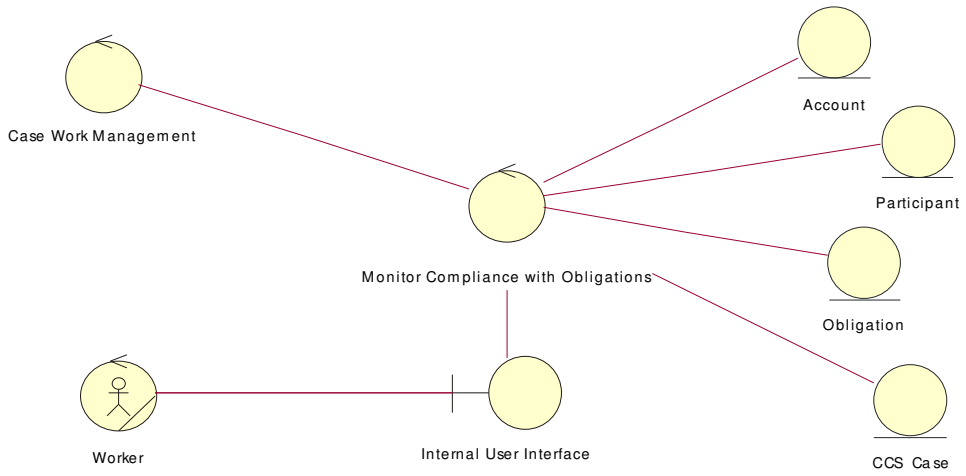



**Figure 4A.3.2c-33 Monitor Compliance with Obligations** – *Robustness Analysis Diagram*

#### ***Overview***

Monitor Compliance with Obligations is the process of monitoring a payer's obligations to determine whether the payer is compliant with those obligations or not. When it is necessary to reassess a payer's compliance, the Monitor Compliance with Obligations use case is invoked. In this use case, obligations are compared to activity to satisfy those obligations to measure the payer's compliance. At completion, the payer and the appropriate CCS Case(s) are updated to reflect the current compliance status. The Enforcement use case will be invoked if the payer is determined to be non-compliant.

#### ***Description***

Monitor Compliance With Obligations use case continually monitors the state of cases such that a change in Case conditions or business rules is detected and causes this use case to be applied.
It determines the status of obligations. Have obligations changed? Are they being met (e.g., are there delinquent payments, an arrearage, or an unfulfilled health insurance requirement)?
Business rules determine what is considered to be failure to comply with obligations. These may be fully automated or may require the intervention of a Worker.
Determining delinquency for financial obligations is driven by a threshold methodology. It is possible for an obligor to have an arrears balance and to be making the ordered payments on time. Rather than simply looking at arrears or obligation balances to identify delinquency, the CSE system will use the obligor's failure to make ordered payments in assessing the delinquency status. It is also necessary to avoid recommending enforcement action against obligors who are not truly delinquent. Many cases experience the accumulation of an arrearage at the end of the month because the support payment from the employer does not reach the CSA until the beginning of the next month. These cases are usually considered "false arrearages" because the

arrearage exists only because of a timing issue between the CSE system processes and the employer's payroll. The threshold methodology helps to bring only cases that need to be enforced into the focus of enforcement actions. By looking at the failure to make ordered payments as a percentage of the ordered payment amount, the CSE system can bypass many obligors who are making support payments, or whose employers are doing so, and focus on those that have missed payments equal to one month's ordered payment amount or more. For example, an obligor with a $100 arrearage and $400 current support order would only be 25% delinquent and would not be subject to enforcement activity. Naturally, the monthly billing statement would reflect the arrearage and prompt the obligor to make payment arrangements if a payment had not already been made. However, an obligor with a $400 arrearage and $400 current support order would be 100% delinquent and subject to enforcement action. Whether the obligor became 100% delinquent in one month, or over the course of many months, it is necessary to take some action to correct the problem.
The use case detects any change in the status of compliance with obligations, either positive or negative. When a change in the status of compliance with obligations is detected, the appropriate enforcement use case(s) is invoked.
This use case ends when the payer's compliance has been reassessed.

***Operations***

*Monitor Compliance with Obligations*

Monitor Compliance with Obligations is an operation that determines whether or not an NCP has fulfilled the ordered obligations. Both financial and non-financial obligations will be monitored for compliance.
Actors: Internal operation

### *4A.3.2c.2.2.1.6 Use Case: Review Case Account History*

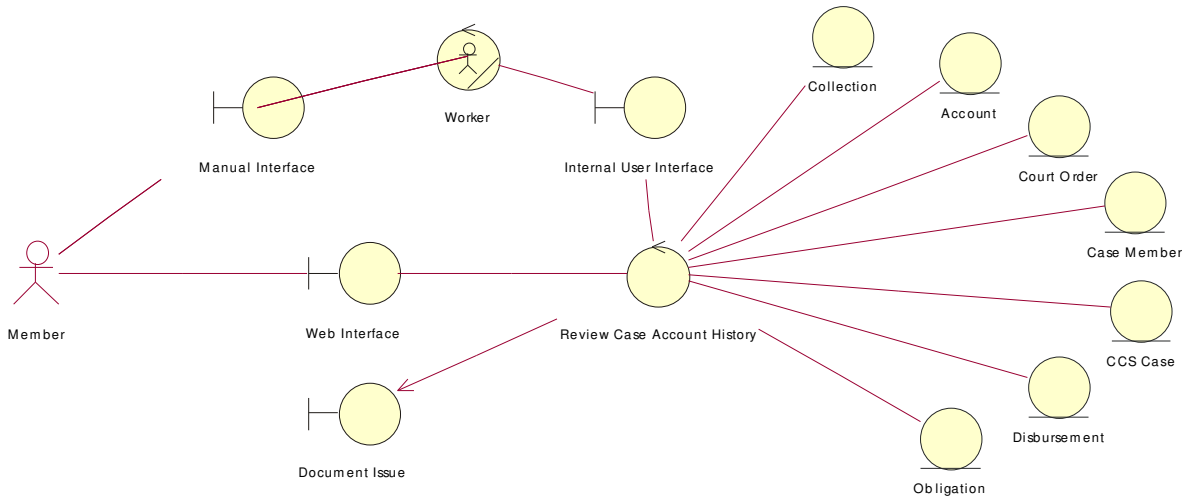



**Figure 4A.3.2c-34 Review Case Account History** – *Robustness Analysis Diagram*

#### ***Overview***

Review Case Account History is the process of gathering and presenting financial information for review by the members of the case. When a CP or NCP requests information to document the history of financial activities in the case, the Review Case Account History use case is invoked. In this use case, collection, distribution, disbursement, and obligation information is gathered and presented in a format for review. At completion, the information is provided to the requesting party.

#### ***Description***

Review Case Account History begins when a request for an Account History is received from the CP or NCP.
The report period (start & end date) is determined. For this period, the transactions are documented and provided to the requestor.
The requestor can use this information to contest enforcement activity. For instance, a new/changed order may not have been applied on a timely basis.
If a new/changed order is to be applied, the use case Manage Order/Obligation Modifications is invoked.
The use case ends when the Account History has been supplied to the requestor.

#### ***Operations***

*Receive request for Account History*

Receive request for Account History is an operation that allows a Case Member to request a copy of their Account History. This information can be provided directly through a web page, or mailed to the party after printing.
Actors: Case Member, Customer Service, Court

### *4A.3.2c.2.2.1.7 Use Case: Identify Cases for Right to Review*

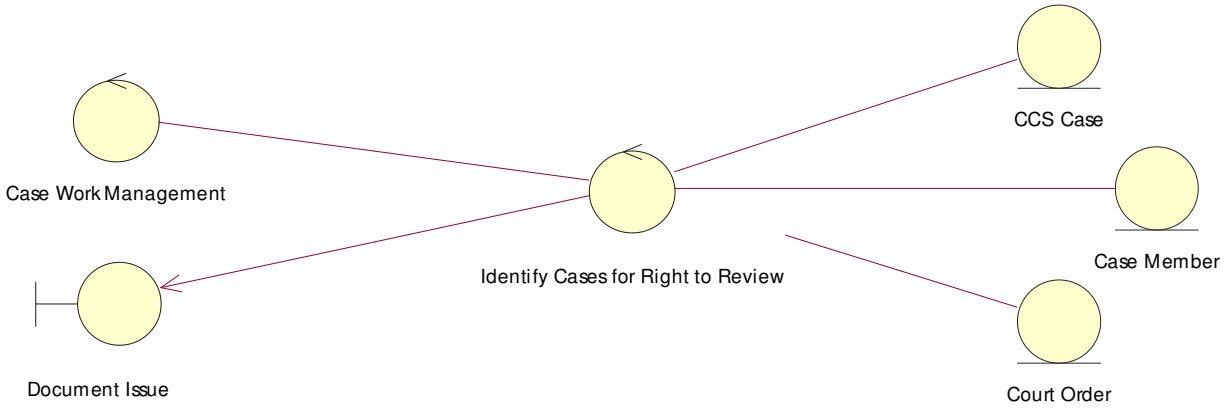



**Figure 4A.3.2c-35 Identify Cases for Right to Review –** *Robustness Analysis Diagram*

#### ***Overview***

Identify Cases for Right to Review is the process of identifying case members who are eligible to receive a Right to Review notification. When a IV-D CCS Case is detected that meets the criteria for eligibility for the notification, the Identify Cases for Right to Review use case is invoked. In this use case, the Document Generation common service is invoked to produce the notification to the appropriate parties, or the review is automatically initiated, and the CCS Case is updated to document the activity.

#### ***Description***

Identify Cases for Right to Review use case begins when either:

- A Case reaches three years from the last order modification, review, or notification to the case members of a right to review (per Federal requirements)
- A condition is detected in a Case that could affect the obligation (based on State policy)

The last order modification must have included a notification of the right to review procedure to be eligible to mark the beginning of the three-year period. A notice of the right to review is sent to the parties. In certain Cases (e.g., Welfare, Foster Care), the system will automatically submit a request for review on behalf of the State. Notification of the review is sent to the affected parties.
The use case ends when the notices have been sent or the automatic review request has been submitted.

#### ***Operations***

*Identify Case for Right to Review Notice*

Identify Case for Right to Review Notice is an operation that identifies a CCS Case that meets the criteria for producing the Right to Review Notice.
Actors: Internal operation

4A.3.2c.2.2.1.8 Use Case: Review & Adjust Obligations

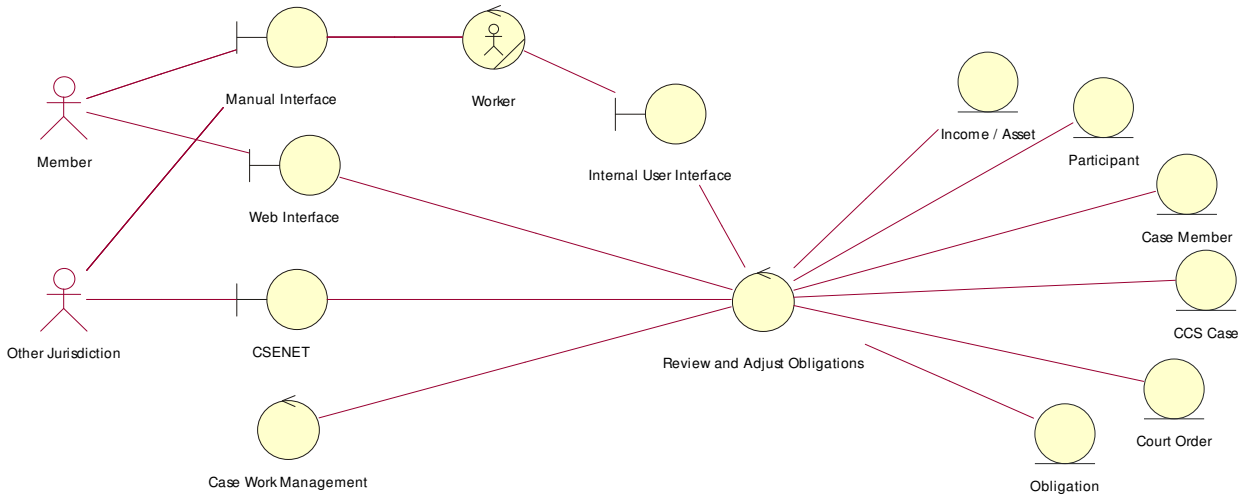



**Figure 4A.3.2c-36 Review & Adjust Obligations –** *Robustness Analysis Diagram*

### *Overview*

Review & Adjust Obligations is the process of gathering current financial information for both the NCP and the CP, determining whether a significant change has taken place to warrant a modification of the obligation, determining whether health insurance coverage has been ordered in the original order, and documenting the results of the review. When it is necessary to review an order for potential modification, the Review & Adjust Obligations use case is invoked. In this use case, the Obtain Income and Asset Info use case and the Locate Asset use case are invoked to obtain current financial information for both the NCP and the CP, the circumstances of the parties are reviewed to determine if a modification is justified, and the Establish Support or Establish Health Insurance use cases are invoked if a modification is justified. At completion, the CCS Case is updated to document the result of the review.

### *Description*

Review & Adjust Obligations use case begins when a request for review is received from the NCP or the CP, or is automatically requested by the system in use case 'Identify Cases for Right to Review'.
The request could be to increase or decrease the amount of support, or to investigate the status of health insurance coverage.
The use case 'Obtain Income and Asset Info' is invoked to request information from the CP & NCP and the 'Locate Assets' use case is performed.
If there is a cause for order modification then the 'Establish Support' use case calculates new obligations and produces a new proposed judgment.
The use case ends when it is determined that there are no grounds for a modification of the order, or the order modification is successfully implemented.
Completion of this use case starts the next three year notice of review period

***Operations***

*Receive request for Review*

Receive request for Review is an operation that allows a Case Member or interested party to submit a request to have the obligations of the CCS Case reviewed for the potential of obtaining a modification.
Actors: Case Member, Other Jurisdiction, Welfare system

*Conduct Review*

Conduct Review is an operation that allows a worker to evaluate the CCS Case and relevant circumstances of the parties to determine whether a modification is warranted.
Actors: Internal operation

### *4A.3.2c.2.2.1.9 Use Case: Produce Monthly Statements*

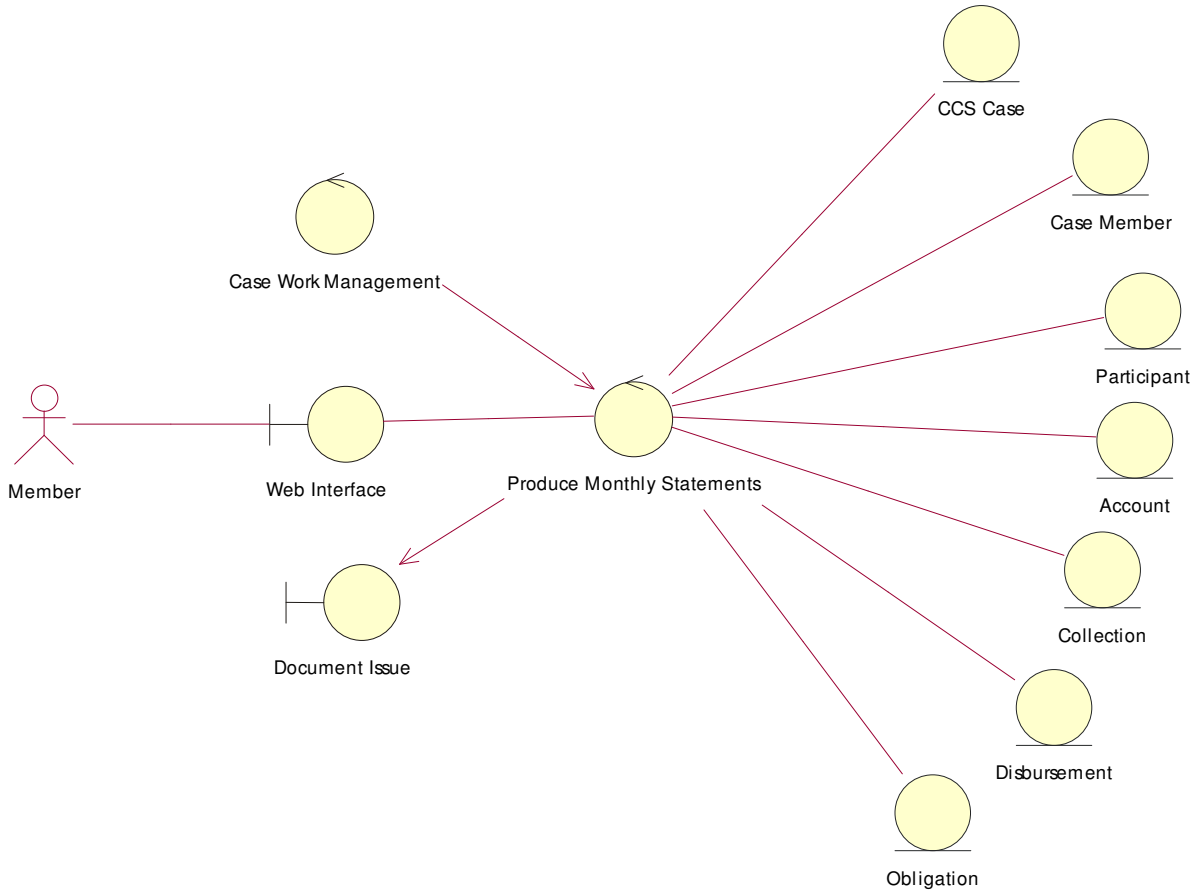



**Figure 4A.3.2c-37 Produce Monthly Statements –** *Robustness Analysis Diagram*

### *Overview*

Produce Monthly Statements is the process of gathering and presenting financial information in a statement format for the payers/NCPs and the payees/CPs. In this use case, financial information is gathered for the eligible NCPs and a Billing Statement is produced for each; and financial information is gathered for the eligible CPs and a Support Statement is produced for each. At completion, the statements are provided to the appropriate parties.

### *Description*

Produce Monthly Statements use case begins when it is time to produce the monthly Billing Statements for the non-custodial parents, and when it is time to produce the monthly Support Statements to the custodial parties.
The Billing Statement provides information about the payer's obligations for the next month, and payment activity for the last month. The Billing Statement may also include remittance devices to support automation in the SDU. Planning and design of the Billing Statement should include participation of the SDU vendor.
The Support Statement provides information about payments that were made to the payee, or assigned and retained on the payee's behalf.

This use case ends when the Billing Statements and the Support Statements have been produced.

***Operations***

*Produce Billing Statements*

Produce Billing Statements is an operation that generates billing statements for the payers.
Actors: Internal operation

*Produce Support Statements*

Produce Support Statements is an operation that generates support statements for the payees. Actors: Internal operation

### 4A.3.2c.2.2.2 Business Service: Collections

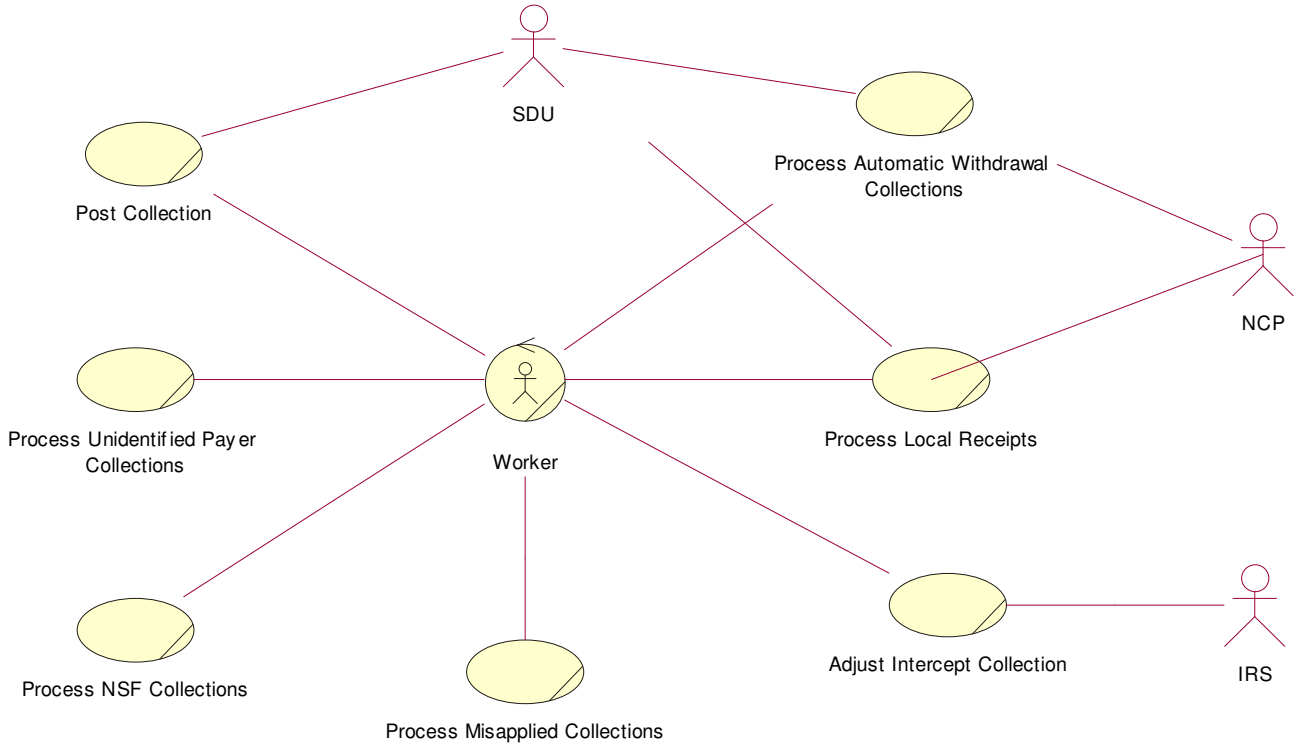



**Figure 4A.3.2c-38 Collections** - *Use Case Diagram*

Collections is defined by six major use cases: Post Collection, Process Unidentified Payer Collections, Process NSF Collections, Process Local Receipts, Adjust Intercept Collection, and Process Misapplied Collections.

### *4A.3.2c.2.2.2.1 Use Case: Post Collection*

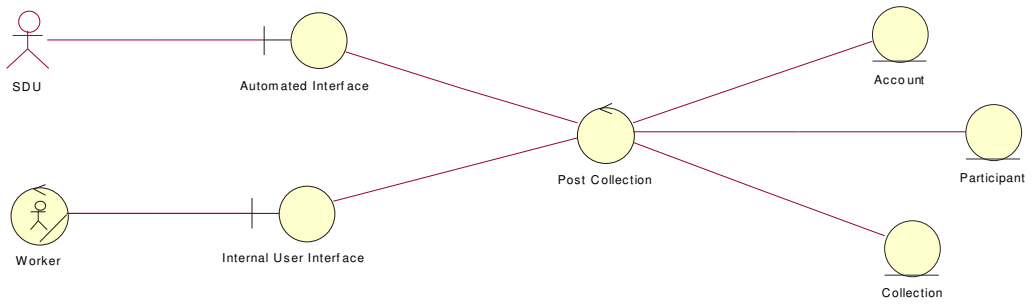



**Figure 4A.3.2c-39 Post Collection –** *Robustness Analysis Diagram*

#### *Overview*

Post Collection is the process of recording support collections in the CSE system. When a collection is sent from the SDU to the CSE system, the Post Collection use case is invoked. In this use case, collection information is recorded in the CSE system. At completion, the Collection is created and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts.

#### *Description*

Post Collection use case begins when a collection is available for posting in the CSE system.
This use case is used to enter collections into the CSE system. Each collection is posted to the payer's account. If the specific payer for whom the payment is being made cannot be identified, the collection is posted to the unidentified payer account. The system will not distribute or disburse collections posted to the unidentified payer account. These collections are considered held in "suspense".
The information provided with the collection will be recorded in the system. At a minimum, identifying information must be captured for the payer. Case and Debt Designation information will be captured regardless of the state's allocation policy. The employer may also indicate that the employee has been terminated. This will be reflected in the CSE system by ending the employment.
It is assumed that the volume of payments processed by County Workers will be extremely low because the SDU will have been implemented prior to the CSE system implementation. For cash control purposes it is desirable to group collections into batches for posting. Even though the volumes will be low, the CSE system will support the requirements for managing collection batches.
The SDU will provide payment information on a continuous basis throughout the day, rather than a single transmission at the end of the business day.
The Post Collection use case ends when the collection has been recorded in the CSE system.

***Operations***

*Receive collection*

Collections are received from the SDU. The sources will remit collections to the SDU. The SDU will provide collection information to the CSE system in an electronic form. When a collection is received, a Collection is created and the collection amount is posted to the designated payer's account. If the collection contains additional information, other updates may be applied. For example, if the employer indicates that the payer's employment has been terminated, and the end date is then set on the employment record. The Accounting Services common service is used for standardized financial processing, such as posting transactions, and updating Accounts and sub-accounts.
Actors: SDU

### *4A.3.2c.2.2.2.2 Use Case: Process Unidentified Payer Collections*

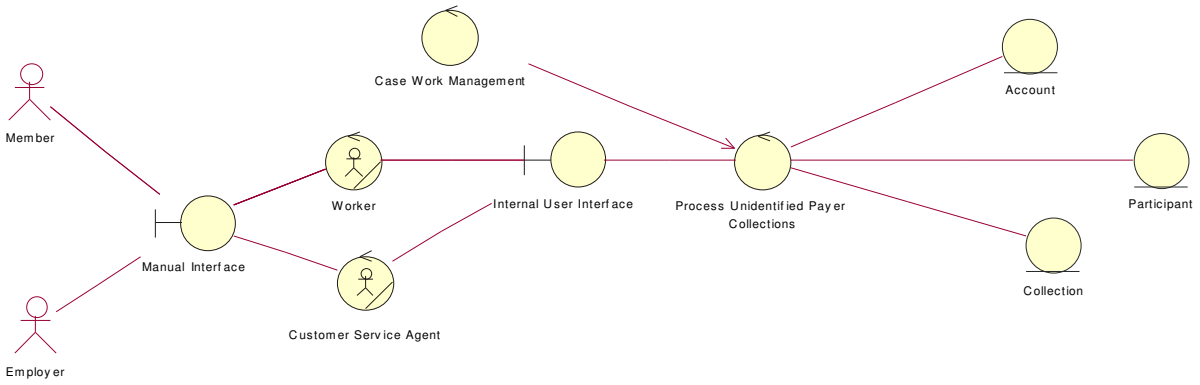



**Figure 4A.3.2c-40 Process Unidentified Payer Collections –** *Robustness Analysis Diagram*

#### *Overview*

Process Unidentified Payer Collections is the process of researching, identifying, and posting unidentified payer collections to the appropriate payer's account. When a collection cannot be posted to a payer and is held in suspense at the unidentified payer account, the Process Unidentified Payer Collections use case is invoked. In this use case, collection information is used to research the suspended collection. When a payer is identified in the CSE system the collection is updated and posted to the appropriate payer account. At completion, the Collection is updated and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts.

#### *Description*

Process Unidentified Payer Collections use case begins when a collection is suspended in the Unidentified Payer account.
Collections posted to the Unidentified Payer suspense account must be researched and processed to identify the actual payer and post the funds to the appropriate payer's account. To support the research activity, the SDU must provide as much information as possible in a defined and usable format. Additionally, access must be provided for workers to see an image of the original documents.
The worker accesses the system to attempt to identify the actual payer based on the identifying information recorded with the original collection. If a match is found, an adjustment transaction is created to post the funds from the unknown payer account to the actual payer's account.
On a periodic basis, these collections are automatically processed to attempt to identify the actual payer. If a match is found, a collections worker is prompted to review the match prior to releasing the funds. In order to clear the funds from suspense, an adjustment transaction is created to post the funds from the unidentified payer suspense account to the actual payer's account.
Customer service agents will receive inquiries from payers and payees who are looking for a specific collection. When the collection cannot be located in the appropriate account, this information can be used to search the collections applied to the unidentified

payer suspense account. If the collection is found here, it can be posted to the actual payer's account.
Funds that cannot be posted to an actual payer within a fixed timeframe must be treated as unclaimed property. State statutes typically provide guidelines for handling these funds. Commonly, unclaimed property is published for a fixed time period. If the funds remain unclaimed, they are transferred to the General Fund.
The Process Unidentified Payer Collections use case ends when the collection has been applied to the actual payer, or removed from suspense and processed as unclaimed property.

***Operations***

*Research Unidentified Payer Collection*

When a collection cannot be associated with the payer for whom the payment was made, the funds are held in suspense until they can be posted to the actual payer's account. Funds that have been posted to the unidentified payer suspense account must be researched in order to find the actual payer.
Actors: Internal Operation

*Receive additional collection information*

If the collection was received with incomplete or incorrect information that caused the collection to be posted as unidentified, subsequent research may result in obtaining additional information about the collection from the Case Member or Employer. This information can be used to update the Collection and post it to the appropriate payer's account.
Actors: Case Member, Employer

### *4A.3.2c.2.2.2.3 Use Case: Process NSF Collections*

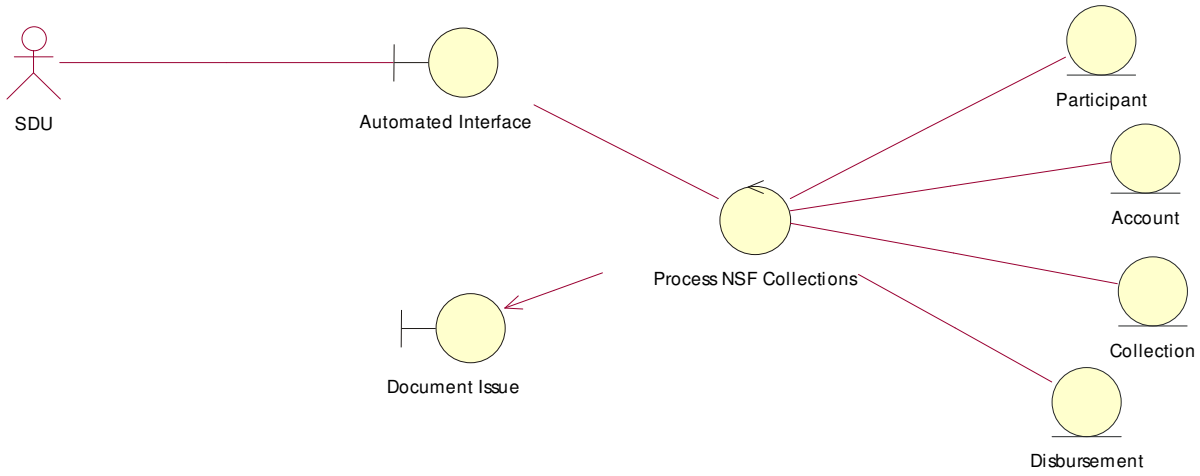



**Figure 4A.3.2c-41 Process NSF Collections –** *Robustness Analysis Diagram*

#### *Overview*

Process NSF Collections is the process of receiving notification of a returned deposit item due to non-sufficient funds, and updating the CSE system to reflect the change to the Collection. When a notice of Non-Sufficient Funds (NSF) is received from the bank, the Process NSF Collections use case is invoked. In this use case, the collection information is updated and adjustments are created to reflect the current status of the collection. At completion, the Collection is updated and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts.

#### *Description*

Process NSF Collections use case begins when a notice of Non-Sufficient Funds is received from the bank.

This use case is used when a notice of Non-Sufficient Funds (NSF) is received from the bank. In this situation the payer/employer does not have enough money in his/her checking account to cover the collection that has been paid to the child support agency. The bank reduces the balance of the SDU's account by the amount of the NSF collection. By the time the SDU and CSE system are notified of the NSF collection, the funds may have already been distributed and disbursed. Given the requirement to disburse funds to the CP within two days of receiving the collection, it is likely that the funds will have been disbursed. However, it is possible that the collection could not be distributed, or that it could not be disbursed prior to receiving the NSF notification. When the NSF notice is received, the SDU will generate the required documents to the account holder (employer or payer). The CSE system will update the Collection to reflect the status of NSF and the employer or payer will be updated to document the NSF incident. The payer's account will also be updated to reverse the collection and support reconciliation with the bank.
Additional analysis will be necessary to determine if any other functions are required within the CSE system to support NSF situations. The requirements do not address the

issues of recovering NSF funds, reversing distributions, etc. At this time it is not clear whether the SDU or the State will be responsible for making up the shortage of funds, or whether the funds will be recovered from the employer or payer.
The Process NSF Collections use case ends when the collection has been updated and the appropriate adjustments have been made.

***Operations***

*Receive Non-sufficient Funds notification*

The Non-sufficient Funds notification is received from the bank. The notice identifies the detail item within the deposit that has been returned. The accounts in the CSE system must be updated to reverse the individual deposit item in order to reconcile the account. The CSE system must also update the Collection to reflect the NSF status, and the employer or payer to document the incident.
Actors: SDU

### *4A.3.2c.2.2.2.4 Use Case: Process Automatic Withdrawal Collections*

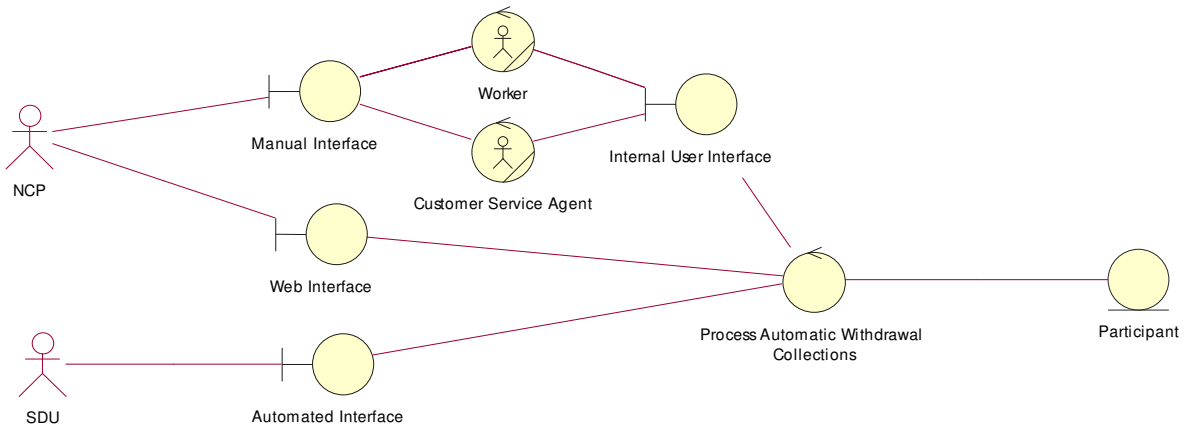



**Figure 4A.3.2c-42 Process Automatic Withdrawal Collections** – *Robustness Analysis Diagram*

#### *Overview*

Process Automatic Withdrawal Collections provides the services to support enabling payers to elect to have support payments withdrawn from their bank accounts automatically. This use case supports enrolling a payer in this service and maintaining the account information, as well as generating the electronic instructions on a periodic basis to create the payments.

#### *Description*

Process Automatic Withdrawal Collections use case begins when a payer enrolls in the service or changes information about the account enrolled in the service, or when it is time to generate a payment from an enrolled account.
When a payer enrolls in the automatic withdrawal service, the payer's bank account and bank information is recorded in the CSE system. This information will be updated if the payer changes banks or accounts. If an automatic withdrawal is rejected by the payer's bank, the process is suspended until the payer resolves the problem.
Periodically, the CSE system will initiate a request for the SDU to produce a debit EFT from the payer's account to the SDU account. When the payer enrollment is recorded, the timing of the payments and the amount is established.

#### *Operations*

*Receive automatic withdrawal information*

Receive automatic withdrawal information is an operation that allows the payer to enroll in the automatic withdrawal service. The payer provides the information necessary to produce automatic withdrawals and the authorization to access funds in the designated account.
Actors: NCP, SDU

*Generate automatic withdrawal*

Generate automatic withdrawal is an operation that creates a request for an electronic funds transfer to remove funds from the payers bank account and send them via EFT to the SDU.
Actors: SDU

### *4A.3.2c.2.2.2.5 Use Case: Process Local Receipts*

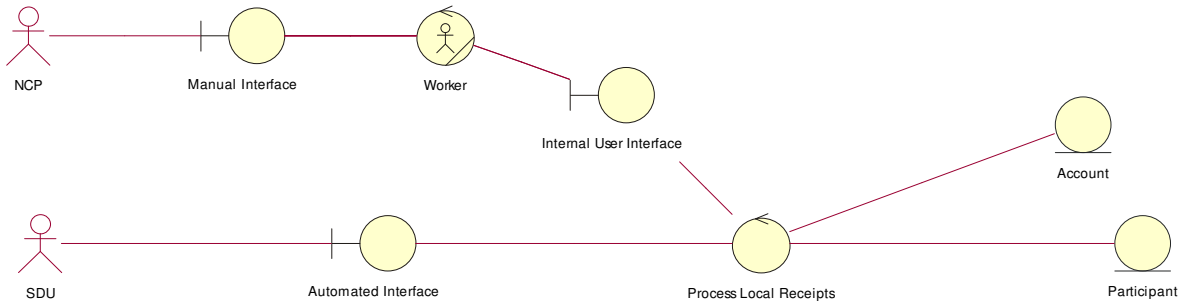



**Figure 4A.3.2c-43 Process Local Receipts** – *Robustness Analysis Diagram*

#### ***Overview***

Process Local Receipts is the process of receiving walk-in payments from payers in the Local Child Support Agency (LCSA). When a payer makes a satisfactory walk-in payment, the Process Local Receipts use case is invoked. In this use case the collection must be recorded and transferred to the SDU for inclusion with the standard collections. The payer must be able to obtain a receipt for the payment to provide evidence that the collection was made at the LCSA. Externally, the funds received by the LCSA must be transferred to the SDU for deposit in the statewide collections account. At completion, the Local Receipt is created and sent to the SDU.

#### ***Description***

Process Local Receipts use case begins when an LCSA receives a support payment in their local office.
The SDU is required to assume responsibility for the receipting of IV-D Collections and wage withholding collections for non IV-D cases. Therefore, the majority of this workload will be transferred from the local offices to the SDU. However, it will be necessary to accept a support payment in the local office and provide some form of receipt that the payment was made. These local payments must then be sent to the SDU, and the SDU will send them back to the CSE System in the standard collection transmissions. To support this capability, it will also be necessary for the LCSA to deposit the funds in a bank account and transfer those funds to the SDU's bank account. This process is external to the CSE System. It is recommended that an automatic sweep be established to transfer the funds from the local accounts on a daily basis. This use case ends when the local support payment has been sent to the SDU.

#### ***Operations***

*Receive walk-in payment*

When a payer makes a walk-in payment, the CSE system must produce a receipt, and create a local collection. The local collection is not the same as a Collection. A Collection is only created when a collection is received from the SDU.
Actors: Payer

### *4A.3.2c.2.2.2.6 Use Case: Adjust Intercept Collection*

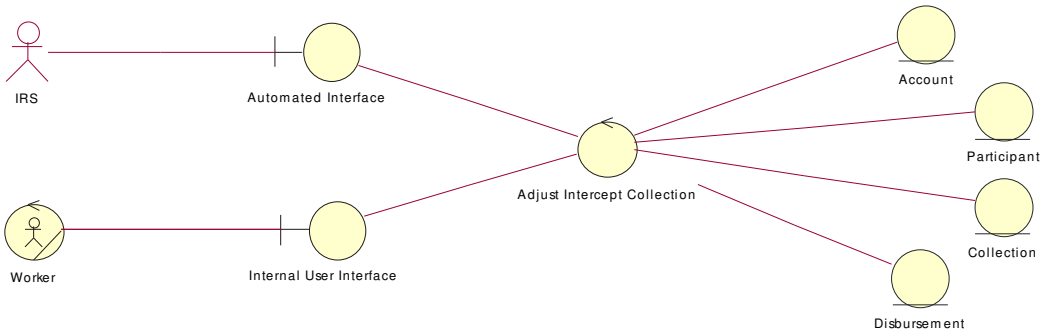



**Figure 4A.3.2c-44 Adjust Intercept Collection –** *Robustness Analysis Diagram*

#### ***Overview***

Adjust Intercept Collection is the process of receiving notification from the IRS that a previous intercept collection has been reversed (in whole, or in part), and reacting to that notification. When an IRS intercept adjustment is received, the Adjust Intercept Collection use case is invoked. In this use case, the payer's account is updated to reflect a negative collection, or a reversal of the original collection, to reflect the fact that the IRS has deducted the adjustment from the gross collections that are sent to the state. If the reversed funds have been disbursed, they must be recovered in order to restore the funds to the support collections account. At completion, the original Collection is updated, and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts.

#### ***Description***

Adjust Intercept Collection use case begins when an intercept collection adjustment is received from the IRS.

IRS Intercept collections may be adjusted in a subsequent month. These adjustments reflect the fact that the IRS is taking back the collection (or part of it) and refunding the money to the payer. At the aggregate level, this adjustment is simply netted out of the total collections for the month.
The specific adjustment(s) necessary to reflect this situation will be driven by the status of the original collection.
This use case ends when the original collection has been updated and the appropriate adjustments have been made.

#### ***Operations***

*Receive Intercept Collection Adjustment*

When the IRS reverses an intercept collection, the original collection is updated and the payer's account is updated to support reconciliation of the accounts. The distribution must also be adjusted so that the payer is not given credit for making a payment that was never really received.
Actors: IRS

### *4A.3.2c.2.2.2.7 Use Case: Process Misapplied Collections*

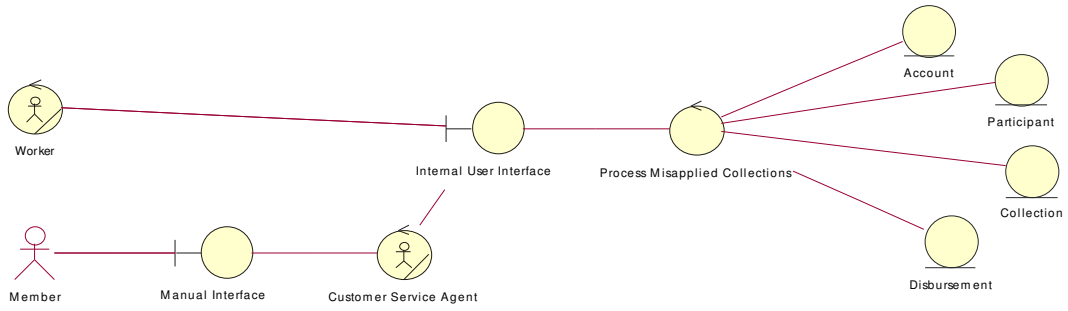



**Figure 4A.3.2c-45 Process Misapplied Collections –** *Robustness Analysis Diagram*

#### ***Overview***

Process Misapplied Collections is the process of detecting that a collection has been applied to the wrong payer, and making any necessary adjustments to correct it. When a misapplied collection is detected, the Process Misapplied Collections use case is invoked. In this use case, the collection information is updated and adjustments are created to correct the error. At completion, the Collection is updated and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts.

#### ***Description***

Process Misapplied Collections use case begins when a misapplied collection is detected.

When this situation is detected, the collection must be assessed to determine how it will be corrected. If the collection has been disbursed, the correct payer's account must be updated to correct the mistake. These funds will be distributed and disbursed in the standard processing. The original collection will also be updated to reflect the new status and the funds should be recovered from the payee who received them in error. Additional research may be necessary to determine how the money will be recovered. If the misapplied collection has not been disbursed, it must be reversed and re-posted to the correct payer's account.
Misapplied Collections can be identified in a number of ways. Research of funds that cannot be distributed may identify collections that have been posted to the wrong payer. Customer service inquiries regarding missing checks, or missing collections may provide the input necessary to search other payers for a misapplied collection.
This use case ends when the original collection has been updated and the appropriate adjustments have been made.

***Operations***

*Identify Misapplied Collection*

When a Misapplied Collection is identified, the original collection must be updated. A new collection must be created for the correct payer, and the correct payer's account must be updated.
Actors: Customer Service, Case Member

### 4A.3.2c.2.2.3 Business Service: Distribution

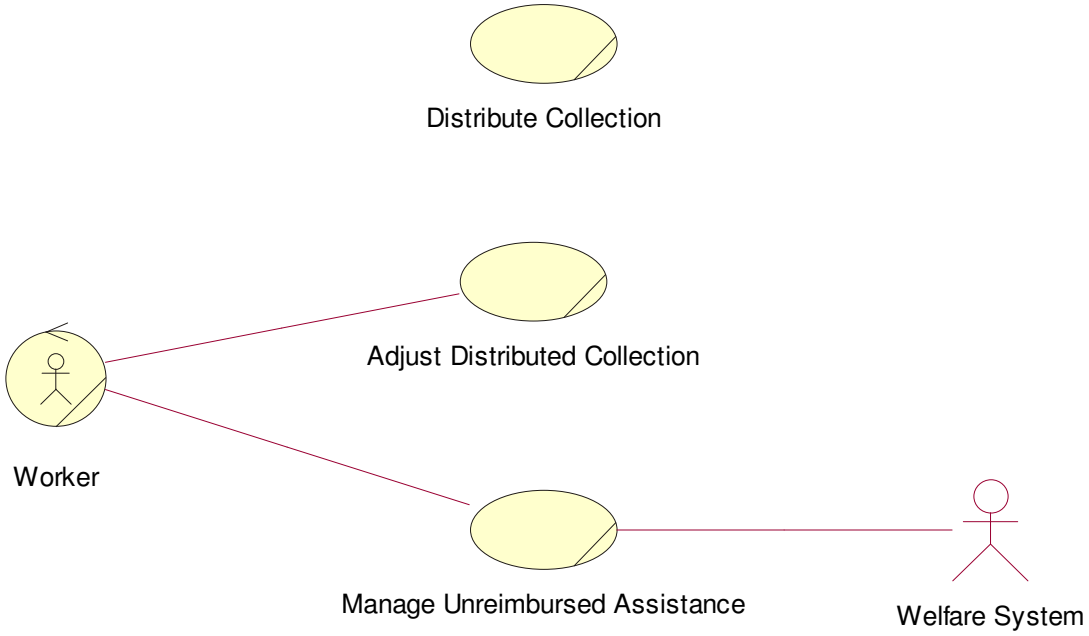



**Figure 4A.3.2c-46 Distribution** - *Use Case Diagram*

Distribution is defined by three major use cases: Distribute Collection, Adjust Distributed Collection, and Manage Unreimbursed Assistance.

### *4A.3.2c.2.2.3.1 Use Case: Distribute Collection*

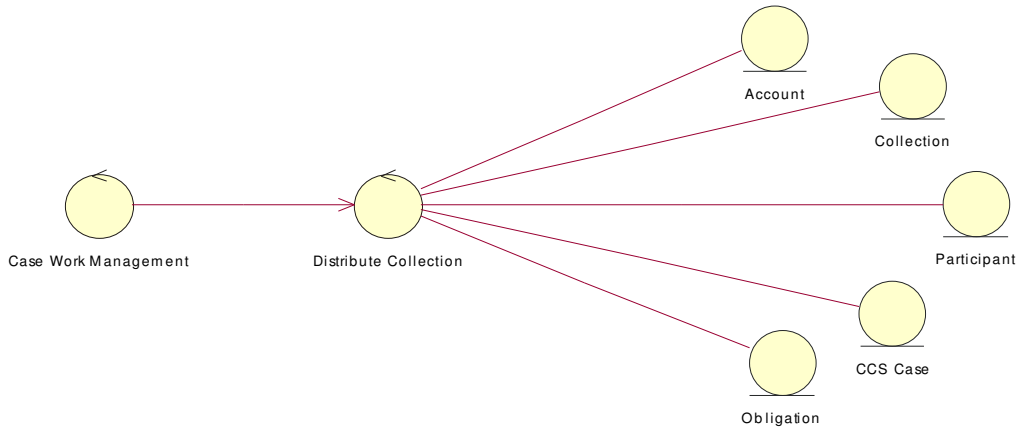



**Figure 4A.3.2c-47 Distribute Collection –** *Robustness Analysis Diagram*

#### ***Overview***

Distribute Collection is the process of applying support collections to satisfy the payer's obligations in the CSE system. When a collection is posted to a payer account in the CSE system, the Distribute Collection use case is invoked. In this use case, the collection is evaluated, and the specific obligations to be satisfied are identified. At completion, the Collection is updated and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts and sub-accounts.

#### ***Description***

Distribute Collection use case begins when a collection is available for distribution in the CSE system.
This use case applies collections to specific obligations according to a distribution hierarchy determined by Federal and state rules. The distribution hierarchy varies depending on the collection source (i.e., IRS). State and Federal rules are followed to determine the specific obligations that are eligible for distribution based on the collection information. Support collections must be distributed within two days of receiving the collection. Distributed collections payable to individual CPs must be disbursed within two days of receiving the collection.
"Statewide allocation" refers to the concept of distributing a collection across a payer's cases regardless of the county to which those cases are assigned. With a single disbursement facility, the SDU, it is possible for collections to be receipted and distributed with a statewide perspective. Prior to centralizing this function, a collection receipted in a county office would have been distributed to satisfy obligations in that county only.
Each collection that has been posted to a payer account is examined. The appropriate obligations are assembled in order to determine how the collection will be applied and to whom it will be disbursed. The monthly obligation amount due and the obligation balance are both considered as factors in determining the distribution amounts. The

Accounting Services common service is utilized to post transactions that will transfer the funds from the payer's account to the payee's account.
A single collection may be distributed to satisfy one or more obligations. It is possible that a single collection will be disbursed to more than one payee.
Prior to distributing the collection to satisfy support obligations, it may be necessary to apply the collection to a payer advance. When IRS tax intercept collections are adjusted, the IRS notifies the CSA that it has taken funds back and refunded them to the payer. In some cases, the original intercept collection has already been disbursed. Therefore, the CSA is in a position where it has "advanced" the payer funds until the payer makes payment. The specific rules and requirements for satisfying this type of advance must be identified during analysis.
This use case ends when the collection has been distributed.

***Operations***

*Detect need to distribute collection*

When a collection is detected that needs to be distributed, the system performs the automated distribution process. The Collection is updated to reflect that it has been distributed. Transactions are created, and the appropriate accounts and sub-accounts (obligations) are updated.
Actors: Internal operation

### *4A.3.2c.2.2.3.2 Use Case: Adjust Distributed Collection*

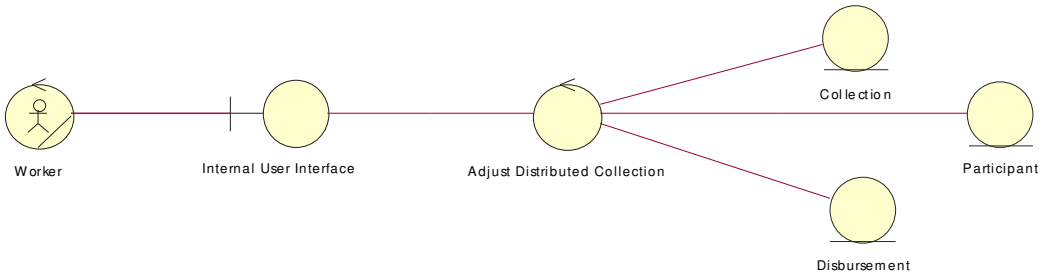



**Figure 4A.3.2c-48 Adjust Distributed Collection** – *Robustness Analysis Diagram*

#### ***Overview***

Adjust Distributed Collection is the process of correcting the erroneous distribution of a support collection in the CSE system. When a collection has been distributed incorrectly, the Adjust Distributed Collection use case is invoked. In this use case, collection and disbursement information is updated in the CSE system. At completion, the Collection is updated and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts and sub-accounts

#### ***Description***

Adjust Distributed Collection use case begins when a distributed collection must be adjusted.
This use case is used to make adjustments when a collection has been distributed. Reversing transactions are necessary to “undo” the original distribution. New distribution transactions apply the collection to the appropriate sub-accounts.
This use case ends when the distributed collection has been corrected.

#### ***Operations***

*Detect need to adjust distributed collection*

When a distributed collection that needs to be adjusted is detected, the Accounting Services common service is invoked to reverse the original distribution, and update the affected accounts and sub-accounts.
Actors: Internal Operation

### *4A.3.2c.2.2.3.3 Use Case: Manage Unreimbursed Public Assistance*

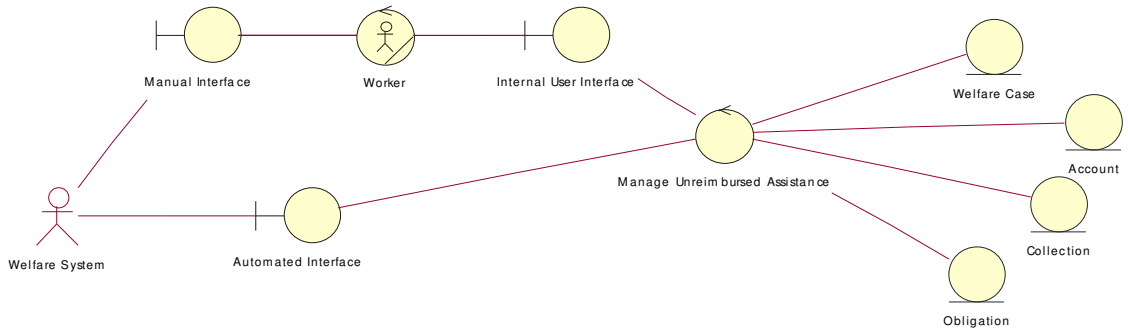



**Figure 4A.3.2c-49 Manage Unreimbursed Public Assistance** – *Robustness Analysis Diagram*

#### *Overview*

Manage Unreimbursed Public Assistance is the process of maintaining accurate balances of unreimbursed public assistance (UPA) pools for welfare and foster care recipients. When a collection is distributed to an assigned obligation, the Manage Unreimbursed Public Assistance use case is invoked. When information about assistance benefits and cost of care is received, the Manage Unreimbursed Public Assistance use case is invoked. In this use case, the welfare distribution process is executed to determine how much of the assigned collection will be retained to offset the unreimbursed public assistance pool. In this use case, the assistance benefit information is applied to the UPA in order to maintain an accurate balance. At completion, the UPA balance is updated and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts and sub-accounts.

#### *Description*

Manage Unreimbursed Assistance use case begins when either a collection has been distributed to satisfy assigned obligations, or welfare / foster care benefit information is received.
This use case performs the welfare distribution function and maintains the Unreimbursed Public Assistance (UPA) pool for the CP, according to Federal regulation.
When a CP receives welfare or a child is placed in foster care, the support obligations that are payable to the CP are assigned to the state. Assigned collections are collections distributed to satisfy assigned obligations. An assigned collection has a Federal share component and a state share component. The Federal share must be forwarded to ACF/OCSE. The state share may be forwarded to the family or retained by the state.
At state-option, California has elected to continue the practice of forwarding the first $50 of assigned current support collected for the month to the family. The remainder of the assigned collections is retained by the state and used to offset the UPA. Any amount that exceeds the UPA balance must be forwarded to the family.
This use case receives grant data from the IV-A system(s) in order to maintain an accurate balance of the CP's Unreimbursed Public Assistance (UPA). This data includes grants paid to the CP and any adjustments made to those grants. The alliance

has assumed that foster care financial data (cost of care) will also be available in a similar format to support this use case.
This use case communicates collection data to the IV-A system(s) and the IV-E system. This data includes collections that are assigned and retained, as well as collections that are forwarded to the family.

***Operations***

*Receive welfare assistance (grant) information*

The welfare assistance information is received from the welfare system. This information identifies the primary person for the welfare case that received the assistance, the welfare case, and the amount of the assistance. The CP's UPA is updated to maintain an accurate balance of unreimbursed public assistance.
Actors: Welfare

*Receive foster care cost of care information*

The foster care cost of care information is received from the welfare system. This information identifies the child who has been placed in foster care, the foster care case, and the cost of care. The Child's UPA is updated to maintain an accurate balance of Unreimbursed public assistance.
Actors: Welfare

*Detect need to perform welfare distribution*

When a distribution is detected that needs to be applied to UPA, the system performs the automated welfare distribution process. Transactions are created, and the appropriate accounts and sub-accounts are updated. The CP or Child's UPA is updated.
Actors: Internal Operations

### 4A.3.2c.2.2.4 Business Service: Disbursement

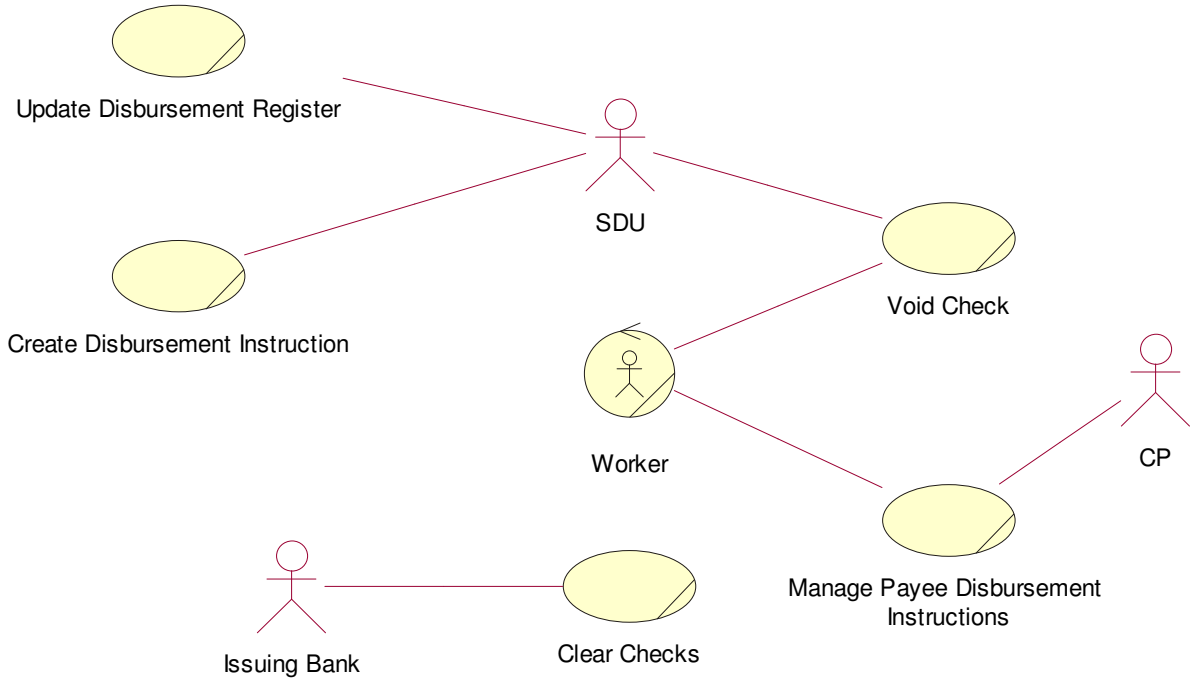



**Figure 4A.3.2c-50 Disbursement** - *Use Case Diagram*

Disbursement is defined by five major use cases: Update Disbursement Register, Create Disbursement Instruction, Void Check, Manage Payee Disbursement Instructions, and Clear Checks.

### *4A.3.2c.2.2.4.1 Use Case: Update Disbursement Register*

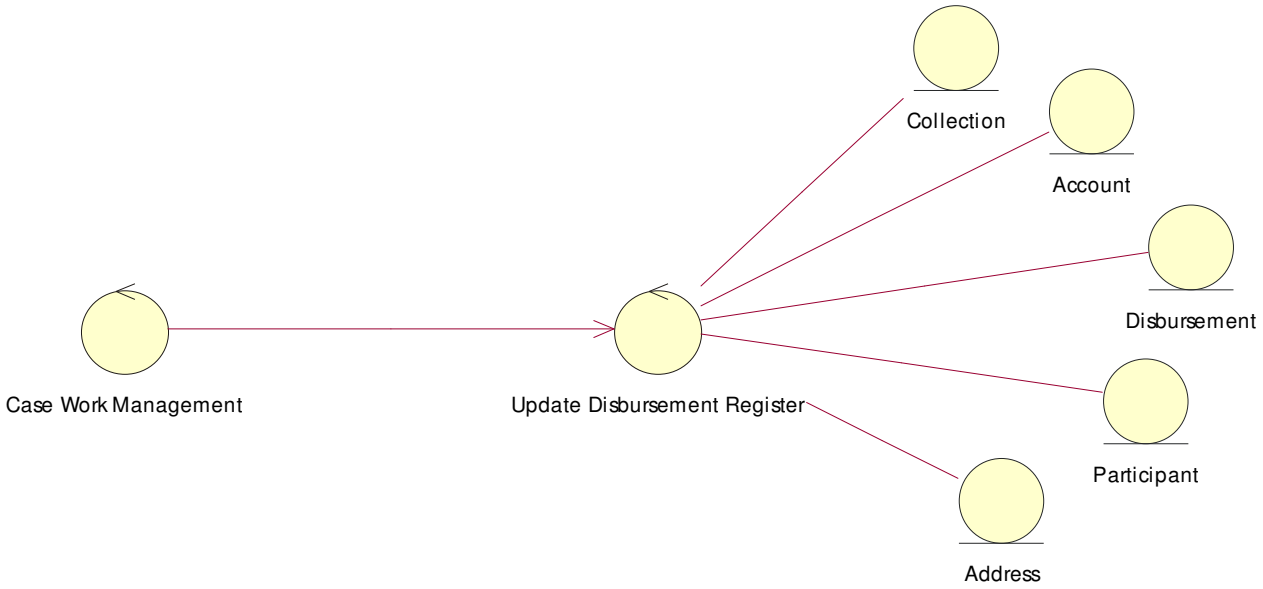



**Figure 4A.3.2c-51 Update Disbursement Register** – *Robustness Analysis Diagram*

#### ***Overview***

Update Disbursement Register is the process of recording disbursements in the CSE system. When funds are available for disbursement to a payee, the Update Disbursement Register use case is invoked. In this use case, disbursement information is recorded in the CSE system. At completion, the Disbursement Register items are created and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts.

#### ***Description***

Disbursement Register use case begins when funds are available for disbursement to a payee.
This use case is used to process funds that are available for disbursement in a participant or third party account. Funds must be disbursed to individuals as soon as possible. Funds available for disbursement to state agencies or other entities may be held to aggregate a larger disbursement and reduce the number of individual disbursements produced (weekly or monthly processing).
In order to disburse funds, a transaction(s) must be created to move the funds from the participant or third party account to the cash disbursement account, and an entry must be recorded in the disbursement register. Additional requirements must be specified to determine how much detail will be required on the check stub and to determine how much detail must be recorded in the disbursement register.
If a participant has funds available for disbursement, but no verified address or disbursement instructions, a request for locate is produced. The funds will be held in suspense until adequate information is available to support disbursement. Additional requirements must be specified to determine the procedures for handling funds that

cannot be disbursed (e.g., refund to payer, unclaimed funds processing, transfer to general fund).
Prior to disbursing any funds to the payee, it may be necessary to apply the collection to a payee offset. Payee offsets are created when it is necessary to make adjustments which involve recovering funds that have been disbursed to the payee. The specific rules and requirements for satisfying this type of advance must be identified during analysis.
This use case ends when the disbursement register items have been created and the funds have been posted to the disbursement account.

***Operations***

*Detect disbursable funds*

When funds are detected that need to be disbursed, the system performs the automated disbursement process. Transactions are created (via Accounting Services), the disbursement register is updated, and the appropriate accounts are updated.
Actors: Internal Operation

### *4A.3.2c.2.2.4.2 Use Case: Create Disbursement Instruction*

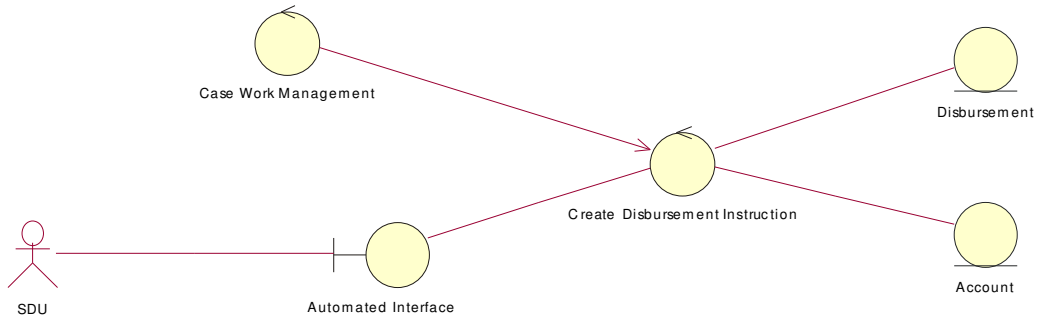



**Figure 4A.3.2c-52 Create Disbursement Instruction** – *Robustness Analysis Diagram*

#### ***Overview***

Create Disbursement Instruction is the process of creating instructions for the SDU to produce a disbursement from the CSE system. When a disbursement is available for generation, the Create Disbursement Instruction use case is invoked. In this use case, disbursement information is formatted for the SDU and the disbursement register item(s) is updated. At completion, the disbursement instruction is sent to the SDU, the disbursement confirmation is received from the SDU, and the disbursement register is updated.

#### ***Description***

Create Disbursement use case begins when a disbursement is available for payment from the CSE system.
This use case is used to create an instruction to disburse funds to a participant or third party. Disbursement instructions are sent to the SDU for processing. After producing a disbursement, the SDU provides a response containing the confirmation, check number, and print date (as appropriate). This information is updated in the disbursement register.
This use case ends when the disbursement confirmation is received from the SDU and the disbursement register is updated.

#### ***Operations***

*Generate disbursement instruction*

When the disbursement register is updated to reflect funds that need to be disbursed, an instruction is created and sent to the SDU to facilitate the disbursement. The disbursement register is updated to reflect the pending disbursement.
Actors: SDU

*Receive disbursement confirmation*

After producing the disbursement (check or EFT), the SDU creates and sends a confirmation to the CSE system. The confirmation information is used to update the disbursement register to support auditing and research.
Actors: SDU

### *4A.3.2c.2.2.4.3 Use Case: Void Check*

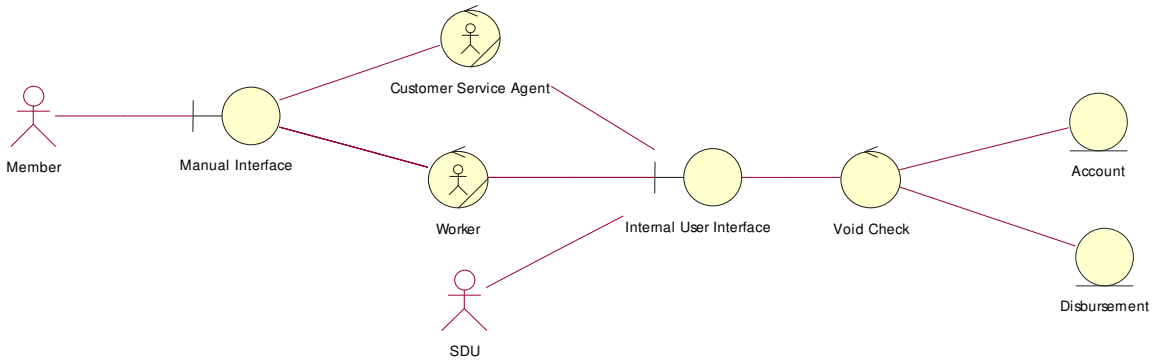



**Figure 4A.3.2c-53 Void Check** – *Robustness Analysis Diagram*

#### *Overview*

Void Check is the process of canceling a check that was produced by the CSE system. When a check must be cancelled in order to complete an adjustment, the Void Check use case is invoked. In this use case, disbursement register information is updated in the CSE system. At completion, the Disbursement Register is updated and the Accounting Services common service is invoked to create the appropriate transaction(s) and update the appropriate accounts.

#### *Description*

Void Check use case begins when an issued check must be voided.

This use case is used when a check must be voided. The request may come directly from a Customer Service Worker, LCSA worker, DCSS worker or SDU worker (specific security restrictions and responsibilities will be determined during detailed design). When a check is voided, it may be reissued in its original form, or the funds may be left in the payee's account for further adjustment or subsequent disbursement. In either case, a transaction(s) must be issued to restore the funds from the cash disbursement account to the payee account. If the check is to be reissued immediately, a request is sent to the Update Disbursement Register use case to produce a new disbursement.
Assumption: If a Stop Payment instruction is necessary, the worker creating the adjustment will confirm the Stop with the issuing bank before voiding the disbursement in the CSE system.
This use case ends when the Disbursement Register has been updated and the funds have been restored to the payee's account.

#### *Operations*

*Detect need to cancel disbursement*

When the need to cancel a disbursement is identified, the disbursement register is updated to reflect the new status. Transactions are created (via Accounting Services), the disbursement register is updated, and the appropriate accounts are updated.
Actors: Customer Service, Case Member

### *4A.3.2c.2.2.4.4 Use Case: Manage Payee Disbursement Instructions*

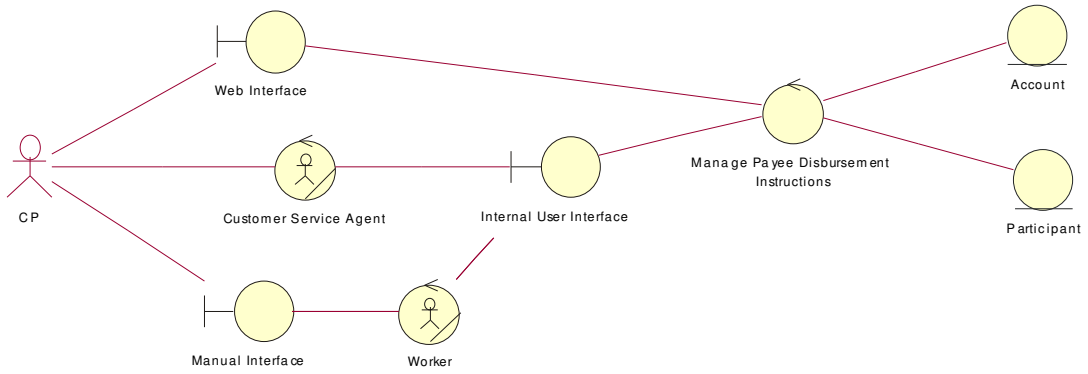



**Figure 4A.3.2c-54 Manage Payee Disbursement Instructions** – *Robustness Analysis Diagram*

#### ***Overview***

Manage Payee Disbursement Instructions is the process of recording disbursement instructions for a payee to facilitate electronic funds transfer (EFT). When a payee enrolls in the EFT service, or changes their banking information, the Manage Payee Disbursement Instructions use case is invoked. In this use case, bank, account, and authorization information is recorded/updated in the CSE system. At completion, the payee disbursement instruction is created or updated.

#### ***Description***

Manage Payee Disbursement use case begins when a payee provides new or updated disbursement instruction information.

This use case is used to accept and update payee instructions for electronic disbursement. If a payee elects to receive disbursements via EFT/direct deposit, they must submit instructions identifying the bank and account number, and authorizing DCSS to provide disbursements electronically. Additional specifications are required to determine if physical documentation must also be sent to the payee when an electronic disbursement is produced.
This use case ends when the disbursement instructions have been recorded in the CSE system.

#### ***Operations***

*Receive electronic disbursement information*

When a payee submits the authorization for EFT, the payee's disbursement instructions are updated to reflect the information required to produce EFT disbursements. The payee may subsequently, change the account or bank information, or cancel the enrollment in electronic disbursements.
Actors: Case Member

### *4A.3.2c.2.2.4.5 Use Case: Clear Checks*

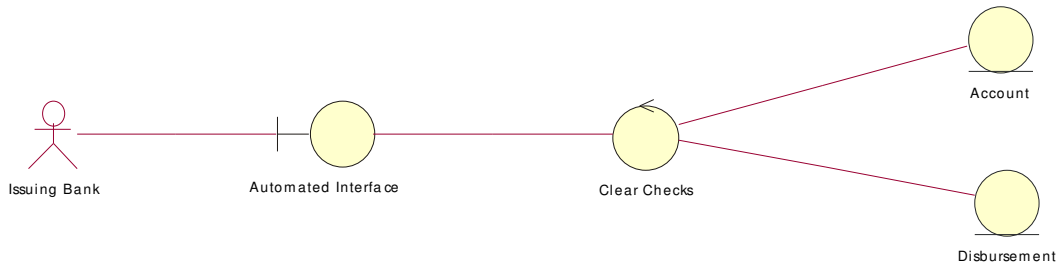



**Figure 4A.3.2c-55 Clear Checks –** *Robustness Analysis Diagram*

#### ***Overview***

Clear Checks is the process of updating the disbursement register to reflect the status of disbursements when they have cleared the bank account. When the bank sends the account reconciliation information, the Clear Checks use case is invoked. In this use case, disbursement register information is updated in the CSE system. At completion, the disbursement register is updated.

#### ***Description***

Clear Checks use case begins when the bank provides account reconciliation information.
This use case is used to update the status of disbursements as they are cleared through the issuing bank. This information is used to support reporting, balancing, and communicating with payees.

#### ***Operations***

*Receive bank account reconciliation information*

When the bank provides the account reconciliation data, the disbursement register is updated to reflect the current status of each disbursement.
Actors: Bank

## 4A.3.2c.2.3 Program Management

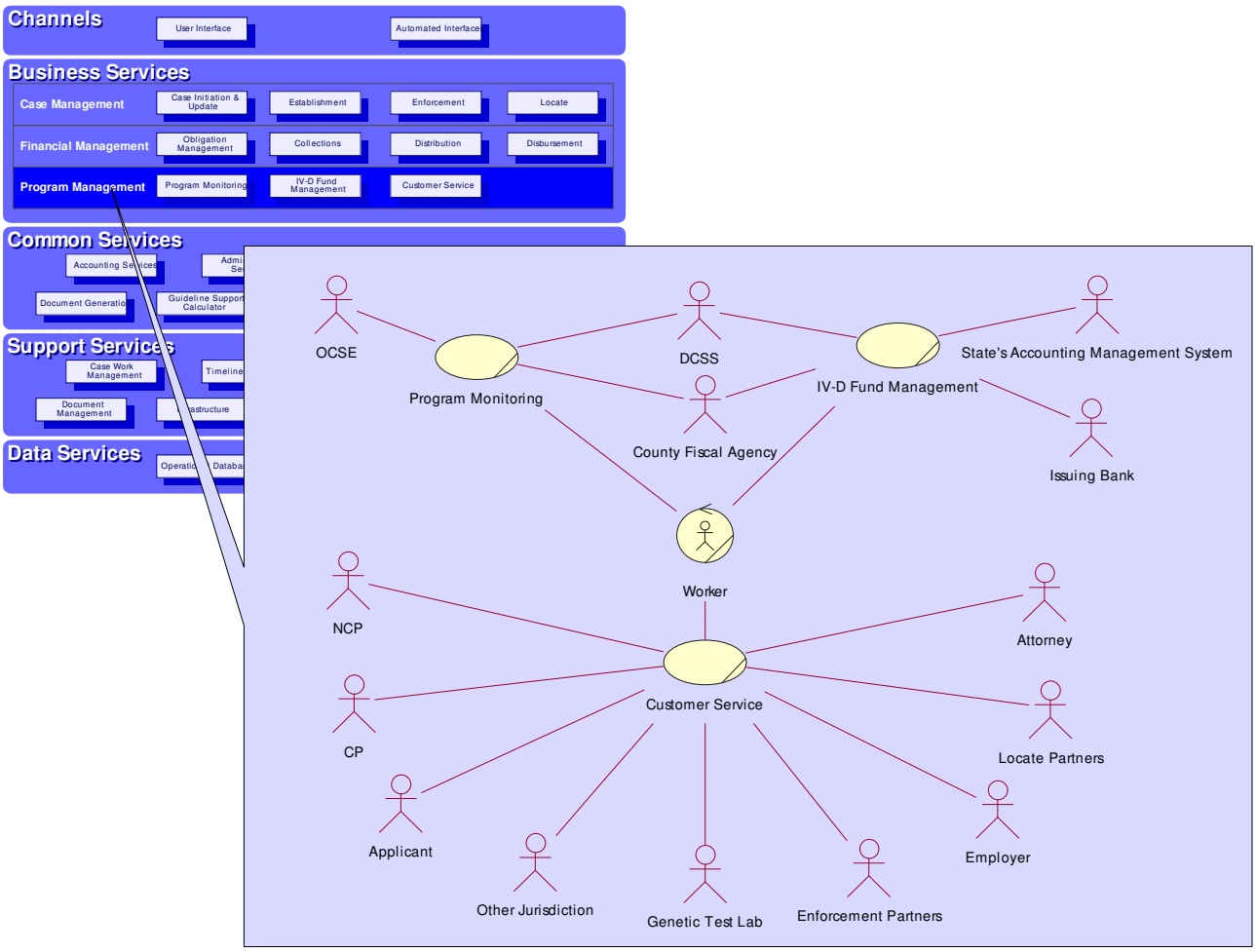



**Figure 4A.3.2c-56 Program Management Context Diagram -** *Program Management is one of three categories of CSE functions. The three business services within Program Management are highlighted in the functional architecture and displayed as use cases in the context diagram.*

Program Management is made up of three business services: Program Monitoring, IV-D Fund Management, and Customer Service. These business services provide the tools and capabilities to assist California's child support program in operating at peak performance, accurately managing program funding, and providing the highest level of service to its customers and partners.

### 4A.3.2c.2.3.1 Business Service: Program Monitoring

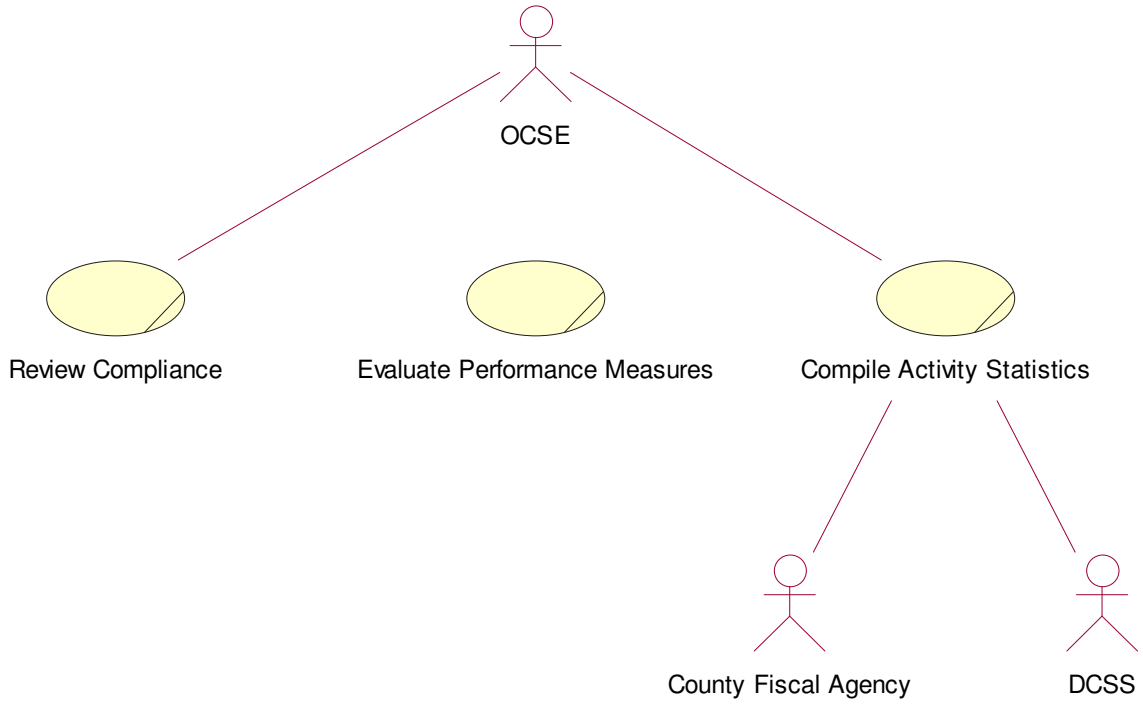



**Figure 4A.3.2c-57 Program Monitoring –** *Use Case Diagram*

Program Monitoring is defined by three major use cases: Review Compliance, Evaluate Performance Measures, and Compile Activity Statistics.

### *4A.3.2c.2.3.1.1 Use Case: Review Compliance*

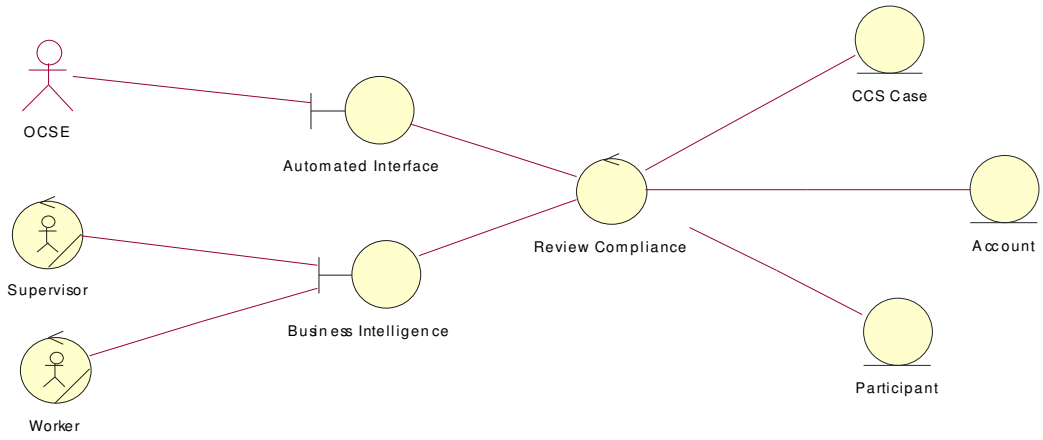



**Figure 4A.3.2c-58 Review Compliance –** *Robustness Analysis Diagram*

#### ***Overview***

Review Compliance is the process of evaluating the Child Support Program's compliance with Federal and state timeframe requirements and standards. The Program's compliance is reviewed on a periodic basis, by analyzing the data within the CSE system and measuring the level of compliance with requirements and standards. In this use case, CCS Case, Participant, and Account information is analyzed and formatted for review. At completion, the compliance review results are stored and the reports are generated.

#### ***Description***

This use case begins when it is time to review the Child Support Program's compliance, or evaluate the Program's ability to meet Federal and state standards.
Timeframes that will be analyzed for compliance are the following:

- Expedited process
- Locate
- Paternity establishment
- Support order establishment
- Review and adjustment
- Enforcement

This use case will apply the Self-Assessment Guidelines mandated by OCSE to support compliance reviews and communicate compliance information to OCSE.
Another aspect of compliance review is facilitated by internal audits. Case samplings are created and the sample is audited to document findings that will be used in the evaluation of the Program.
Review compliance will also enable the user to access tools to facilitate the generation of Ad hoc Queries and Reports.

***Operations***

*Generate Self-Assessment Report*

Generate Self-Assessment Report is an operation that applies the Self-Assessment Guidelines and produces a Self-Assessment report.
Actors: Internal Operation

*Perform ad hoc Query / Reporting*

This operation allows users to access tools to create and execute ad hoc queries and reports against compliance data.
Actors: Internal Operation

*Conduct compliance audit*

This operation selects a random sample of cases and produces an audit report to document the results.
Actors: Internal Operation

### *4A.3.2c.2.3.1.2 Use Case: Evaluate Performance Measures*

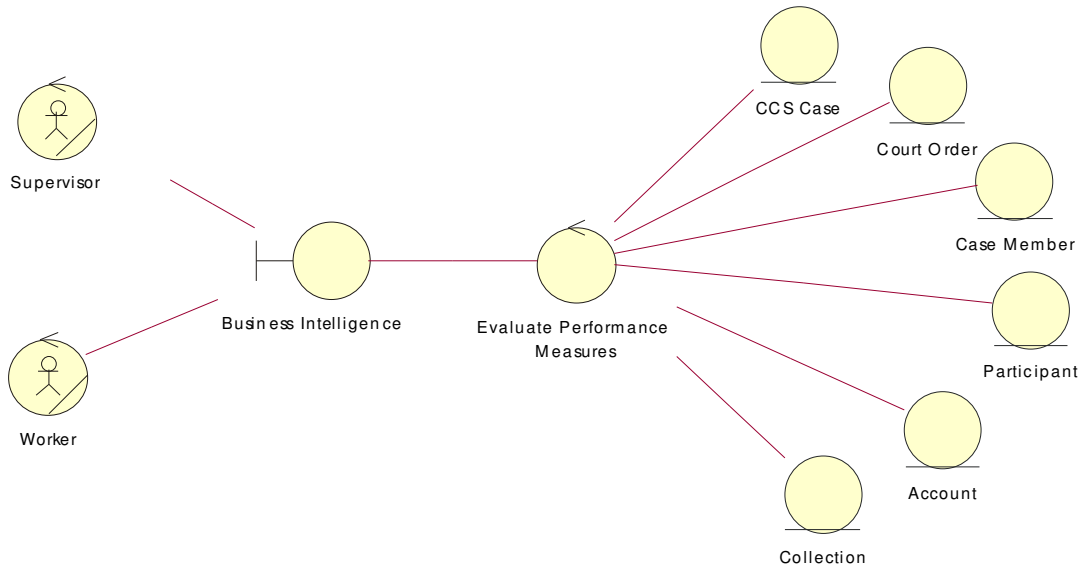



**Figure 4A.3.2c-59 Evaluate Performance Measures** – *Robustness Analysis Diagram*

#### *Overview*

Evaluate Performance Measures is the process of evaluating the Child Support Program's ability to deliver services efficiently and effectively. The Performance Measures are reviewed on a periodic basis, by analyzing the data within the CSE system, measuring the Program's performance, and comparing the current performance to the performance in prior periods. In this use case, CCS Case, Participant, and Account information is analyzed and formatted for review. At completion, the performance measure results are stored and the reports are generated.

#### *Description*

This use case begins when it is time to review the Child Support Program's performance measures, or evaluate the Program's ability to meet Federal and state standards. State standard performance measures are:

- Percent of cases with a court order for current support
- Percent of cases with collection of current support
- Average amount collected per case for cases with collections
- Percent of cases with an order for arrearages
- Percent of cases with arrearages that were collected
- Percent of alleged fathers who were served with a summons and complaint to establish paternity or a support order during the period
- Percent of children for whom paternity has been established during the period

- Percent of cases that had a support order established during the period
- Total child support dollars collected per $1.00 of total expenditure
- Cases where medical support has been ordered
- Cases where health insurance is provided as ordered
- Requests for complaint resolution filed
- Complaints resolved timely
- State hearings filed by the fifteenth calendar day of the month following the end of each quarter

Federal standard performance measures are:

- Paternity establishment percentage
- Percent of cases with a child support order
- Current collections performance
- Arrearage collections performance
- Cost-effectiveness performance level

***Operations***

*Generate performance measures report*

This operation gathers the required data and formats the performance measures report.
Actors: Internal Operation

*Perform ad hoc Query / Reporting*

This operation allows users to access tools to create and execute ad hoc queries and reports against performance measure data.
Actors: Internal Operation

### *4A.3.2c.2.3.1.3 Use Case: Compile Activity Statistics*

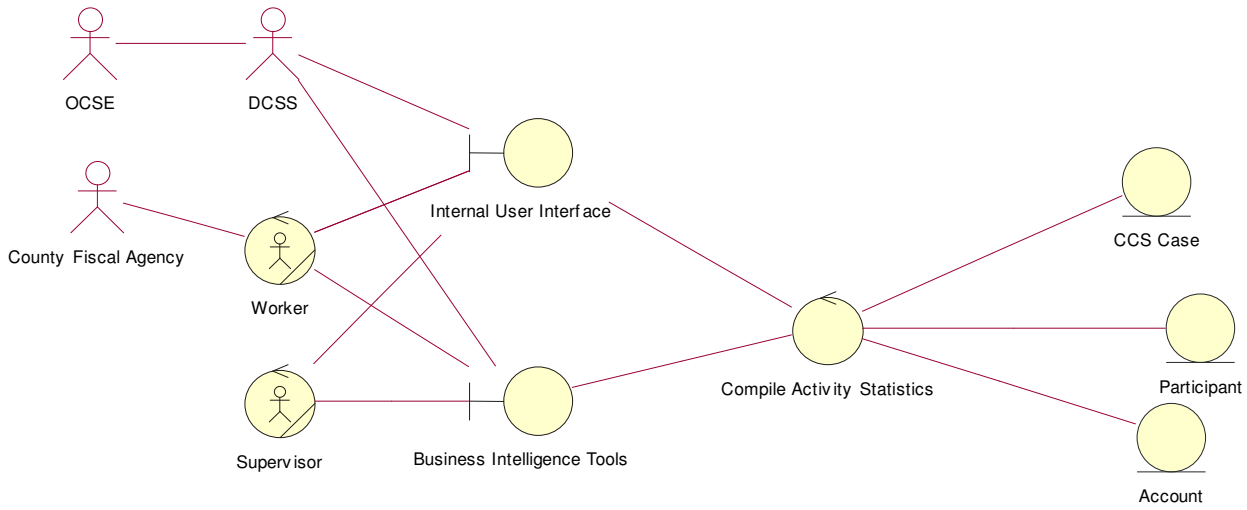



**Figure 4A.3.2c-60 Compile Activity Statistics** – *Robustness Analysis Diagram*

#### *Overview*

Compile Activity Statistics is the process of capturing, and gathering statistical information to support the generation of the OCSE-157 and other reports used for program forecasting, pilot project monitoring, and legislative inquiries. In this use case, CCS Case, Participant, and Account information is gathered and stored in a format to support report generation and ad hoc access. At completion, the statistical information is updated and the appropriate reports are generated.

#### *Description*

The Compile Activity Statistics use case is invoked on a periodic basis to transform native data in the CSE system into a format conducive to statistical reporting and analysis. Although the OCSE-157 is required to be sent to OCSE on an annual basis, DCSS and LCSA staff can monitor the underlying data on a more frequent basis. This will also assist in monitoring progress toward improving the performance of the program. The obligation groups and assistance codes associated with the CCS case support the current Federal reporting requirements.

#### *Operations*

*Generate OCSE-157*

This operation gathers the required data and formats the OCSE-157 report.
Actors: Internal Operation

*Generate statistical report*

This operation gathers the required data and formats the statistical report.
Actors: Internal Operation

*Perform ad hoc Query / Reporting*

This operation allows users to access tools to create and execute ad hoc queries and reports against statistical data.
Actors: Internal Operation

### 4A.3.2c.2.3.2 Business Service: IV-D Fund Management

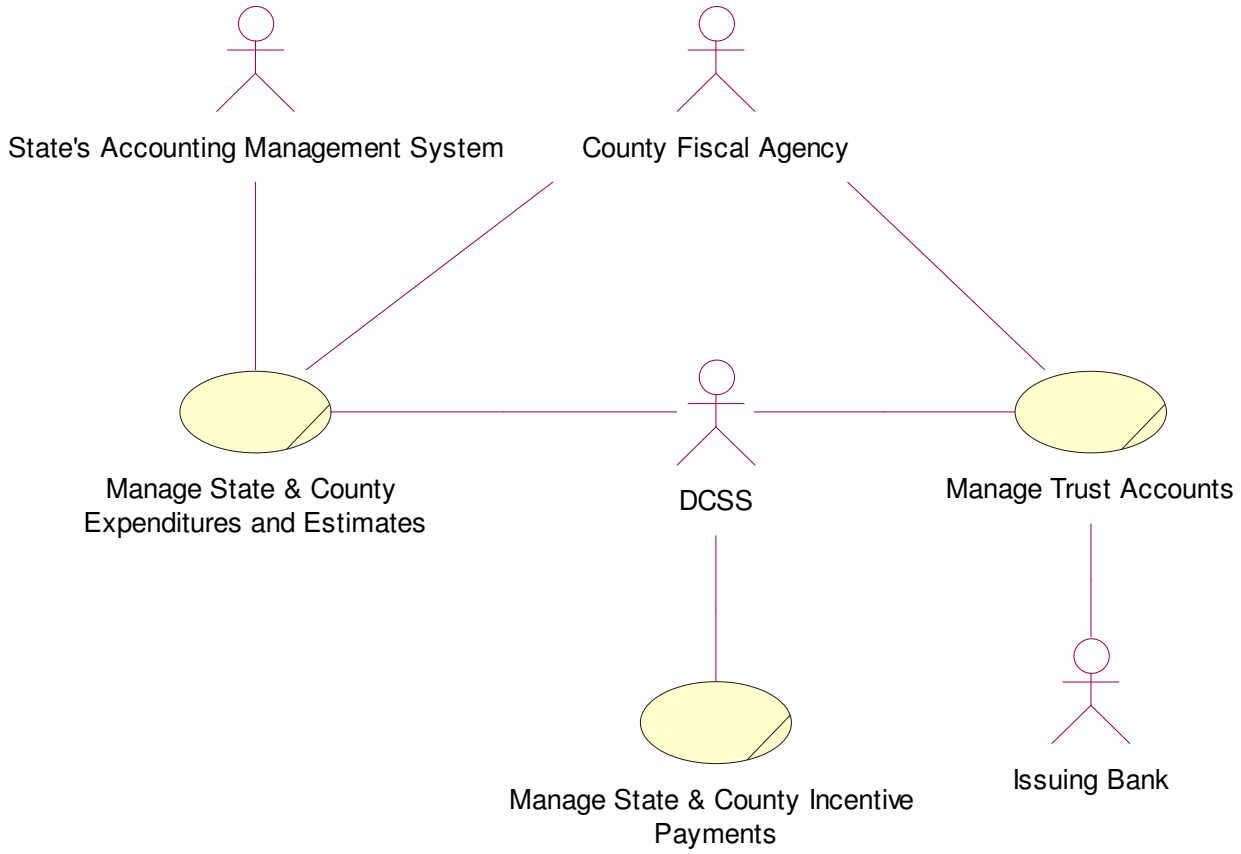



**Figure 4A.3.2c-61 IV-D Fund Management** - *Use Case Diagram*

IV-D Fund Management is defined by three major use cases: Manage State & County Expenditures and Estimates, Manage State & County Incentive Payments, and Manage Trust Accounts.

### *4A.3.2c.2.3.2.1 Use Case: Manage State & County Expenditures and Estimates*

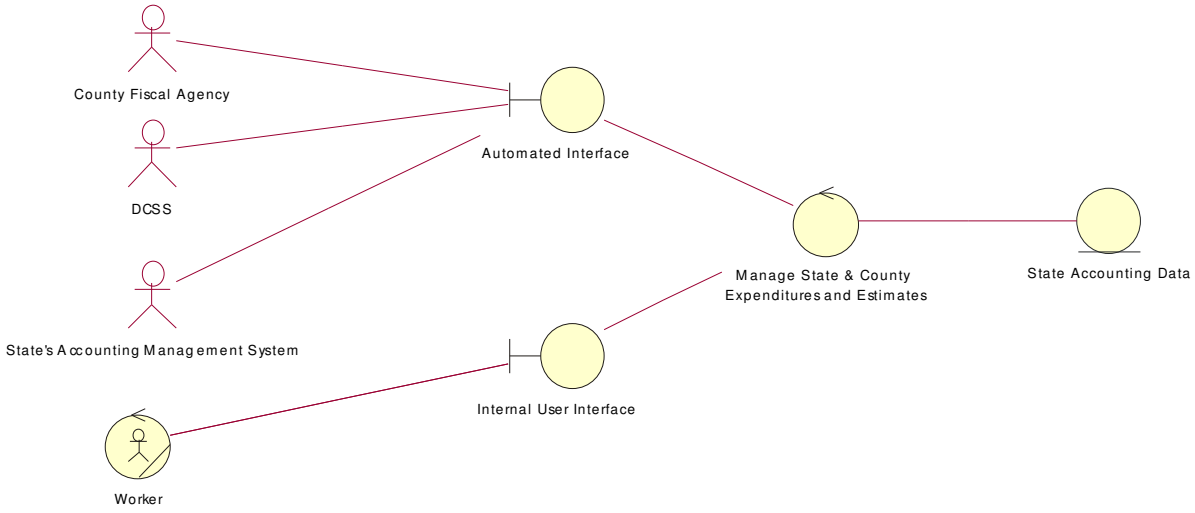



**Figure 4A.3.2c-62 Manage State & County Expenditures and Estimates** – *Robustness Analysis Diagram*

#### *Overview*

Manage State & County Expenditures and Estimates is the process of recording financial information in the CSE system to support production of the OCSE-396A report. Expenditure information will be provided by the state's accounting management system and DCSS. Estimates, or budget information, will be provided by DCSS. At completion, the county and DCSS financial information for the period is updated and stored for reporting on the OCSE-396A.

#### *Description*

A description of the Manage State & County Expenditures and Estimates use case follows:
The CSE system will receive data at a high level from the State's accounting system to produce the OCSE-396A. The State's accounting system will maintain detail of information required to complete the OCSE-396A, including state operations expenditures, local assistance expenditures, payment and tracking of county administrative advances, auditing of county administrative claims, county budget allocations and monitoring of expenditures, payment of incentives, etc. The CSE system will maintain detail of information captured through its use to support the completion of the OCSE-396A, including costs and fees recovered, and collection data.
The CSE system will receive data from the State's accounting system for Current Quarter Claims, Prior Quarter Adjustments, Next Quarter Estimates, and Annualized Estimates for the next two Federal Fiscal Years for the following categories: IV-D Costs, non IV-D Costs, Interest Income, Net Admin Costs, ADP Costs - APD, ADP Costs - No APD, ADP Costs, Lab Paternity Costs, FPLS Fees, CSENet Fees, Pre-Offset Service Fees, Other Fees or Adjustments.
Additionally, the CSE system must receive Annualized Estimates for the Current and next two Federal Fiscal Years in order to complete Part 3, Section B. Alternatively, a

methodology could be developed for deriving these estimates from the collection data directly in the CSE system.
Whenever a Prior Quarter Adjustment is received, the information necessary to complete Part 2 of the OCSE-396A must also be provided to the CSE system.

***Operations***

*Record Expenditures and Estimates*

Periodically, expenditure and estimate information will be provided to the CSE system. This information will be received via automated interface with the State's accounting management system, and through the internal user interface used by LCSA administrators and DCSS staff.
Actors: Internal Operation

### *4A.3.2c.2.3.2.2 Use Case: Manage State & County Incentive Payments*

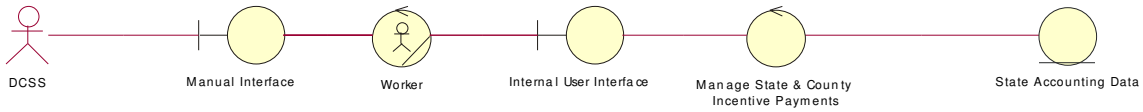



**Figure 4A.3.2c-63 Manage State & County Incentive Payments –** *Robustness Analysis Diagram*

#### ***Overview***

Manage State & County Incentive Payments is the process of recording the FMAP rate for the State, and the Estimated Incentive Payment data. This information is received from Health and Human Services (HHS) each year. This use case also calculates and records the distribution of the State incentive payment to each of the counties. At completion, the FMAP rate and Estimated Incentive Payment data is updated in the CSE system and the distribution of Incentive Payment to each county is updated in the CSE system.

#### ***Description***

A description of the Manage State & County Incentive Payments use case follows:
Capture and maintain the FMAP rate for the State. The FMAP rate is used in calculating the Federal and State share of assigned collections (OCSE-34A). The FMAP rate is provided by the Health and Human Services (HHS) agency prior to the beginning of each Federal Fiscal Year.
Capture and maintain the Estimated Incentive Payment data for the State. HHS estimates the total incentive payment that each State will receive for the upcoming fiscal year. Each State includes one-quarter of the estimated total payment in its quarterly collection report that will reduce the amount that would otherwise be paid to the Federal government. Following the end of the fiscal year, HHS calculates the actual incentive payment the State should have received. If adjustments to the estimated amount are necessary, an additional positive or negative title IV-D grant award is issued. (See OCSE AT-01-01)
Calculate and maintain Incentive Payment Data for each county. Based on the methodology defined by DCSS, the State Incentive Payment is passed through to the counties.

#### ***Operations***

*Record FMAP Rate and State Estimated Incentive Payment*

At the beginning of each Federal fiscal year, HHS provides the State with the FMAP rate for the State and the estimated Incentive Payment. This information will be recorded in the CSE system through the internal user interface.
Actors: Internal Operation

*Calculate County Shares of Estimated Incentive Payment*

Following a methodology to be defined by DCSS, the CSE system will calculate and maintain the county shares of the State's incentive payment. This information will be stored in the CSE system.
Actors: Internal Operation

### *4A.3.2c.2.3.2.3 Use Case: Manage Trust Accounts*

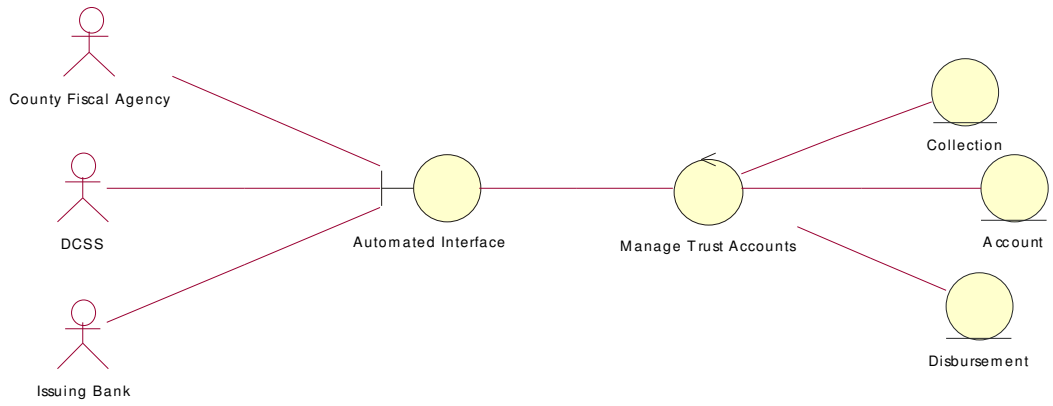



**Figure 4A.3.2c-64 Manage Trust Accounts** – *Robustness Analysis Diagram*

#### ***Overview***

Manage Trust Accounts is the process of reconciling and maintaining the accounts used for tracking support collections. When information is received from the bank, this use case is invoked to reconcile the information with the CSE system data. At completion, the account information is updated and the reconciliation reports are produced.

#### ***Description***

A description of the Manage Trust Accounts use case follows:
This use case is used to support the creation, maintenance and reconciliation of trust accounts for tracking support related collections.
After full statewide implementation of the CSE system and implementation of the SDU, collection activity will be minimal in the counties. However, it is anticipated that counties will continue to deal with walk-up payments in some manner. This model recognizes the likelihood that counties will continue to have bank accounts that must be managed and reconciled. The County Fiscal Agency is defined as an actor in this use case, because it is assumed that they or their designated agent will have some responsibility for any account(s) used by an LCSA.

#### ***Operations***

*Reconcile trust accounts*

Reconcile trust accounts is an operation that receives account information and reconciles activities between the account information and the collection, disbursement, trust accounts, and adjustment activities. If discrepancies are discovered, they are researched and the CSE system is updated.
Actors: Internal Operation

### *4A.3.2c.2.3.3 Business Service: Customer Service*

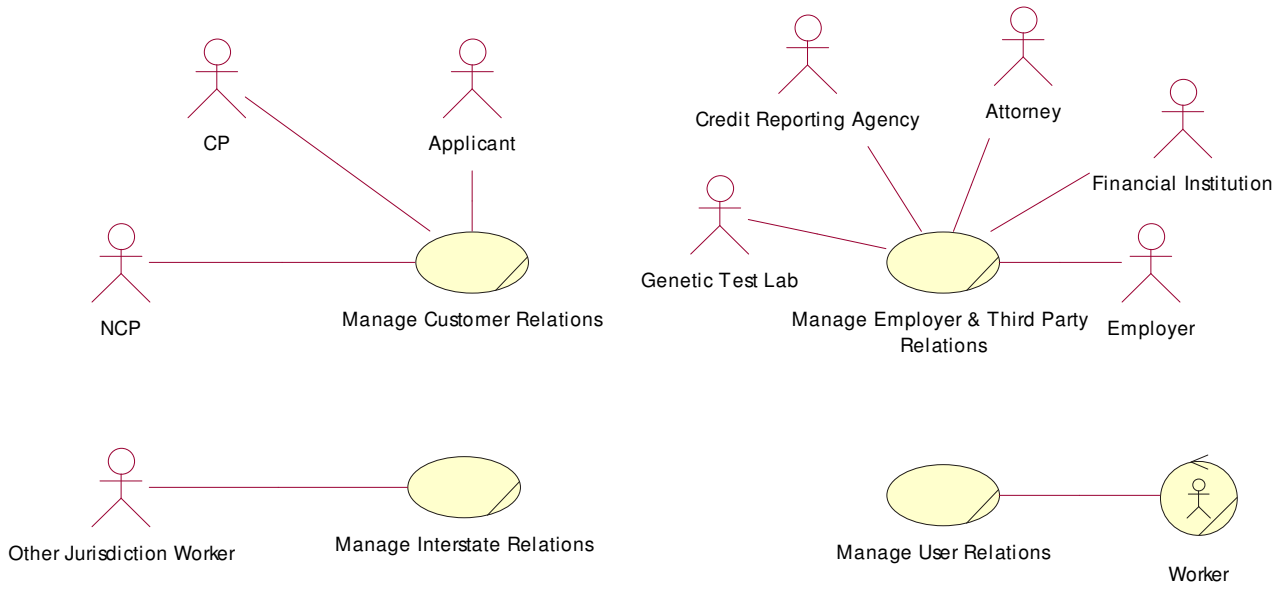



**Figure 4A.3.2c-65 Customer Service** - *Use Case Diagram*

Customer Service is defined by four major use cases: Manage Customer Relations, Manage Employer and Third Party Relations, Manage Interstate Relations and Manage User Relations.

### *4A.3.2c.2.3.3.1 Use Case: Manage Customer Relations*

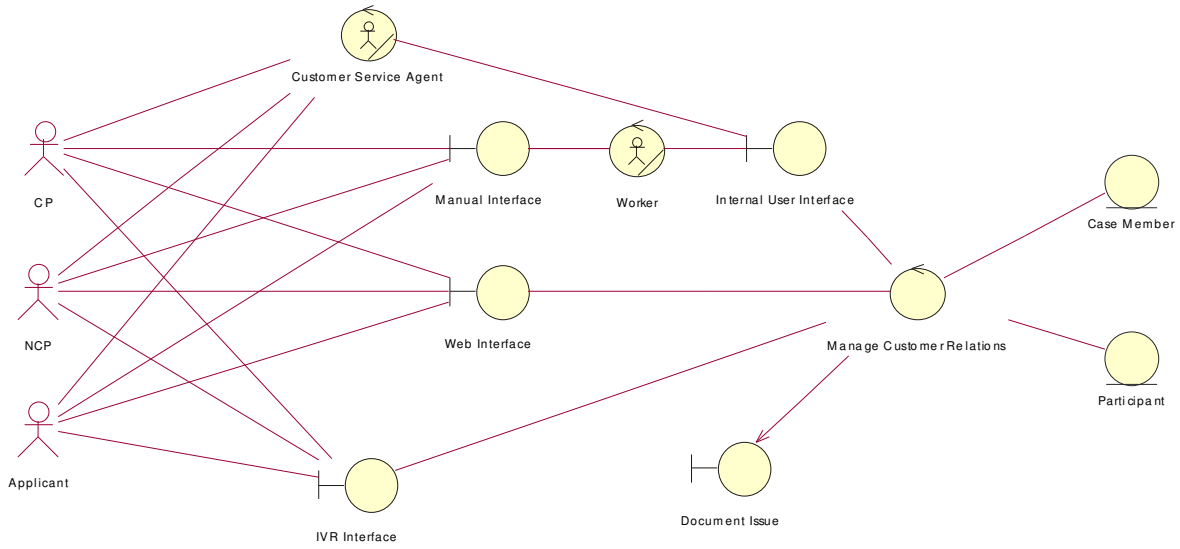



**Figure 4A.3.2c-66 Manage Customer Relations –** *Robustness Analysis Diagram*

#### *Overview*

Manage Customer Relations involves providing quality information and service to child support case members and potential case members (applicants). When a request for an application is received, when a case member requests information or registers a complaint, or there is a need to conduct a case member outreach campaign, the Manage Customer Relations use case is invoked. At completion, the Participant component may be created or updated, the CCS case may be updated, and the Customer Interaction component is created or updated.

#### *Description*

When a person requests an application for services, adequate information is obtained to uniquely identify the person and clear them against the participant data to try to avoid duplicating them in the CSE system. An application and program materials are sent to the requestor. This process is monitored to determine whether requests for applications are processed within Federal timeframes. A request for application can be made via telephone, the Internet, or in person.
A request for information may be answered immediately or it may be referred to another user for further research. An inquiry may be received via telephone, mail, or the Internet.
When a case member registers a complaint, the complaint is logged and referred to another user for further research. A complaint may be received via telephone, mail, or the Internet.
When a case member registers a subscription request, the subscription is recorded and a confirmation is sent to the requester. Depending upon the service to be provided it may be necessary to mail an authorization form to the requestor. When the signed authorization is received, the process is completed and the subscription is activated. A subscription service request may be received via telephone, mail, or the Internet.

Examples of subscription services: E-mail delivery of general correspondence, e-billing, EFT with e-Check Stub, Automatic Withdrawal of support payments, electronic newsletter/flash alerts, and e-payment receipt.
Manage Customer Relations is used when it is necessary to contact groups of case members or entities with similar characteristics to provide information or offer services that could improve their relationship with the Child Support Program.

***Operations***

*Receive Application Request*

This is an operation that allows a person to request an application for IV-D services and program information. The application and program information package is mailed to the requestor.
Actors: Applicant

*Receive Inquiry*
This is an operation that allows a case member, or their authorized representative, to inquire about the status of their case or account. The information is retrieved from the CSE system and provided to the requestor. Privacy and the protection of sensitive information will be protected.
Actors: Case Member

*Receive Complaint*
This is an operation that allows a case member to register a formal complaint about the services they have received or requested. The complaint is referred to the appropriate unit for investigation and resolution.
Actors: Case Member

*Process Subscription Request*
This is an operation that allows a case member to initiate, update, or cancel a subscription service provided by the CSE system.
Actors: Case Member

*Conduct Outreach Campaign*
This is an operation that sends information to a specific population to educate and inform them about the services of the program. This may be accomplished by mailing, e-mailing, or telephoning the target audience.
Actors: Case Member

### *4A.3.2c.2.3.3.2 Use Case: Manage Employer and Third Party Relations*

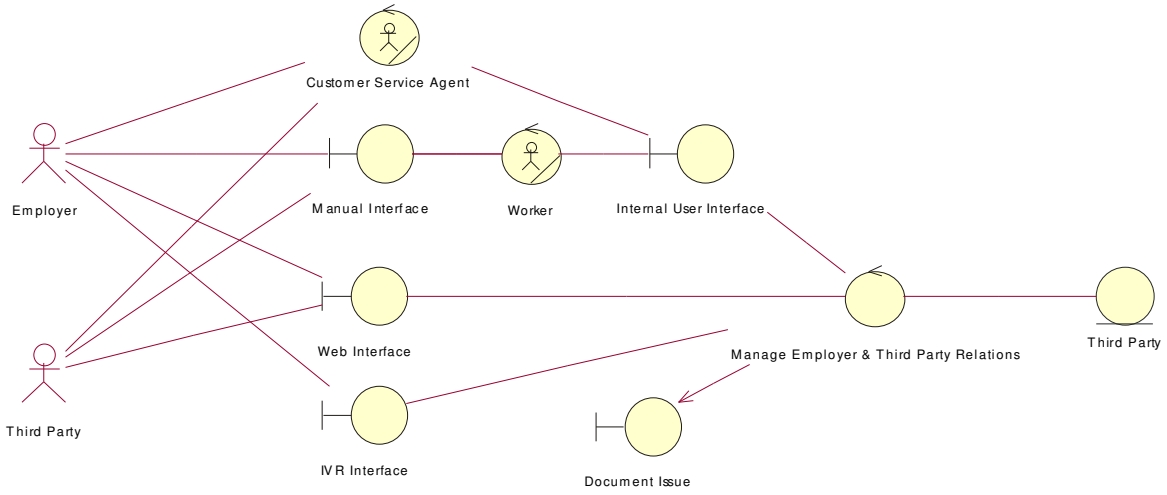



**Figure 4A.3.2c-67 Manage Employer and Third Party Relations** – *Robustness Analysis Diagram*

### *Overview*

Manage Employer and Third Party Relations involves providing quality service to Employers, and other Third Parties. When an employer or other third party initiates a request for information, registers a complaint, or a need to conduct an outreach campaign is identified, the Manage Employer and Third Party Relations use case is invoked. At completion the Customer Interaction component is created or updated.

### *Description*

A request for information may be answered immediately or it may be referred to another user for further research. An inquiry may be received via telephone, mail, or the Internet.
When an employer or other third party registers a complaint, the complaint is logged and referred to another user for further research. A complaint may be received via telephone, mail, or the Internet.
When an employer or other third party registers a subscription request, the subscription is recorded and a confirmation is sent to the requester. Depending upon the service to be provided it may be necessary to mail an authorization form to the requestor. When the signed authorization is received, the process is completed and the subscription is activated. A subscription service request may be received via telephone, mail, or the Internet.
Examples of subscription services: e-mail delivery of general correspondence, e-billing, EFT with e-Check Stub, automatic withdrawal of support payments, electronic newsletter/flash alerts, and e-payment receipt.
Examples of other third parties: Genetic Test Lab, Service of Process Agents, Courts.

### *Operations*

*Receive Inquiry*

This is an operation that allows an employer or other third party to inquire about the services and procedures of the child support program. The information is retrieved from

the CSE system and provided to the requestor. Privacy and the protection of sensitive information will be protected.
Actors: Employer, Other Third Party

*Receive Complaint*

This is an operation that allows an employer or other third party to register a formal complaint about the services they have received or requested. The complaint is referred to the appropriate unit for investigation and resolution.
Actors: Employer, Other Third Party

*Process Subscription Request*

This is an operation that allows an employer or other third party to initiate, update, or cancel a subscription service provided by the CSE system.
Actors: Employer, Other Third Party

*Conduct Outreach Campaign*

This is an operation that sends information to a specific population to educate and inform them about the services of the program. This may be accomplished by mailing, e-mailing, or telephoning the target audience.
Actors: Employer, Other Third Party

### *4A.3.2c.2.3.3.3 Use Case: Manage Interstate Relations*

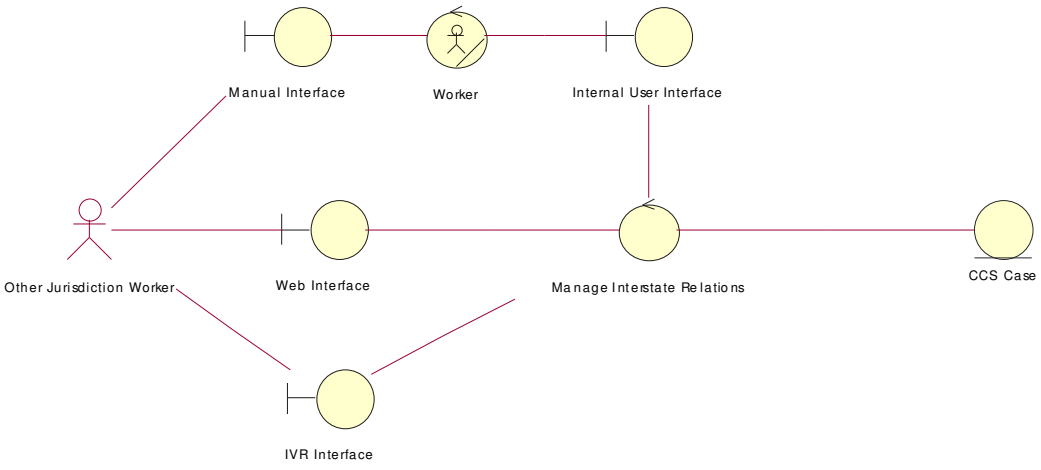



**Figure 4A.3.2c-68 Manage Interstate Relations –** *Robustness Analysis Diagram*

#### *Overview*

Manage Interstate Relations involves providing quality service to other jurisdictions. When a request for information or a complaint is received from a child support worker in another jurisdiction, the Manage Interstate Relations use case is invoked. At completion, the CCS Case may be updated, and the Customer Interaction component is created or updated.

#### *Description*

A request for information may be answered immediately or it may be referred to another user for further research. An inquiry may be received via telephone, mail, or the internet. When a worker in another jurisdiction registers a complaint, the complaint is logged and referred to another user for further research. A complaint may be received via telephone, mail, or the internet.

#### *Operations*

*Receive Inquiry*

This is an operation that allows an interstate child support agency to inquire about the status of an interstate case, or services and procedures of the child support program. The information is retrieved from the CSE system and provided to the requestor. Privacy and the protection of sensitive information will be protected.
Actors: Other Jurisdiction Worker

*Receive Complaint*

This is an operation that allows an interstate child support agency to register a formal complaint about the services they have received or requested. The complaint is referred to the appropriate unit for investigation and resolution.
Actors: Other Jurisdiction Worker

### *4A.3.2c.2.3.3.4 Use Case: Manage User Relations*

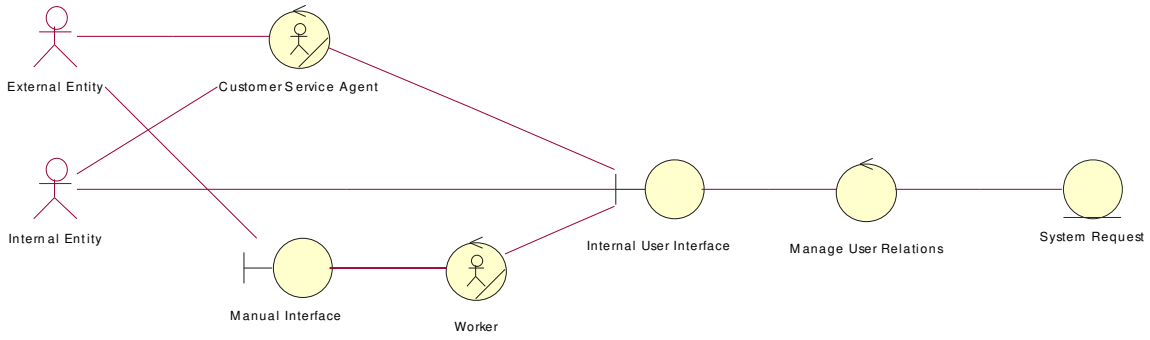



**Figure 4A.3.2c-69 Manage User Relations** – *Robustness Analysis Diagram*

#### ***Overview***

Manage User Relations involves providing quality service to the users of the CSE system. When a user of the system registers a change request, or reports a system problem, the Manage User Relations use case is invoked. At completion the Customer Interaction component is created or updated.

#### ***Description***

When a user submits a system change request, it is registered and referred to the Change Control process managed by DCSS. A change request may be rejected or it may be referred to the system development group for further research.
When a user submits a problem report, the problem is logged and referred to the systems development group for further research.

#### ***Operations***

*Receive Change Request*

This is an operation that allows an internal user to register a change request.
Actors: Internal Operation

*Receive Problem Report*

This is an operation that allows an internal user to report a problem they have experienced with the application software or hardware.
Actors: Internal Operation

# 4A.3.3 CSE System Architecture Objectives, Best Practices, and Attributes

***This section describes the alliance's solution in terms of the architecture objectives, best practices, and attributes articulated by the State. Further, it defines the alliance's architecture principles; our commitment to strongly architected systems; and how we champion the architecture objectives, best practices and attributes in our solution.***

## 4A.3.3.1 Overview

This section describes how the CSE system architecture meets the architecture objectives, best practices and attributes specified by the State. It is structured as follows:

- This overview, which examines the alliance's approach to architecture. The overview has the following sub-sections:
  - 4A.3.3.1.1 Embracing Architectural Principles. This section affirms the alliance's commitment to sound architectural principles.
  - 4A.3.2.1.2 Architecture Approaches.
- 4A.3.3a CCSAS Architectural Objectives to Conceptual Design Characteristic Matrix. This section provides a matrix to map characteristics of the conceptual design to the architectural objectives. It first defines the characteristics, and concludes with a review of each of the architectural objectives.
- 4A.3.3b CCSAS Architecture Best Practices Matrix. This section provides a matrix to address each of the State's architectural best practices .
- 4A.3.3c CCSAS Architectural Attributes, Proposed Best Practices, and Proposed Technology Matrix. This section provides a matrix to map the technical architecture attributes to the proposed technology. It concludes with a review of each of the technical attributes.

### 4A.3.3.1.1 Embracing Architectural Principles

This section relates the CCSAS CSE architecture principles to the CSE system conceptual solution proposed by the alliance. This uses three matrices . These are included below in Sections 4A.3.3a, 4A.3.3b, and 4A.3.3c.

Prior to introducing the matrices, we start this section by confirming that the alliance enthusiastically agrees with both the principles and their importance. We believe that systems with a strong architectural foundation and carefully integrated components are inherently better systems. In our experience, adherence to strong architectural principles and design enhances a smooth delivery, reduces maintenance costs, and greatly extends the computing system's life span.

For many years the alliance partners have focused on developing solid architectures in many complex technology implementations. In particular, the partners have individually worked with the Franchise Tax Board (FTB) on several large projects like INC, PASS, and ARCS. We believe that the focus on architecture on those projects provided substantial benefits and greatly contributed to the success of each project; a focus that starts with an initial commitment to superior architecture, and just as importantly, continues this commitment throughout the project lifecycle.

Additionally, each alliance partner represents their corporate culture and continually demonstrates their commitment to formal and standards based architecture. We have developed and will use software products and tools that are built on industry or *de facto* standards. IBM's WebSphere Application Server is one such product; Accenture's General and Re-useable Net-centric Delivery Solution (GRNDS) framework is one such tool. Our IT product lines showcase a devoted commitment on the part of each partner to architecturally designed systems, software development, and deployment standards. We believe that our architectural principles and those defined by the State reflect a shared philosophy and approach.

This section highlights how our proposed solution will adhere to and champion those important architectural principles. It also highlights how we will continue this commitment in actual delivery. In this section we will describe our architectural approach and conformance methodology. This review will demonstrate how our CSE development methodology, services and components based construction approach, and commitment to industry standards and best practices will result in a superior more easily maintained CSE solution.

Prior to the section proper, as a point of clarification, this section will refer to the alliance's proposed solution as a whole (i.e. the system, technical, and software architectures) to demonstrate adherence and alignment with the architecture principles.

## 4A.3.3.1.2 Architecture Approaches

This section reviews the approaches to architecture that will govern the CSE system and its adherence to the architectural principles.

### 4A.3.3.1.2.1 Architecture Construction Methodology

The proposed CSE system will be constructed using a standards-based, services-oriented component model, founded on a strong use of metadata. The software architecture separates data, business logic, and technology-oriented functionality. This approach provides several benefits. For instance, business functionality can be isolated to permit easy extension by separating functional change(s) from the technology-oriented layers.

The architectural model, using an extensive metadata dictionary, will provide data about the application's information resources, independent of the information's physical location and format. These capabilities provide data about:

- Physical definition
- Data business definition
- Both physical and business inter-relationships between the data
- What objects can be used to access the data
- Data history, data access audit information
- How the data relates to its source information (when applicable)

The software architecture with its adherence to open-standards, layered, component model and metadata foundation, will provide for flexible hosting deployment; it will be easy to re-host or migrate the applications on alternate hardware and supporting software. Relying on a standards approach will also provide for extensive adaptability to workload changes. Our adherence to standards will provide great flexibility in expanding the hardware environment to support performance needs. Horizontal scalability will be greatly simplified so that the application can be deployed in smaller components to support large hardware suites, e.g., multiple RS/6000 SP2 frames or IBM pSeries UNIX servers. These features will allow for enhanced reliability and fail-over capability through the use of a redundant, fault-tolerant hardware environment.

The alliance will use a layering approach to provide the appropriate service granularity for the CSE system's construction. There will be three Services layers:

- *Business* Services
- *Common* Services
- *Support Services*

*Business Services* implement the specific CSE system business functions. Functionality at this layer will be tailored to be specific to applicable Federal and State laws, and State policy.

*Common Services* provide support that is common to the business services and is shared among them.

*Support Services* provide system-level support to both the business services and the common services.

The CSE system will be a combination of tailored, developed software and supporting third-party hardware and software products.
These products are described in detail in *Section 4.A.4 CCSAS System Environments*, and are also referred to in the Architecture Matrix responses later in this Section.

### 4A.3.3.1.2.2 Architecture Conformance Methodology

The alliance has a wholehearted commitment to the State's principles of architectural systems. Our approach to meeting the CCSAS architectural objectives, principles, best practices, and attributes is twofold:

- We propose hardware, software, and implementation practices that support the architecture goals. Those components and practices are described in:
  - *4A.3.3a: CCSAS Architecture Objectives and Conceptual Design Characteristic Matrix*
  - *4A.3.3b: Proposes Best Practice Matrix*
  - *4A.3.3c: CCSAS Architectural Attributes, Proposed Best Practices, and Proposed Technology Matrix*
- We propose an architecture conformance approach that will manage the development process and verify architecture conformance

#### *4A.3.3.1.2.2.1 Management*

Management is probably the most important component of this process. The Chief of Architecture will oversee architecture conformance. Supported by an architecture team composed of alliance and CCSAS project staff, he will guide and administer the CSE system architecture creation and change process over time. This team will provide:

- Proper oversight for the training and deliverable components related to architecture.
- Decision papers related to architectural changes, product procurements, and other system architecture matters. Those decision papers will also indicate architectural impact. These will be evaluated by the architecture team.
- Proper design, development, and related methodologies produced by the project team. These matters will be evaluated by the architecture team for compliance.
- Research, review and resolution of matters related to new technology, processes, and implementation techniques.

#### *4A.3.3.1.2.2.2 Compliance Techniques*

During the development and implementation of the CSE system, we will use training, specific architecture-focused deliverable components, and architecture management techniques to align with the architectural goals for the CSE system. The architecture compliance matrices from the proposal will form the basis of determining how, and if, the components we developed or chose and the approach we took meet the architecture goals.

#### *4A.3.3.1.2.2.3 Deliverable Components*

We will develop a comprehensive architecture representation for the CSE system solution that will be included as part of the overall System Architecture deliverables. This will build on the matrices proposed here to provide a more detailed specification of our compliance with the stated architectural goals.

The remainder of this section describes the proposed solution's compliance with the architectural goals.

# 4A.3.3a CCSAS Architectural Objectives to Conceptual Design Characteristics

This sub-section describes our proposed solution's compliance with the architectural objectives. The conceptual design characteristics were initially introduced in Section 4A.3.1.5.

## 4A.3.3a.1 Conceptual Design Characteristics

### 4A.3.3a.1.1 Layered Component-Based Architecture

The alliance is proposing a software architecture construction approach that is based on the concepts of layers, components, and services, and utilizes object oriented design and code techniques. This approach provides application functionality through Services that handle requests for functional delivery, regardless of the requesting mechanism. This approach also specifies the layering of services to provide both separation of complexity to the appropriate technical level *and* simplification of the development and deployment of functional logic. It gives rise to a well-structured, interface driven architecture.

### 4A.3.3a.1.2 Java & Internet Technology

The use of Java and Internet technologies proposed in this solution provides a portable, consistent, standards based platform and development environment. The technology is fully supportive of the layered, component based architecture, and is suitable to implement the aspects of the solution, from external, browser based customers, internal case workers, to background bulk processing.

### 4A.3.3a.1.3 Best of Breed Solution Approach

The best of breed approach is a blend consisting of a brand new custom system, built upon an existing alliance framework and other technology assets, and incorporating proven, innovative techniques and concepts from prior alliance Child Support systems in California and elsewhere in the country.

This approach is designed to meet the specific business requirements of the California Child Support Program. It specifically addresses the five business problems., and embraces the innovative thinking and 'new generation' approach introduced in the Base Business Concepts. It adheres to and promotes the Architecture Principles and Objectives, and it utilizes the best of advanced e-business technology.

The use of a best of breed approach allows the alliance to accelerate the development effort and reduce risk by re-using proven concepts and assets. The technology assets are not only supportive of the architectural principles, but were developed specifically for re-use in a Java based e-business architecture. The program assets and concepts have been selected for consideration due to their consistency and compatibility with DCSS goals.

### 4A.3.3a.1.4 Open Standards Adherence

Embracing open standards was an imperative for the various facets of the alliance's proposed solution. This includes the technology, architecture, products, development methodology and re-usable assets we have chosen such as the GRNDS application framework the alliance is proposing. A description of the types of standards, and how they apply to the proposed solution is provided in Section 4A.3.1.

### 4A.3.3a.1.5 CSE Development Methodology

The alliance is proposing a CSE Development Methodology that is built on Rational's Unified Process (RUP) combined with international standards, i.e. IEEE and ISO. The alliance proposes to use an iterative, component-based development strategy to create California's next generation system. This approach has been used successfully on thousands of engagements in both the public and private sectors. The methodology and tools are described in detail in Section 3C.

### 4A.3.3a.1.6 Common Metadata

The use of metadata, and its use in models, provides a well-documented and understandable description of the system at an appropriate level of abstraction. While strictly defined as 'data about data', the term metadata is used here to refer to object modeling information as well as pure data. Within the CSE system, the metadata will form the backbone of the various types of data use within the CSE system. This includes the OLTP application (object model and operational database), the OLAP capabilities (data warehouse, data marts and reporting/OLAP tools), and the data intake validation and transformation using Extraction, Transformation, and Loading (ETL) tools.

In addition to documenting the system's design, given the appropriate tools and under appropriate circumstances, metadata can be used to generate implementation products (such as DDL for the database). This permits changes to be applied at the higher level of abstraction represented by the metadata and automatically applied to the implementation level, and avoids the need to make changes more than once. It automatically keeps the documentation consistent with the implementation. Where this approach is not practical, the use of appropriate tools can support reverse engineering to re-construct the model from the implementation.

The adjective 'common' is used because of the need to keep similar metadata in different tools and their repositories. While there are valid reasons for this (such as the different uses and interpretations placed on the metadata), there is also a need to keep the repositories consistent. To this end, the Metadata Object Facility (MOF) and the Common Warehouse Meta-Model (CWM) can be used to help describe and tie together the complete metadata definition and usage model for the CSE system.

### 4A.3.3a.1.7 Best of Breed COTS Products

The alliance is proposing a large number of IBM and third-party supporting COTS products to support design, development and implementation of the CSE system. These products have been selected for their suitability for the CSE system solution. As described above, a primary selection criterion is that they support open standards. Where standards are lacking, a strong market presence and widely accepted industry leadership position is required for their inclusion. Further, the alliance has used their experience, where applicable, in the selection of products. The COTS products and their role in the technical architecture are fully detailed in Section 4A.4 CSE System Environments. We believe that these products represent the best choice in their respective areas for the proposed solution.

### 4A.3.3a.1.8 Enterprise Application Integration (EAI)

The use of an EAI infrastructure incorporates concepts such as messaging and externalized routing and data transformation rules, and is fundamental to the construction of a loosely coupled system. This approach allows different components within the system to communicate with no dependency (except as dictated by CSE program needs) on time, data format, transmission protocols, or even knowledge of who the communication partner(s) is.

Partner Access Management extends these benefits to external partners, outside the CSE system application, and includes additional features such as security and partner profile management. The use of EAI in the proposed solution is described in Section 4A.3.1.

### 4A.3.3a.1.9 Workflow Driven

The use of a workflow driven approach and COTS workflow product allows business process knowledge to be de-coupled from the developed Java code. The Java code will be implemented to provide atomic business functions, such as create a case, update an address, or process a collection. Workflow is like a roadmap that links business functions such as these together to form business processes. A business process (such as responding to an application and establishing a new case) consists of a number of tasks that may take days or weeks to complete, and may involve a number of different people. The workflow component manages this extended series of activities and routes work to the appropriate worker or automated system function to be performed.

By de-coupling this knowledge from the developed code, and placing it into an external environment specifically geared to this capability, business processes can be defined, managed, and changed, more quickly and effectively. The use of Workflow in the proposed solution is described in Section 4A.3.1.

### 4A.3.3a.1.10 Externalized, Centralized Rules and Decision Data

A development pattern that will be used for the development of the CSE system is to define business rules in a manner to facilitate their identification, understanding and modification. There are a number of techniques that will be used for this. The simplest and most flexible is to store data that is used in business rule decisions (such as if arrears is greater than x dollars, or if no response is received in z days) in database tables. This allows these business rules to be altered to use new values without any code changes. Of course this has to be closely managed and controlled, but it is an effective way of providing flexibility for volatile decision data.

Another approach is to implement business rules in Java code, but to provide special ‘rules objects’ that are available throughout the application. This technique uses a common language and development environment for specifying the rules and the other application code, but by virtue of its organization isolates the rules for simpler manipulation.

### 4A.3.3a.1.11 Distributed, Multi-tiered Technical Architecture

The CSE system technical architecture is based on a distributed philosophy. Different components within the system are sited in distinct physical environments. These environments may be physical machines, or Logical Partitions (LPARs), or both. For instance the web servers, application servers, and database servers are located on different ‘platforms’. Note that a distributed approach does not have to mean geographical distribution; the components may be sited in the same ‘facility’, but are still distinct, separate physical entities.

The distributed philosophy applies not only to the distribution of different components within the architecture, but also to distribution in the form of parallel instances of the same component. This provides the capability for load balancing and fail-over, and provides an architectural approach that is ideally suited for horizontal scalability.

The distributed approach is supported by the technologies and products used. For instance, the use of IBM pSeries servers allows for significant variations in the physical ‘structure’ of the

architecture, from a large number of small machines to a few very large servers. Various products such as WebSphere Application Server, WebSphere MQ, and DB2 are specifically designed to facilitate distributed operation. Use of technology standards such as CORBA and RMI build a distributed capability into the core of the application.

### 4A.3.3a.1.12 Security Framework

The alliance is proposing a strong security framework that provides application APIs supported by COTS tools. The security framework will provide authentication, authorization, confidentiality, integrity, non-repudiation, and auditing for the CSE system operation. Components of the proposed security framework include:

- CSE system application security service provides authentication and access control through authorization with roles-based access
- IBM's HTTP web services provides data transmission integrity protection, supporting SSLV2, SSLV3 cryptographic and key file support as well as TLS transaction level security
- Symantec Host Intrusion Detection Service (HIDS)
- Cisco PIX and Nokia firewalls will provide intrusion prevention
- IBM SecureWay Policy Director will integrate with the CSE system security service to provide authentication services for CSE system users. Policy Director will store user identification information in X.500 directory format and will accept or reject authentication credentials presented by applications upon user access

### 4A.3.3a.1.13 Enterprise Management Tools

The CSE system will utilize a suite of highly capable tools that will provide extensive administrative capabilities, including system configuration, system performance monitoring, and event handling (alerts). These tools will be able to operate in the distributed, heterogeneous environment that will support the CSE system, providing consolidated, centralized management capabilities across the range of products. The monitoring capabilities will use pre-defined thresholds for a variety of metrics, including response time, resource usage (such as memory, CPU, or I/O channels) to detect system degradation. The metrics will be established based on empirical data gathered during performance testing, and can be applied at a fine level of granularity, to monitor individual components such as the web server, the application server, the network, and the database. Any degradation in performance beyond the specified thresholds can trigger alerts or other events that to initiate corrective action.

### 4A.3.3a.1.14 COTS Data Intake, Validation, and Transformation Tools

Data input to the system, whether during conversion, production batch feeds, or on-line data input, is subject to consistent validation and transformation. The intake processes detect and eliminate potential duplicates, such as Participants, Cases and Addresses. The solution uses the AMS/Synergy Automated Conversion System (ACS) conversion software to perform the conversions, transformations, association and duplicate elimination. Also Pitney Bowes Finalist is used to validate USPS addresses entered to the system. These products and techniques are used to establish and maintain a high-quality, consistent, and accurate store of data.

These products and techniques are more fully described in 4A.3.1 and 4A.4.

## 4A.3.3a.15 Centralized, Shared and Normalized Operational Database

The use of a centralized, shared, and normalized operational database verifies that data is kept in one place, avoiding duplication and replication issues. Within the database, a data item is linked to other items, rather than copied. Data input validation occurs on the only copy of the item, avoiding problems with inconsistent data.

The data is available statewide so, where there is an overlap of subject data between LCSAs (e.g. shared cases or participants), the LCSAs see the same information, in the same state and with the same relationships to other data.

While logically a single, shared entity, the database is physically constructed in a partitioned manner so that the different partitions can be independently sited and managed. Also, within the database, different tables, and table spaces can be assigned different physical characteristics, such as buffer pool sizes, to accommodate different processing characteristics.

## 4A.3.3a.16 Segregation of Operational and Analytical Data and Processing

The alliance solution provides a comprehensive Business Intelligence capability in addition to the Child Support case management system. This is designed not only to meet the defined reporting needs, but also to provide the ability to perform analytical and ad hoc queries against the CSE system data. By their nature, these types of activities are ill defined and tend to expand with time. To accommodate this nebulous requirement without running the risk of adversely impacting the transaction-processing environment, the system has been structured such that the reporting and analytical activities are supported by a totally separate hardware and software environment. These use BI products such as Brio Intelligence, DB2 OLAP Server and DB2 Analyzer, executing on a dedicated p690 server running DB2 EEE. The solution also provides comprehensive tools to manage replication of operational data to the BI environment, such as Data Warehouse Manager and DPROPR.

# 4A.3.3a.2 CCSAS Architectural Objectives to Conceptual Design Characteristics Matrix

| Conceptual Design Characteristics | Improve System User Productivity | Improve Efficiency Of Systems Development | Improve Interoperability, Portability and Scalability | Increase Vendor Independence | Reduce Total Cost of Maintenance | Improve System Manageability | Improve Security | Maximize Data Quality |
|---|---|---|---|---|---|---|---|---|
| Layered Component-Based Architecture | | X | X | X | X | | | X |
| Java & Internet Technology | | X | X | X | X | X | | |
| Best of Breed Solution Approach | X | X | | | X | | | |
| Open Standards Adherence | | X | X | X | X | X | | |
| CSE Development Methodology | X | X | X | | X | | | X |
| Best of Breed COTS Products | | | X | X | | | | |
| EAI | | X | X | | X | X | | |
| Workflow Driven | X | X | X | | X | X | | |
| Externalized Rules | | X | | | X | X | | |
| Distributed, Multi-tiered Technical Architecture | | X | X | X | X | X | | |
| Security Framework | | | X | X | X | X | X | |
| Enterprise Management | | | | | X | X | X | |
| Common Metadata | | X | | | X | | | X |
| COTS Data Intake, Validation, | | X | | | X | X | | X |

| Conceptual Design Characteristics | Improve System User Productivity | Improve Efficiency Of Systems Development | Improve Interoperability, Portability and Scalability | Increase Vendor Independence | Reduce Total Cost of Maintenance | Improve System Manageability | Improve Security | Maximize Data Quality |
|---|---|---|---|---|---|---|---|---|
| and ETL Tools | | | | | | | | |
| Centralized, Shared & Normalized Database | | X | X | | X | X | | X |
| Segregation of OLTP and OLAP Data and Process | X | | | | | X | | X |

**Figure 4A.3.3-1 CCSAS Architectural Objectives to Conceptual Design Characteristics Matrix.**

# 4A.3.3a.3 CCSAS Architectural Objectives Analysis

Focusing on each column heading in *Figure 4A.3.3-1*, in turn, we will discuss just how the Conceptual Design characteristics of the alliance's solution satisfy the CCSAS project's architectural objectives.

## 4A.3.3a.3.1 Improve System User Productivity

The alliance is proposing a service/component-based application that will have common functionality and common "entry points" for business functions regardless of the channel the user selects. Functionality will be provided by services that will be accessible via the Internet user interface, internal caseworker interface, IVR, Customer Service Center Customer Relationship Management (CRM) solution, SDU interface, or any other automated interfaces. This will facilitate system-user productivity by providing central access points to common data and functions to provide for consistent application behavior and information delivery across application delivery mechanisms.

For example, access to common functional services will be the mechanism the CSE system uses to provide information and case functionality to customers through the CRM tool. Replication of data will be reduced and will only be used to support transient uses like session-specific information.

The alliance also believes that: (1) the use of common metadata during system build and operations along with, (2) data intake validation and transformation using Extraction, Transformation, and Loading (ETL) tools and AMS/Synergy's Automated Conversion System (ACS) software, will improve statewide data quality and consistency. This improvement will reduce errors in delivery of information to case workers and case participants and will also facilitate accurate planning for program resources to improve case handling and overall customer service.

In addition, the use of self-service through Interactive Voice Response (IVR) and Internet, plus improved walk-in service, will improve the ability of the CSE program to serve the case participants and reduce the caseworker's workload while improving productivity.

## 4A.3.3a.3.2 Improve Efficiency of Systems Development

The alliance is proposing a comprehensive mix of mature, productive system development methodologies, a common service/component system design approach, along with supporting commercial software frameworks, and COTS products.

## 4A.3.3a.3.3 Improve Interoperability, Portability, and Scalability

The alliance is proposing a heterogeneous suite of hardware platforms, COTS software packages, *de facto* and industry-standards-based operating systems, with a common wide area network (WAN) backbone supported by county-resident campus and local area networks (LANs). Our segmentation of business, data, and system functionality to specific parts of the application and third-party products provides clean distinction of the boundaries and functions of architecture components, which allows for a high level of configuration and the ability to swap components.

We have taken care in selecting the architectural approaches and parts. We have pursued a strategy of selecting components with a history of successful interoperation. We have enhanced this sensible approach by relying on standards, methods, and safeguards that have had high acceptance and success in past computing infrastructure implementations. We have provided redundant CPUs, disk storage, network bandwidth and physical wiring, cache management, fail-

over in hardware and software, and used the Java EJB framework industry standard to act as the container and controller of our application services and functions.

We believe that our techniques, our choice of recognized industry products, and our adherence to the State's stated architectural best practices and standards provide a CSE system environment that adapts to change and meets the State's requirements.

## 4A.3.3a.3.4 Increase Vendor Independence

We are proposing tools from a number of different vendors including IBM, Cisco, Microsoft, Interwoven, and Nokia. Where *de facto* or common industry standards exist, we have chosen products where the vendor has adhered to existing standards and shows a dedicated corporate commitment to standards in their products.

## 4A.3.3a.3.5 Reduce Total Cost of Maintenance

We believe that open standards, common data, common access to data and functions through services, software, and the re-use of data structure are significant, positive factors that will reduce the total cost of the CSE system maintenance.

In the CSE system implementation, its impact will be not only on post-implementation maintenance, but also on the maintenance and enhancement of the statewide services, SDU Interface Services, and other pieces of the application that will have new versions delivered during the implementation of the CSE system solution. Thus the choice to adhere to standards, to use Services, to re-use software, and the evolution of re-used Application Program Interfaces (APIs) is of critical importance to the CSE system meeting its delivery schedule and reducing on-going maintenance costs.

We have proposed a number of development tools such as PVCS, Rational Rose, and WebSphere Application Developer Studio to assist in managing the Development environment and its components and structures. We believe that these tools, in combination with the developer documentation and training, will facilitate re-use and promote careful, incremental expansion of the application's capabilities.

## 4A.3.3a.3.6 Improve System Manageability

The use of the enterprise management tools will be major factor in satisfying this characteristic. These allow system configuration parameters to be administered in a centralized fashion. They also provide the ability to closely monitor the performance of the system and to generate alerts when performance metrics exceed pre-defined thresholds. Also, as discussed later, the characteristics that contribute to a flexible system, such as external, administratively amendable system 'control' parameters, such as found in the EAI tools and Workflow component, will also contribute to improved system manageability.

## A.3.3a.3.7 Improve Security

The proposed CSE system solution incorporates a number of packaged security products to provide centralized management and control of:

- Identification and Authentication, which involves determining whether individuals or systems *are* who they *say* they are. This is the most important element of security
- Authorization, which involves determining what access privileges have been granted to a *user*, *group*, *application*, or *process* and enforcing these privileges

- Integrity, which involves providing proof of the correctness of the content of the information
- Confidentiality, which involves protecting information from unauthorized eavesdropping
- Non-repudiation, which involves the ability of both parties in a transaction to prove to a third-party that the sender *sent* the message and the receiver *received* the message
- Auditing, which involves creating a chronological record of the *user*, the *systems*, *application*, and *network activities* of transactions

The alliance is proposing a set of security tools that will provide centralized security definition, intrusion prevention, and monitoring services. Those tools are:

- Cisco PIX Firewall
- Nokia IP740 Network Appliance
- IBM SecureWay Policy Director
- IBM LDAP Server
- Symantec Intruder Alert

The IBM SecureWay Policy Director is the principle security definition and management facility. It will facilitate single definition of authorization and authentication controls, and it will interface with the IBM LDAP Server. The CSE system will have a Security Service that interfaces with Policy Director and the LDAP Server to provide comprehensive security definition and management.

In addition, the other security tools will provide network traffic, intrusion, and access protection for the overall CSE system environment. In particular, the alliance is cognizant of the need to have a consistent security structure across interface channels, including network interface, Internet-based GUIs, and voice-based interfaces like IVR. The following table lists common security threats and the mitigation strategies the alliance will employ for the CSE system.

| Risk | Frequency | Impact | Mitigation |
|---|---|---|---|
| Eavesdropping | Low | Critical | Encrypt communication channels. |
| Open ports | Medium | Critical | Limit open ports to those required. |
| Message flooding | High | High | Packet filtering. |
| False headers | High | High | Packet filtering. |
| SYN flooding | High | High | Packet filtering, SYN cookies. |
| Ping of Death | High | High | Packet filtering. |
| ICMP redirect | High | High | Packet filtering. |
| Router ACL exposure | Medium | High | Router configuration. |
| IP spoofing | High | Medium | TCP wrappers. |
| DNS spoofing | High | Medium to High | DNS resolution. |
| DNS redirection | Medium | Medium | Frequent DNS table refresh. |
| Co-location of Services | High | Critical | Logical or physical partitioning. |
| Password cracking | High | Critical | Limit login attempts; enforce non-obvious passwords. |
| NT-level attacks | Medium | Critical | Install latest vendor fixes. |
| Guest or password-less user privileges | Medium | Critical | Disable default logons. |
| Eavesdropping | Low | Critical | Encrypt service connections. |

| | | | |
|---|---|---|---|
| Lack of activity awareness | High | High | Monitor, log, and audit. |
| No ticket expiration | High | Medium | Set expirations. |
| No session timeout | High | Low | Automatic termination. |

**Figure 4A.3.3-2 Risks and Mitigations -** *The alliance has carefully evaluated the security risks that could threaten the CSE system and has developed strategies to mitigate each of them***.**

Data Security will be provided through the application and through native DB2 facilities. This provides protection for sensitive case information.

The proposed Tivoli Storage Manager software will also aid data integrity through a centralized backup solution. Adequate testing and management of off-line storage media and procedures will be done to test *correct* and *timely* restoration of target data.

## 4A.3.3a.3.8 Maximize Data Quality

Data quality is probably one of the major challenges in implementing the CSE system. Converting disparate data from multiple legacy consortia systems will be the immediate challenge. In addition, the CSE system will be receiving and sending data from and to numerous other sources to support SDU, the Locate functionality, and other interfaces. The alliance is proposing specific techniques and tools to support data quality. They are:

- Using common metadata during the system build and operations
- Data intake validation and transformation, using ETL tools – specifically AMS/Synergy's ACS to support conversion of consortia legacy data

The alliance will define common data types, common data-handling services, common data rules and edits, and other data-quality techniques to support the accurate conversion, intake, and management of data in the CSE system.

The AMS/Synergy ACS tool has been used for conversion of consortia system data very successfully in the State of California. It will provide starting data models to support the creation of common routines for conversion and facilitate a definition of a common CSE system data model. Application common services will be created to manage data access, manipulation, and storage. Common data components will provide single-source access points to support application functionality, thus reducing data mishandling through multiple redundant routines. In addition, the CSE system (particularly the Locate functionality) will contain filtering capabilities allowing case workers to manage data intake in such a way as to avoid being overwhelmed by *too many* or *unhelpful* data responses. Finally, the data-handling process will be prototyped to promote consistent interaction, interoperability, and speed in order to handle the CSE system's load.

# 4A.3.3b CCSAS Architecture Best Practices Matrix

This sub-section describes the alliance's evaluation of the State's best practices and guidelines .

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| **Conceptual** | | | |
| CCSAS BP-1 Use partitioned application designs based on clear logical boundaries. | Concur | | The CSE system architect is based on the highest level using a component approach, which partitions the application and present well-defined interfaces. These are initially defined in the system and functional architectures, and are decomposed to successive lower levels of detail. At the lowest level, actual classes are defined. |
| CCSAS BP-2 Design interfaces to be message based, preserving logical boundaries, asynchronously if possible. | Concur | | The use of an EAI infrastructure based on WebSphere MQ provides asynchronous messaging. This will be used to support communications between autonomous services. At a lower level of granularity, object interactions use a synchronous, message-based protocol. |
| CCSAS BP-3 Use business events driven systems design, spawning actions brokered by messages. | Concur | | Business events will be driven by user actions, time changes, and other external case actions. Case Management and Timeline Services will trigger business events and drive real-time, asynchronous, or scheduled actions. |
| CCSAS BP-4 Send messages in real-time, providing application flexibility and avoiding batch-based contingencies. | Concur | | The use of WebSphere MQ at the heart of the EAI infrastructure allows messages to be posted to queues regardless of the current state of the receiver. The messages can be read on a flow basis as soon as the receiver can process them, or left to accumulate in the queue for the receiver to process in batch mode. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-6 Use granular application designs emphasizing reusable components and loose coupling techniques. | Concur | | As per BP-1, the use of a component approach that extends from the highest level of architectural components to the actual Java classes emphasizes reusable components. Formal, well-defined interfaces, layering principles and messaging emphasize loose coupling. |
| CCSAS BP-7 Centralize architecture management. | Concur | | The alliance project team includes a position of Chief of Architecture who will have the responsibility to oversee and manage the aspects of the architecture. See the *Architecture Conformance Methodology* subsection earlier in this section for a description of our approach to centralized architectural management. |
| CCSAS BP-8 Promote vendor independence by using wherever possible non-proprietary specifications and interchangeable components. This supports modular system development, more easily replaced components and the achievement of the best return on IT investments. | Concur | | The CSE system solution is founded on open standards. This applies equally to custom development and COTS products. Non-proprietary, standards based COTS products from a significant range of vendors have been selected. |
| CCSAS BP-9 Incorporate e-business technologies and services when practical and appropriate, supporting e-Government initiatives, in the design of new solutions. | Concur | | E-business technologies are fundamental to this solution. This applies to the entire architecture, which is based on J2EE concepts and products, and not just external, browser-based users. This permits a multi-channel approach that consistently re-uses the same business functionality. In addition, the alliance will conform to State e-business look-and-feel standards and other initiatives, where appropriate, in designing and developing the CSE system. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-10 Design databases to facilitate system portability, scalability and adaptability. | Concur | | The operational database will be implemented using DB2 UDB. This is a relational database product that adheres to ANSI SQL standards. Relational databases are inherently flexible, with features such as the 'Alter' command to permit certain dynamic changes. In addition, DB2 can run on a numerous platforms such as UNIX and Windows based systems. These inherent features, together with a database design strategy that adheres to third normal form, will facilitate this practice. |
| **Application** | | | |
| CCSAS BP-20 Design for the component services oriented architecture, uncoupling client and user interfaces from business rules and from data delivery services. | Concur | | Loosely coupled components within the layered software architecture will support this. Each layer encapsulates its functionality and presents a well-defined interface to its services. For instance, the implementation of business rules can change without affecting the GUI, and the data structure, or even the physical data store can change without affecting the business rules (assuming no change in the logical definition). |
| CCSAS BP-21 Maximize platform-neutral design and development strategies. | Modify | Prefer platform-neutral design and development strategies. | Open standards and Java technology directly contribute to platform independence, as does the use of a UML based development methodology. |
| CCSAS BP-22 Generalize application interfaces. | Concur | | The CSE system architecture is designed to accommodate a multi-channel user community. The layered architecture makes it possible for different interface types to utilize the same application functionality. At the appropriate layer in the architecture, the actual client type is irrelevant and unknown. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-23 Assign responsibility for business rules to business units. | Omit | | This practice is a business policy that is appropriate for DCSS and FTB to implement. The system will facilitate it by implementing appropriate business rules in a centralized, externalized manner. This includes table-driven decision data and purpose built Java rules objects. This separation of business rules into easily identifiable and modifiable elements will assist with this practice. |
| CCSAS BP-24 Make business rules platform-neutral. Implement business rules in a non-proprietary, cross-platform language. This approach provides platform independence and portability. | Concur | | As described above, the use of techniques such as table-driven decision data (held in a relational database) and rules objects coded in Java support this practice. |
| CCSAS BP-25 Implement business rules as discrete components. | Concur | | The use of an OO approach based on business objects provides a natural support for this practice. The use of centralized and externalized rules enhances it. |
| CCSAS BP-26 Design applications so business rules control access to data. | Modify | Design applications so business objects control access to data | The CSE system layered, object-oriented architecture is designed so that the business object layer controls the access to data. As described above, the externalized rules objects will obtain their data from the invoking entity. They may also use read-only access to data (for instance to code tables) to implement their functionality. |
| CCSAS BP-27 Develop so as to iteratively confirm a working system, including iterative proof of concept, early validation of the application design, early warning of performance issues. | Concur | | Using the IBM and partner Best Practice methodologies, the alliance will build early prototypes for both architectural and functional validation. This includes the use of a 'reference application' to provide an early working model of the architecture, and the low-fidelity interface design approach. The early prototypes will be used to detect and address performance issues. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-28 Design for manageability using the enterprise's system management practices and tools. | Concur | | The CSE system will use a full suite of system management tools. |
| CCSAS BP-29 Component design facilitates effective testing strategies. | Concur | | The alliance will decompose the business problem into discrete business logic (along with other) components. Such decomposition will facilitate white-box testing at the *component* and *service* level. |
| CCSAS BP-30 Define and develop business rules and data integrity controls separate and apart from business process and data access logic. The integrity logic must be reusable across applications that can cause change to shared data. | Concur | | Business objects (and rules objects used by the business objects) will implement the business rules and data integrity. The session objects and workflow component will implement the business process. Data access occurs from the business objects via data access objects. Business objects with their inherent business logic and data integrity can be re-used by different 'applications. |
| **Network** | | | |
| CCSAS BP-40 Develop the enterprise-wide network infrastructure to be centrally maintained and managed. | Concur | | The enterprise-wide network backbone and outlying infrastructure will be managed. Network routers and switches will be SNMP-compliant and will interact with the management products to provide comprehensive management of network traffic, problems, and performance. |
| CCSAS BP-41 Networks must be positioned for future growth in traffic and expansion of services such as voice and video. | Concur | | The alliance is proposing substantial bandwidth to accommodate not only usage spikes in child support activity but also future addition of multimedia capability to the CSE system. Since TCP/IP will be the standard network protocol, future layering of voice and other multimedia packets over IP will be a natural growth process. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-42 When data has to be distributed to multiple points (e.g., software and content distribution), move it once and only once across each data link. Minimize data movement. | Concur | | The alliance is proposing a browser-based user interface delivery mechanism to minimize locally distributed software and application content. Caching of graphical and other content may be done to aid performance, but the alliance does not plan to provide any significant distribution of content or software. |
| CCSAS BP-43 Consider the impact of middleware on network utilization. | Concur | | The alliance is a strong supporter of the use of middleware and of middleware's importance in forward-thinking system architectures. The CSE system EJB framework and messaging Services will be designed to consider network impact such as the number of round trips and amount of data transmitted. |
| CCSAS BP-44 Design network-neutral applications; Code to middleware Application Programming Interface (API) and not network API. | Concur | | The alliance plans to build message-based application components that communicate at several layers above the network layer in the OSI model. The APIs that support communication will be consistent with EAI. |
| CCSAS BP-45 Implement a common network environment using standard protocols to connect workstations, computers and communications devices and to provide services such as file transfer, electronic mail and directory and network management. A common network environment will improve internal and external communications, staff productivity, efficiency, responsiveness to customer needs and scalability to meet future requirements. | Modify | Implement a common network environment using standard protocols to connect workstations, computers and communications devices and to provide services such as file transfer, and directory and network management. A common network environment will improve internal and external communications, staff productivity, efficiency, responsiveness to customer needs and scalability to meet future requirements. | The alliance solution will conform with the exception of the electronic mail service. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-46 Perform performance measurement and load testing on distributed applications before deployment. | Concur | | The alliance is proposing a substantial amount of performance testing during Development. These will vary from tests during Development to confirm design approaches and assumptions to full- blown load tests to confirm proper performance and functionality before phased implementation. We will test service delivery, traffic and other aspects of service-to-service, service-to-data, component-to-component, and browser-to-service functionality delivery. Network testing and performance will be a major focus of these tests. |
| **Data/Information** | | | |
| CCSAS BP-50 Treat Child Support information as a *strategic* business resource owned by DCSS. | Concur | | We believe that the data is the most important component of the system. As our implementation strategy suggests, we have placed significant emphasis and effort on converting, cleaning, and managing child support case and system data. Correct case functioning, payment distribution, and customer service are dependent on accurate, complete data. We understand that the child support information is not only strategic, but also vital to successful CSE system operation. |
| CCSAS BP-51 Validate data at every practical level to ensure data quality and avoid unnecessary network traffic. Leverage common edit functionality and data related business rules and/or leverage metadata for data validation. | Modify | Validate data at every practical level to improve data quality and avoid unnecessary network traffic. Leverage common edit functionality and data related business rules. Use metadata to define data validation requirements. | Simple edits will be performed by the application on the user workstation, while the bulk of data validation will occur on the server. GUI edits will perform basic range, value, and type-checking to confirm basic data requirements are met before initiating a network trip. Wherever appropriate, server-side validation will occur at the business object level to implement commonality. Metadata in the UML model will define data relationships, dependencies, and validation. This may or may not be automated. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-52 Centralize data that needs to be shared and current. | Concur | | We are proposing a centralized data store to support the CSE system case management and customer service. In addition we are also proposing a data warehouse to support reporting and case analysis. This data will be kept current and will be shared by the application services and components. |
| CCSAS BP-53 Minimize the replication of data within operational application systems by replicating only stable data when necessary and based on business requirements. Data redundancy must be planned. | Concur | | The centralized operational database avoids the need for data replication to support the operational system. A fully managed data replication environment will be established to support the replication of operational data to the data warehouse. |
| CCSAS BP-54 Data must be modeled, named and defined with a singular definition, standard set of values and uniform business rules to support all users of the data. | Concur | | We will use industry standard techniques such as UML, MOF, CWM, and tools that support these techniques such as Rational Rose and ErWin, to manage a consistent model of the system's data and objects. |
| CCSAS BP-55 Use a common, enterprise data dictionary tool, which supplies information to the users of the system, to the enterprise data model, to design and maintain all new database instances. | Concur | | The data model will be developed and maintained using ErWin. This constitutes a dictionary that will form the core of the application's understanding of the data, and will be a key component in managing and maintaining database instances. |
| CCSAS BP-56 Replicated data should be read-only. | Concur | | We agree; the only planned data replication is for the data warehouse, which is *read-only*. |
| CCSAS BP-57 Separate On-Line Transaction Processing (OLTP) from Executive Information Systems (EIS), Decision Support Systems (DSS) and On-Line Analytical Processing (OLAP), accommodating disparate growth rates for each, integrity of data of record, and avoiding performance degradation. | Concur | | The operational CSE system processes and data will be stored separately from the data warehouse data. The operational data will support the OLTP activity and the data warehouse will support analytical activity, including OLAP, EIS, and DSS. Separate machines and/or partitions will access these. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-58 Centralize administration for data access middleware. Typically, workstations and servers are used for multiple applications and require connectivity to multiple databases. If administration for data access middleware is provided by central IT staff, any changes that are required are more easily managed and executed. | Modify | Centralize administration for middleware during the contracted support period. | This is a business policy. The alliance project approach and architecture will be consistent with this practice. The middleware consists of WebSphere Advanced Application Server, and the database is DB2 UDB. Administrative activities on these tools in non-development environments (e.g. production, test, production simulation) will be managed by the IBM e-Business Hosting Center. |
| CCSAS BP-59 Design databases to be modular, not monolithic. Aligning data with the application service facilitates changes in business processes. Only the data associated with a particular business process is potentially affected when a change is needed, not all the data associated with an entire application. These strategies increase performance for backup and recovery and provide higher reliability, availability, and scalability. | Omit | | Business Services and components will be aligned to business processes and functions. Data Services and components will be aligned to data structures and tables. In the CSE system layered software architecture, the lower the layer, the less specific it is to a business function or process. As most data is common to many business processes (e.g. Case and Participant data), it is shared between these processes. Any change would be significant to any process that uses it, and should be applied consistently. (However, changes may be hidden within the business object layer so they are not exposed to business process functionality.)<br>Physical database partitioning will be used to address issues such as performance, backup & recover, and scalability. |
| CCSAS BP-60 Use the method of capturing data that provides the best accuracy, facilitates completeness, and provides the best timeliness. | Concur | | Data will be captured using interface services, image capture software for printed materials, and browser-based user interface screens. Since multiple physical channels will be supported, multiple capture mechanisms will be required at the physical level. Each of these capture mechanisms will be developed to provide the best accuracy and completeness based on its physical capabilities. These data capture mechanisms will use common Services and components to support edits, validation, and transformation. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-61 Identify specific requirements for data availability, freshness (i.e., live, 24 hours old, etc), and recoverability. | Concur | | We will identify specific requirements for data effective dating, data availability as well as archival and backup timeliness based on the business needs. |
| CCSAS BP-62 Consider the network when designing OLAP systems. | Concur | | OLAP tools will allow definition of OLAP models and model run initiation at a workstation, but actual model execution and result set assembly will be done using middle-tier servers to reduce network traffic. |
| CCSAS BP-63 Process, store and disseminate data in electronic form to the greatest degree practical. Convert data received in paper form to electronic form at the earliest possible point. | Concur | | We are proposing an imaging solution to capture case paper documents. Documents will be scanned when received at LCSA locations. These electronically captured documents will be centrally stored and indexed using IBM Content Manager. |
| CCSAS BP-64 Define measurable data quality targets to facilitate data quality management. | Modify | Define measurable data quality intake procedures to facilitate data quality management | We will define data quality targets for interface data acceptance, conversion data, and other data interactions and for loading performed by the CSE system. We are proposing tools such as Vality Integrity, Evoke Axio, and AMS/Synergy ACS, which have extensive capabilities for data handling and quality control. Intake procedures using these tools will be defined with data validation and other quality controls, and run-time statistics generated to measure the quality of input data. Data input via the on-line system will enforce data validation and quality controls. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-65 Define and name data attributes with a singular definition, standard set of values and uniform business rules. | Concur | | A single, common definition, with name aliases mapping to external interface and legacy systems, will be maintained in the metadata repository managed by ErWin and Rational Rose. Appropriate business rules and data constraints will be defined in the repository and implemented in a single place via the business objects. EAI products will be used to provide common transformation to aliases and external system-valid values for the design and operation of data interfaces. |
| **Componentware** | | | |
| CCSAS BP-70 Establish a reuse methodology for the identification and implementation of components, incorporating business requirements service types. | Concur | | The architectural model developed for the CSE system, using a component approach, establishes a formal, well-defined and documented foundation for re-use. This, together with the best of breed re-use of alliance program and software assets, and the establishment of design patterns, will provide an appropriate environment for re-use. The project's design and development methodology provides a focus on these assets to emphasize re-use. |
| CCSAS BP-71 Component services should be callable by any application or any other component. | Modify | Component services should be callable by any application or any other component, within the constraints of the architecture and design. | Components will be developed to be unaware of their client. This facilitates modifiability by allowing new clients to be added. Within the constraints of the architecture, a component can be used by any other component. However, a layered architecture imposes certain constraints on the accessibility of components to enhance maintainability. One example is the hierarchical nature of the layers, which prohibits a component from calling 'upwards' to a higher level layer. Also, object-oriented techniques to define interfaces as private/package/public and the use of appropriate authorization enforcement will be imposed. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-72 Establish a repository for maintaining the information about available reusable components. | Concur | | This information will be maintained in Rational Rose and ErWiin. |
| CCSAS BP-73 Every component must have a published API managed by change control. | Concur | | Every component will have a published API containing the public and private methods of its use. Change and version management will be through PVCS. |
| CCSAS BP-74 Adopt effective component management methodologies, including the tools to support component reuse. | Concur | | Basic component management will be effected through a combination of methodology and supporting tool sets, namely PVCS and Rational Rose. We believe that the essential ingredients for successful component management, especially to facilitate re-use, are: (1) Continuing training of team members in the architecture and in its use. This includes providing solid understanding of the frameworks, Services, component uses and hierarchies, and how to appropriately use them. (2) Publication and easy access to component information with extensive documentation. (3) Enforcement through the Design, Development, and Test processes. This includes peer reviews, sanity/completeness checks, and white-box testing. |
| **Application Communication Middleware** | | | |
| CCSAS BP-80 Design applications to use asynchronous communication when possible. | Modify | Design inter-system and high level inter-component communications to be asynchronous when possible. Lower level inter-object communications will not normally be asynchronous. | As discussed earlier, the use of an EAI infrastructure promotes an inter-service messaging approach. Actions on messages for functional delivery will be either asynchronous or synchronous depending on business needs. At a lower level of granularity, communications between objects within a service component will not normally be asynchronous, but will use a synchronous call/return mechanism. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-81 Establish a statewide information services broker independent of code development tools. | Concur | | The CSE system architecture is based around a distributed object approach, using Enterprise Java Bean technology. Fundamental to this is the ability to lookup and access resources such as object or properties. This uses Java technology such as Java Naming and Directory Interface (JNDI), which is an LDAP compatible directory service, and Remote Method Invocation over Internet Inter-Orb Protocol (RMI over IIOP) which allows objects located by via the JNDI service to be accessed using CORBA protocols. |
| CCSAS BP-82 Use distributed transaction monitors only when distributed transactional integrity is required. | Modify | Use distributed transaction processing only when distributed transactional integrity is required | We concur for communication between the CSE system and external systems, where a loosely coupled, asynchronous transaction approach will be used. Within the CSE system, the WebSphere Application Server is a distributed transaction monitor that can support multiple 'containers' that may be used for load balancing, scalability and failover purposes. The application may utilize these capabilities. |
| CCSAS BP-83 Manage a statewide broker as a strategic infrastructure component. | Concur | | The broker technology described above in BP-81, and its implementation in the CSE system will be appropriately managed and controlled by administrative staff as a strategic resource. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| **Platform** | | | |
| CCSAS BP-90 The client platform displays the interface to an application. In the design of applications, minimize dependency on a particular client platform as much as possible. For examples, Web Browsers in 3-tier and n-tier application architectures, minimize dependence on client platforms. | Concur | | The alliance is proposing a thin-client Web-browser visual user interface delivery mechanism for the primary CSE system, the CSE system e-Child Support, and the customer relationship management (CRM) application for customer service. |
| CCSAS BP-91 Balance business adaptability and ease of systems management with server platform choices. However, when there is a conflict between business adaptability and ease of systems management, the business requirement for providing adaptability should have the highest priority. | Concur | | The CSE system solution is based on AIX on IBM RS/6000 pSeries servers to support the application, database, and data warehouse. The consistent server platform will contribute to ease of system management. The environment will be centrally monitored using BMC tools. We believe that the servers we have chosen provide substantial business adaptability and also facilitate simplified, centralized management. We certainly do agree that the business adaptability need is paramount. |
| **Integration** | | | |
| CCSAS BP-100 Purchase, do not build, software to perform translation, formatting, and transmission of data electronically. | Concur | | This proposal contains an impressive array of COTS products to meet this objective. These include EAI products like WebSphere MQ, and SeeBeyond's eGateIntegrator and eXchange Partner Manager. For data translation, formatting and conversion we have included products such as Vality Integrity, Evoke Axio and AMS/Synergy ACS, Vality. The management of data replication to the warehouse will use tools such as Data Warehouse Manager, and Data Propagator Relational (DPROPR). |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-101 Balance the type of data access method implemented with required performance needed by the application end users and the impact to the existing operational databases. | Modify | Balance the type of data access method implemented with required performance needed by the application end users and the impact to the operational system. | The word "database" was replaced by "system", as the response time and resource impact needs to be balanced for components of the system. The word "existing" was removed as there is no existing system.'<br>Note that the data access for the operational system will be via the application's business objects, with the exception of limited, read-only reporting.<br>During GUI design, the response time and overall system impact of each transaction will be analyzed. There may be a need to trade-off response time against system impact, or to re-visit and amend the requirement. For instance, a transaction that 'needs' to return a large quantity of data, or 'has' to update a wide range of objects in one transaction (thus potentially locking out other users for an unreasonable length of time) may be re-structured for the overall benefit of the system. |
| CCSAS BP-102 Keep the integration strategy as simple as possible. | Concur | | We believe that on a project of the complexity and magnitude of CCSAS, this will be very difficult. We have proposed custom software, frameworks, and COTS products. Integration will be challenging, but we believe we have the right blend of out-of-the-box versus custom software and a mature, tested methodology to keep integration on track. But it will take rigorous, continual joint State/alliance oversight to manage the complexity. We agree that it is the correct goal and we will work with the State to achieve it. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-103 Design new application systems with the user interface as a separate application tier. | Concur | | We are proposing a Web-based user interface and Web servers to provide the interface graphical and text delivery as the first tier. We are proposing a separate application server tier to house the specific business logic, application interaction, and workflow. |
| CCSAS BP-104 Implement as few communications tiers as possible. | Concur | | As Per BP-44, the CSE system will "Code to middleware API and not network API". The communication middleware to be used is WebSphere MQ, and this will be accessed from the application code using MQ Access classes. The messages will be delivered end-to-end via the WebSphere MQ product or by via the EAI infrastructure, depending on the capabilities of the remote partner. In either case. It will not make a difference to the CSE application code. |
| CCSAS BP-105 Use industry standards for transactions that are being performed electronically. | Concur | | We are proposing HTTP and XML to support Web-type transactions. This includes user-interface transactions and data exchanges with external systems. The use of SeeBeyond eXchange for interactions with external systems supports these standards. We do not plan to support electronic payment transactions directly (with standards such as ACH) since these are part of the SDU implementation. |
| **Security and Directory Services** | | | |
| CCSAS BP-130 Provide the capability to monitor all relevant activity. | Concur | | The enterprise management tools that are part of this solution provide comprehensive system monitoring capabilities. These include performance monitoring and security monitoring tools. In addition, the application will be designed to keep an audit record of update activity in the system. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-131 Implementation of security controls must be easy to administer, verify, and sustain. | Concur | | Security controls will be managed primarily through Policy Director and LDAP server for authentication and authorization. Specific security rules for network integrity will be implemented in the firewall and Symantec Intruder Alert. |
| CCSAS BP-132 Authenticate users prior to accessing services. | Concur | | We will use Policy Director through an application API to authenticate users before accessing services. |
| CCSAS BP-133 Design the infrastructure to meet established reliability, availability, performance and security goals, and measure the infrastructure against those goals on a regular basis. | Concur | | The system infrastructure will be designed to meet the reliability, availability, performance and security goals defined by the contract. Performance against these goals will be a factor in design, prototyping, development, performance and operational testing. Operational performance in production will be monitored using a threshold-based approach, using COTS tools such as Wily Introscope. |
| CCSAS BP-134 People are to be responsible for downloaded data they use and will adhere to confidentiality and privacy requirements. People who discover erroneous data will make an effort to correct errors at the authorized source rather than merely updating their copy. | Omit | This is a business and management issue that is outside the scope of the CSE system or the development effort. | We believe that this requirement is part of an effective overall security policy that must be created for the CSE system by DCSS and FTB. The system will facilitate this practice by the implementation of security measures to control access to data, a centralized, shared database so that updates are applied once, and to the definitive 'copy' of the data, and by use of workflow and electronic data promulgation techniques, so that data seen by a user is the definitive source. The concept of a correctable copy of the data will not exist in the system. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-135 Use an enterprise-wide public key infrastructure. | Modify | Evaluate the use of public key infrastructure for defined interactions with defined partners. | The use of PKI is not anticipated, with the possible exception of specific interactions with automated system interfaces and external users who contribute to the system's business processes (such as genetic test labs). The use of PKI in these situations will be evaluated based on the maturity and suitability of the technology for the specific interface, and to verify that it is commercially reasonable.<br>Case members or other public users of the system (as opposed to partners) are not planned to use PKI. This technology requires set-up and administration by the third party, and incurs a cost. We feel that it would be an unnecessary complication and an inhibitor of open access to the general CSE user community. The State and the alliance will jointly agree on an industry- accepted alternate practice to authenticating and managing access for public users, such as passwords.<br>PKI is not planned for internal users of the system such as caseworkers. They will access the system through a secure network, and will use a more conventional means of authentication such as a password. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-136 Authorize users based on least privilege (i.e., the minimum set of resources necessary to perform their function). | Concur | | We believe that the appropriate security policy is that privileges are withheld until granted. That is, there is no default access. We also believe that the safest security policy provides the user with no more privileges than he or she needs to perform his or her job. We are providing tools such as Policy Director, LDAP WebSphere AS and the application's security mechanism, that will allow definition of the appropriate access granularity, based on users or user groups. We will work with the State to determine the appropriate use of security in order to effectively match maintaining *security* and *confidentiality* with *effective management* and *monitoring*. This concept is not new to the alliance. The alliance partners have extensive experience with FTB in defining and implementing security to meet the strict FTB and IRS requirements in past projects. |
| CCSAS BP-137 Use appropriate security domains to achieve flexibility and application neutrality. | Concur | | We will implement domains based on appropriate, defined application usage partitioning. These domains may be geographical, based on functional area, based on user scope of responsibility, or more likely a combination of these and other elements. |
| CCSAS BP-138 Use open standards-based security solutions, avoiding dependence on proprietary strategies. | Concur | | As in other areas, we believe standards usage is a requirement, both to provide that the right functionality is implemented and to protect the State's technology investment. Our proposed solution takes advantage of security standards, including LDAP, SSL, HTTPS, VPN, and others. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-139 Identify security policy domains, simplifying the analysis of security requirements. | Concur | | As stated in the response to BP-137 above, we will identify appropriate policy domains with the State and guide requirements based on a number of domain characteristics, which may include user scope of responsibility, geographical area, etc. |
| CCSAS BP-140 Implement a solution that provides fault-tolerant enterprise directory availability. | Concur | | We will implement LDAP Services using redundant servers that also include redundant components like RAID disks, swappable power supplies, and redundant CPUs. The alliance recognizes that Security Services are critical resources that must be available for overall system operational integrity. |
| CCSAS BP-141 Use token-based or strong password-based authentication where public key certificates are not feasible. | Concur | | As discussed in the response to B-135, we will work with the State to devise a token or password based on an authentication mechanism for public users. |
| CCSAS BP-142 Purchase applications and operating systems that are directory-enabled. | Concur | | Windows 2000, AIX, and many other COTS products bid are directory-enabled. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| **GroupWare Collaboration** | | | |
| CCSAS BP-150 Group Calendaring and Scheduling (C&S) should be a platform independent and centrally managed cross – network activities coordinator employing interoperability standards (e.g., ICAP and iCalendar) | Modify | 150 Group Calendaring and Scheduling (C&S) will be a platform independent and distributed capability of the CSE system. It will be defined to interact using pre-defined interfaces with the court calendar interface and genetic test lab interface. | Group calendaring and scheduling will be a custom developed capability within the CSE system application code. It will exhibit the same platform independence and distributed processing features as the rest of the application. The C&S functionality to be provided consists of the following:<br>• Court calendar / docket maintenance screen (and inbound interface)<br>• Genetic test lab schedule maintenance (and inbound interface)<br>• Hearing maintenance<br>• Appointment maintenance<br>• Outbound interface of extracted appointment data to be accepted by a COTS calendar |
| CCSAS BP-151 C&S is interoperable with other C&S applications and computing platforms across the state | Modify | C&S will be interoperable with the court calendar interface and genetic test lab interface using the defined interface. | See the preceding comment for the C&S functionality to be provided in the CSE system. |
| CCSAS BP-152 C&S should provide mechanisms for support documentation attachment | Omit | | This proposal is based on the assumption that CSE system users worker will have access to COTS Calendaring and Mail software outside of the CSE application that would be used for this purpose. |
| CCSAS BP-153 C&S application should provide remote access capabilities | Concur | | This capability will be supported consistently with the overall access capabilities of the CSE system. The use of a browser interface will, from an appropriately secured intranet site, permit this capability. |

| Best Practice | QBP Concur, Modified, Omitted, or New | Modified or New Best Practice | Justification / Comments |
|---|---|---|---|
| CCSAS BP-154 C&S application should enable task and resource management (e.g., reserve equipment and facilities, reminder messages) | Omit | | These capabilities were not specified as CSE system requirements. They have not been included in the scope of this proposal. |
| CCSAS BP-155 C&S application should support web-enablement | Concur | | The C&S component will be Web-enabled. |

**Figure 4A.3.3 - 3 Proposed Best Practice Matrix.**

# 4A.3.3c CCSAS Architectural Attributes, Proposed Best Practices, and Proposed Technology Matrix

This sub-section describes the relationship of our solution's proposed technology to the attributes of a preferred CCSAS technical architecture and the architectural best practices.. It first presents a matrix to cross-reference each architecture attribute to best practices and conceptual design characteristics, and then follows this with a textual justification for the matrix.

## 4A.3.3c.1 CCSAS Architectural Attributes, Proposed Best Practices, and Proposed Technology Matrix

| CCSAS Architecture Attribute | Proposed Best Practice Reference | Proposed Technology |
|---|---|---|
| Maintainability | CCSAS BP-1<br>CCSAS BP-2<br>CCSAS BP-7<br>CCSAS BP-9<br>CCSAS BP-28<br>CCSAS BP-29<br>CCSAS BP-40<br>CCSAS BP-41<br>CCSAS BP-44<br>CCSAS BP-53<br>CCSAS BP-54<br>CCSAS BP-53<br>CCSAS BP-55<br>CCSAS BP-70<br>CCSAS BP-72<br>CCSAS BP-73<br>CCSAS BP-74<br>CCSAS BP-102<br>CCSAS BP-104<br>CCSAS BP-130<br>CCSAS BP-131<br>CCSAS BP-136<br>CCSAS BP-139<br>CCSAS BP-141 | **Application Domain**<br>Layered Component-Based Architecture<br>Java and Internet Technology<br>Best of Breed Solution Approach<br>Open Standards Adherence<br>CSE Development Methodology<br>Common Metadata Driven Development<br>Enterprise Application Integration<br>Workflow Driven<br>Externalized, Centralized Rules and Decision Data<br>**Data Management Domain**<br>Open Standards Adherence<br>CSE Development Methodology<br>Common Metadata Driven Development<br>COTS Data Intake, Validation & Transformation Tools<br>Centralized, Shared, & Normalized Database<br>Segregation of Operational and Analytical Data<br>**Platform Domain**<br>Open Standards Adherence<br>Enterprise Application Integration<br>Distributed, Multi-tiered Technical Architecture<br>Security Framework<br>Enterprise Management Tools<br>**e-Government Domain**<br>Java and Internet Technology<br>Best of Breed COTS Products |

| CCSAS Architecture Attribute | Proposed Best Practice Reference | Proposed Technology |
|---|---|---|
| Modularity | CCSAS BP-1<br>CCSAS BP-2<br>CCSAS BP-6<br>CCSAS BP-30<br>CCSAS BP-70<br>CCSAS BP-71<br>CCSAS BP-103<br>CCSAS BP-104<br>CCSAS BP-142 | **Application Domain**<br>Layered Component-Based Architecture<br>Enterprise Application Integration<br>Externalized, Centralized Rules and Decision Data<br>**Data Management Domain**<br>Segregation of Operational and Analytical Data<br>**Platform Domain**<br>Java and Internet Technology<br>Distributed, Multi-tiered Technical Architecture<br>Enterprise Management Tools<br>**e-Government Domain**<br>Java and Internet Technology |
| Scalability | CCSAS BP-1<br>CCSAS BP-10<br>CCSAS BP-27<br>CCSAS BP-42<br>CCSAS BP-43<br>CCSAS BP-46<br>CCSAS BP-62<br>CCSAS BP-101<br>CCSAS BP-133 | **Application Domain**<br>Layered Component-Based Architecture<br>Java and Internet Technology<br>CSE Development Methodology<br>Enterprise Application Integration<br>**Data Management Domain**<br>Centralized, Shared, & Normalized Database<br>Segregation of Operational and Analytical Data<br>**Platform Domain**<br>Java and Internet Technology<br>Open Standards Adherence<br>Best of Breed COTS Products<br>Distributed, Multi-tiered Technical Architecture<br>Enterprise Application Integration<br>Enterprise Management Tools<br>**e-Government Domain**<br>Java and Internet Technology |
| Adaptability | CCSAS BP-1<br>CCSAS BP-2<br>CCSAS BP-20<br>CCSAS BP-22<br>CCSAS BP-91<br>CCSAS BP-103 | **Application Domain**<br>Layered Component-Based Architecture<br>Java and Internet Technology<br>Best of Breed Solution Approach<br>Open Standards Adherence<br>CSE Development Methodology<br>Enterprise Application Integration<br>Workflow Driven<br>Externalized, Centralized Rules and Decision Data<br>Common Metadata Driven Development<br>**Data Management Domain** |

| CCSAS Architecture Attribute | Proposed Best Practice Reference | Proposed Technology |
|---|---|---|
| | | Open Standards Adherence<br>CSE Development Methodology<br>Common Metadata Driven Development<br>COTS Data Intake, Validation & Transformation Tools<br>Centralized, Shared, & Normalized Database<br>Segregation of Operational and Analytical Data<br>**Platform Domain**<br>Java and Internet Technology<br>Open Standards Adherence<br>Best of Breed COTS Products<br>Enterprise Application Integration<br>Distributed, Multi-tiered Technical Architecture<br>Security Framework<br>Enterprise Management Tools<br>**e-Government Domain**<br>Java and Internet Technology |
| Portability | CCSAS BP-10<br>CCSAS BP-21<br>CCSAS BP-45<br>CCSAS BP-105 | **Application Domain**<br>Java and Internet Technology<br>Open Standards Adherence<br>Enterprise Application Integration<br>**Data Management Domain**<br>Open Standards Adherence<br>Common Metadata Driven Development<br>**Platform Domain**<br>Java and Internet Technology<br>Open Standards Adherence<br>Best of Breed COTS Products<br>**e-Government Domain**<br>Java and Internet Technology |
| Openness/Standards | CCSAS BP-8<br>CCSAS BP-21<br>CCSAS BP-45<br>CCSAS BP-105<br>CCSAS BP-135<br>CCSAS BP-138<br>CCSAS BP-155 | **Application Domain**<br>Open Standards Adherence<br>**Data Management Domain**<br>Open Standards Adherence<br>**Platform Domain**<br>Open Standards Adherence<br>**e-Government Domain**<br>Open Standards Adherence |
| Autonomy | CCSAS BP-3<br>CCSAS BP-6<br>CCSAS BP-8 | **Application Domain**<br>Layered Component-Based Architecture<br>Enterprise Application Integration |

| CCSAS Architecture Attribute | Proposed Best Practice Reference | Proposed Technology |
|---|---|---|
| | CCSAS BP-20<br>CCSAS BP-140 | **Data Management Domain**<br>Segregation of Operational and Analytical Data<br>**Platform Domain**<br>Distributed, Multi-tiered Technical Architecture<br>Enterprise Management Tools |
| Flexibility | CCSAS BP-2<br>CCSAS BP-4<br>CCSAS BP-25<br>CCSAS BP-24<br>CCSAS BP-135<br>CCSAS BP-137<br>CCSAS BP-154 | **Application Domain**<br>Java and Internet Technology<br>Enterprise Application Integration<br>Workflow Driven<br>Externalized, Centralized Rules and Decision Data<br>**Data Management Domain**<br>COTS Data Intake, Validation & Transformation Tools<br>**Platform Domain**<br>Enterprise Management Tools<br>Security Framework<br>**e-Government Domain**<br>Java and Internet Technology |
| Data accessibility | CCSAS BP-10<br>CCSAS BP-26<br>CCSAS BP-50<br>CCSAS BP-51<br>CCSAS BP-52<br>CCSAS BP-53<br>CCSAS BP-54<br>CCSAS BP-53<br>CCSAS BP-56<br>CCSAS BP-53<br>CCSAS BP-57<br>CCSAS BP-58<br>CCSAS BP-60<br>CCSAS BP-61<br>CCSAS BP-63<br>CCSAS BP-64<br>CCSAS BP-65<br>CCSAS BP-134<br>CCSAS BP-150<br>CCSAS BP-152 | **Application Domain**<br>Layered, Component-Based Architecture<br>Java and Internet Technology<br>Enterprise Application Integration<br>**Data Management Domain**<br>Best of Breed COTS Products<br>Common MetaData Driven Development<br>Segregation of Operational and Analytical Data<br>**Platform Domain**<br>Distributed, Multi-tiered Technical Architecture<br>**e-Government Domain**<br>Java and Internet Technology |

| CCSAS Architecture Attribute | Proposed Best Practice Reference | Proposed Technology |
|---|---|---|
| Interoperability | CCSAS BP-1<br>CCSAS BP-8<br>CCSAS BP-80<br>CCSAS BP-81<br>CCSAS BP-82<br>CCSAS BP-83<br>CCSAS BP-151 | **Application Domain**<br>Layered Component-Based Architecture<br>Java and Internet Technology<br>Open Standards Adherence<br>Enterprise Application Integration<br>**Data Management Domain**<br>Open Standards Adherence<br>Common MetaData Driven Development<br>**Platform Domain**<br>Open Standards Adherence<br>Distributed, Multi-tiered Technical Architecture<br>Enterprise Management Tools<br>**e-Government Domain**<br>Java and Internet Technology |
| Appliance connectivity | CCSAS BP-90<br>CCSAS BP-100<br>CCSAS BP-153 | **Application Domain**<br>Layered Component-Based Architecture<br>Java and Internet Technology<br>Open Standards Adherence<br>Enterprise Application Integration<br>**Platform Domain**<br>Open Standards Adherence<br>**e-Government Domain**<br>Java and Internet Technology |
| Maneuverability | CCSAS BP-1<br>CCSAS BP-7<br>CCSAS BP-9<br>CCSAS BP-28<br>CCSAS BP-29<br>CCSAS BP-40<br>CCSAS BP-41<br>CCSAS BP-44<br>CCSAS BP-53<br>CCSAS BP-54<br>CCSAS BP-53<br>CCSAS BP-55<br>CCSAS BP-70<br>CCSAS BP-72<br>CCSAS BP-73<br>CCSAS BP-74<br>CCSAS BP-102 | **Application Domain**<br>Layered Component-Based Architecture<br>Java and Internet Technology<br>Best of Breed Solution<br>CSE Development Methodology<br>Common Metadata Driven Development<br>Best of Breed COTS Products<br>Enterprise Application Integration<br>Workflow Driven<br>Externalized, Centralized Rules and Decision Data<br>**Data Management Domain**<br>Open Standards Adherence<br>CSE Development Methodology<br>Best of Breed COTS Products<br>Common Metadata Driven Development<br>COTS Data Intake, Validation and Transformation Tools<br>Centralized, Shared and Normalized Database |

| CCSAS Architecture Attribute | Proposed Best Practice Reference | Proposed Technology |
|---|---|---|
| | CCSAS BP-104<br>CCSAS BP-130<br>CCSAS BP-131<br>CCSAS BP-136<br>CCSAS BP-139<br>CCSAS BP-141 | Segregation of Operational and Analytical Data<br>**Platform Domain**<br>Open Standards Adherence<br>Best of Breed COTS Products<br>Enterprise Application Integration<br>Distributed, Multi-tiered Technical Architecture<br>Security Framework<br>Enterprise Management Tools<br>**e-Government Domain**<br>Java and Internet Technology<br>Open Standards Adherence<br>Best of Breed COTS Products |

**Figure 4A.3.3-4 CCSAS Architectural Attributes, Proposed Best Practices, and Proposed Technology Matrix**

The following provides detailed information on our proposed solution's compliance to architectural attributes and best practices.

## 4A.3.3c.2 Additional Technical Architecture Attribute Analysis

The remainder of this section provides additional detail on how our proposed CSE system solution addresses the architectural attributes and specific proposed best practices. This section is illustrative, not exhaustive. There may be unstated ways in which a conceptual design characteristic contributes to an architectural attribute.

### 4A.3.3c.2.1 Maintainability

"The ease of maintaining the developed system and/or its components."

There are many aspects to this characteristic. The system and software architectures implement an approach based on independent, inter-operating components, which permits focused, isolated maintenance activity. Also the quality of the tools used and the availability of appropriate skill-sets are significant. The use of well-recognized and open standards contributes to this. Other contributing aspects include a programming language and development approach that provides the ability to quickly identify where changes are needed, and the ability to make the changes, consistently and universally, without introducing unwanted side effects. Replacing coded functionality with externalized, administrative type changes also contributes, both because of the improved ease of making the changes, but also because of the speed and simplicity of deploying the changes.

## Application Domain

### *Layered Component-Based Architecture*

As described in Section 4A.3.1, a layered, component-based architecture establishes an environment consisting of encapsulated, interacting objects, arranged in a formal, well-defined structure. The use of components increases the capability for re-use, and encapsulation permits the mechanism of implementation of an object to be changed without affecting the external behavior of that object. The use of a layered architecture structures the components into a clear dependency so that the scope of impact for a change is easily understood. These characteristics contribute to the ease with which changes can be made to the code.

### *Java and Internet Technology*

Java is a full-featured object-oriented language, which provides the benefits of encapsulation, abstraction, inheritance and polymorphism, as discussed in Section 4A.3.1. It is a widely accepted, standards-based language that provides an ample source of skilled developers. Furthermore, its use on the CSE system is consistent across different aspects of the system. These include the external web application, the internal CSE user application, and the background processing jobs. This consistency facilitates maintainability, both from the perspective of consistent tools and skills, but also from the ability to re-use code to support these diverse application needs. This consistency and the ability to re-use functionality that is implemented once, in one place, is further supported by the use of Internet technology and J2EE, such as application servers, servlets, and enterprise java beans. This technology provides a platform that lends itself to support of a multi-channel approach, and permits the use of supporting middleware and enterprise-enabling capabilities of products like WebSphere application server, that significantly reduces the amount of custom-developed code that is required.

### *Best of Breed Solution Approach*

The contribution of the best of breed approach to maintainability is founded on the alliance's Software Architecture Assets, The system will be built on the GRNDS framework, and also will review the possibility of re-using significant features from the INC project. These are proven, well documented and J2EE compliant features that will contribute to a well constructed system, and hence are maintainable.

### *Open Standards Adherence*

By basing the choice of technology and product selection on open standards, the CSE system benefits from a vendor-neutral, well-defined and documented environment with controlled evolution. This will assist with verifying that the custom-built application is constructed according to industry best practices. It also helps to confirm that the system does not become dependent on a particular vendor's product that may become inadequately supported, and that a sufficient skill base for the technologies continues to exist.

### *CSE Development Methodology*

The development methodology is based on an iterative, object-oriented approach that uses state of the art requirements, design and development tools. These are discussed in detail in Section 3C. A central tenet of this approach is integration. Integration

between tools and integration (or continuity) from requirements analysis to developed code. The tools include:

- DOORS for the capture of requirements and tracking throughout the development process, including cross-reference to testing to see that the requirements are met.
- Rational Rose and ErWin, which between them provide extensive business modeling capabilities. ErWin is used for logical and physical data modeling with automatic schema (DDL) generation, while Rose supports use case and static and dynamic object modeling. Additionally, these tools support metadata modeling using the Object Management Group (OMG) standards, Metadata Object Facility (MOF) and Common Warehouse Metamodel (CWM).
- WebSphere Studio Application Developer is an Integrated Development Environment (IDE) that provides extensive support for Java coding and debugging that is tailored to WebSphere J2EE and web servers.
- Sitraka JProbe is a profiling tool that provides outstanding white-box testing to analyze code execution for inefficient code, dead code (never executed), and bottlenecks.
- Mercury Interactive WinRunner and LoadRunner provide extensive functionality for functional and performance testing of the application, and incorporate defect tracking and management tools.
- PVCS provides an effective and integrated software configuration management tool to manage modules, objects, and releases.

Also, the CSE system solution includes permanent, dedicated application development, test and performance test environments to support system maintenance beyond the initial development effort.

Together, the tools, methodology, design approach, and technology are explicitly aimed at reducing the maintenance effort.

### *Enterprise Application Integration*

EAI plays a significant role in promoting maintainability by de-coupling components of the system and interactions with other systems. An asynchronous messaging paradigm allows components to be more easily changed independently of other components. Aspects such as the implementation (language, structure, algorithms, etc) and even the platform can be altered without affecting the rest of the system, as long as the message content and meaning remains the same.

EAI also externalizes many of the business logic drivers, such as data transformation rules. These are maintained in the tool where they are more easily understood and amended.

In addition to de-coupling the interactions between components, EAI also de-couples the content from the communication protocol so either can be changed without affecting the other.

### *Workflow Driven*

Workflow enhances maintainability for much the same reasons as EAI. The use of workflow de-couples business process from business logic. This allows the same

functionality to be re-used in many different processes, and perhaps even more importantly allows business processes to be changed without affecting the underlying business logic.

### *Externalized, Centralized Rules and Decision Data*

Where business logic is predicated on data values, such as the time allowed for an NCP to respond to a communication, and/or is volatile (perhaps subject to short notice legislative changes), and/or is complex, and/or needs to be re-used in different business functions, the practice of externalizing those rules contributes to maintainability. Whether held in 'rules objects' or as data in a table, this approach isolates the rules, externalizes the logic drivers, and makes it easier to find, understand and amend the logic. It also helps by having the logic exist in one place, and once the change is made it is immediately and consistently 'applied' within the system.

### *Common Metadata Driven Development*

Metadata improves the understandability of the system. The tools used to maintain the metadata simplify changes and can, if appropriate provide 'change in one place' capabilities. These abilities contribute to improved maintainability. The ability to extend the metadata model across multiple tools and for different uses further increases the benefits.

## Data Management Domain

### *Open Standards Adherence*

This attribute contributes to maintainability for data management for the same reasons as the application domain.

### *CSE Development Methodology*

This attribute contributes to maintainability for data management for the same reasons as the application domain.

### *Common Metadata Driven Development*

This attribute contributes to maintainability for data management for the same reasons as the application domain.

### *COTS Data Intake, Validation & Transformation Tools*

The use of COTS products to define and manage this capability contributes to maintainability by providing purpose built tools that facilitate access to and amendment of the validation and transformation tools. The rules can be more easily located and understood, and certain changes can be applied without having to alter and re-deploy code.

### *Centralized, Shared, & Normalized Database*

Use of a relational database is a direct contribution to maintainability, with features such as the 'Alter' command that allows certain dynamic changes. The database design approach used for the CSE system will also contribute, by appropriate use of normalization.

### *Segregation of Operational and Analytical Data*

This contributes to maintainability in two ways – 1) the normalized operational database design is not 'corrupted' (e.g. de-normalized) by the need to optimize for queries, and 2) the data marts in the data warehouse environment are constructed so that analytical activities do not in any way require changes to the operational system.

## Platform Domain

### *Open Standards Adherence*

This attribute contributes to maintainability for the platform domain for the same sort of reasons as for the application domain.

### *Enterprise Application Integration*

The loose coupling that is characteristic of EAI contributes to the maintainability of the platform domain by providing an environment where distinct physical components can be replaced or changed without affecting other components. The emphasis on externally defined communication 'rules' means that changes can usually be implemented through administrative type actions and not programming type changes. If for some reason aspects such as the communication protocol, data format or data transformations change, the EAI tools can accommodate the change through the administrative consoles they provide.

### *Distributed, Multi-tiered Technical Architecture*

The ability to provide multiple, parallel platforms to support a particular functional component, and the provision of distinct platforms for distinct functional components in the architecture, simplifies maintenance by permitting components to be replaced or adjusted while the system continues to operate.

### *Security Framework*

The sophisticated, integrated suite of security management tools contributes to the administrative maintainability of the security aspects of the operational system and enhances the ability to react to changing or new threats.

### *Enterprise Management Tools*

The use of a centrally administered, integrated management toolset and console that covers the distributed, heterogeneous product environment, and contributes to the administrative maintainability of the operational system.

## e-Government Domain

### *Java and Internet Technology*

Just as this technology contributes to the CSE system's overall maintainability, so it contributes to the e-Government domain. The technology permits web content to be changed and deployed quickly. The CSE solution approach leverages this capability by using the technology appropriately, for instance by the use of JSPs to separate presentation functions from navigation logic encoded in servlets and business logic encoded in EJBs.

*Best of Breed COTS Products*

The use of WebSphere Application Server (WAS) fully supports the technology and provides wizards and other administrative tools to support the configuration and deployment of web components. Also, use of WebSphere Studio Application Developer is closely integrated with WAS to enhance productivity.

## 4A.3.3c.2.2 Modularity

"The ability to add, modify, and remove components of a system."

The most crucial characteristics that contribute to the modularity of the system are loose coupling and independent component operation.

### Application Domain

*Layered Component-Based Architecture*

This characteristic is specifically aimed at producing a modular application structure that, through loose coupling, well-defined interfaces and formal, identified dependencies permits code components to be added, modified or removed with reduced impact on other components.

*Enterprise Application Integration*

As the layered, component-based approach provides modularity for fine-grained components, EAI provides the same for large grained components. It is specifically aimed at providing loosely coupled interfaces that are time and distance independent, and governed by externally defined rules and protocols.

*Externalized, Centralized Rules and Decision Data*

This characteristic separates out appropriate business logic and decision data into distinct 'modules' that can be independently maintained.

### Data Management Domain

*Segregation of Operational and Analytical Data*

This characteristic actually extends beyond just the separation of operational and analytical data, and provides separate, distinct analytical environments in the way of data marts. This data architecture provides a modularized environment, both physically and logically.

### Platform Domain

*Java and Internet Technology*

Java and Internet Technology supports an architecture where there are distinct physical environments to support different functional components. This is evidenced by the provision of a distinct web server tier, application server tier, and database tier. The J2EE standards and compliant products permit distributed deployment of these architectural components.

*Distributed, Multi-tiered Technical Architecture*

This characteristic, by its definition, supports the concept of modularity.

*Enterprise Management Tools*

The use of sophisticated, management tools that can support a distributed, heterogeneous system environment permit a modularized environment to be managed.

### e-Government Domain

*Java and Internet Technology*

The e-Government domain is modular to the extent that web servers and application servers can be easily added, removed, or their functional support re-assigned.

## 4A.3.3c.2.3 Scalability

"The ability to expand a system with minimal change in current viewpoints of the system or its procedures to accommodate growth. Typical areas of growth include, but are not limited to, transaction or data storage volume, concurrent and/or total users."

Scalability is categorized as horizontal or vertical. Vertical scalability includes actions such as adding additional CPU, memory, or disk capacity to a machine, or increasing the number of instances of 'the application' that is running on a machine. Horizontal scalability includes practices such as adding more machines or extending the application to run on additional machines, so that each works in parallel. So in other words, horizontal scalability is dependent on factors like the ability to add more 'instances' of a particular architectural component that can work concurrently in order to increase the overall capacity of that area, whereas vertical scalability is the ability to upgrade the underlying resource to provide an increase in performance. A characteristic that contributes significantly to scalability, especially horizontal scalability is the degree to which the system can be distributed. Many CSE system conceptual design characteristics contribute to this, and are called out below.

Scalability is also affected by application design features, such as techniques to avoid setting hard limits on maximum numbers (for instance, number of defined users, total number of cases, and so on).

### Application Domain

*Layered Component-Based Architecture*

The ability for layers or even components within the layers to be physically distributed permits a high degree of flexibility in how these components are deployed. As described above in the modularity discussion, there is a natural division between web, application and database processing. This can also be much more fine-grained. Components such as Java objects can be deployed onto different physical platforms, or repeated on the same platform to achieve either vertical or horizontal scalability, or both.

### *Java and Internet Technology*

This extends the advantages of the layered architecture for scalability. For instance, the use of a 'network dispatcher' provides load-balancing capabilities that allow multiple web servers to be used, and easily increased. The use of J2EE technology in the application server provides support for distributed processing, including distributed transaction management.

### *CSE Development Methodology*

The application design philosophy will assist application scalability by appropriate coding techniques that do not impose arbitrary hard limits. This can apply to code constructs such as arrays, and for graphical components such as list boxes. The application will leverage similar database techniques to assist with this approach, as described below under data management domain.

### *Enterprise Application Integration*

The capabilities of EAI allow the application to be architected so that its components are discrete and independent, and can communicate in a protocol and platform independent manner, allowing them to be sited anywhere.

## Data Management Domain

### *Centralized, Shared, & Normalized Database*

The database design approach to be used will assist application scalability by appropriate use of cardinality. Unless a relationship has an absolute limit, the use of 'n to many' associations will permit theoretically unrestricted growth. Also, the use of code tables to hold lists of values for display or business logic drivers permits growth.

The capability of DB2 UDB is also well proven in extremely large-scale applications. Beyond the scope of a single database environment, the DB2 product line offers features for almost unlimited scalability through features such as federated database and the Enterprise Edition Extended (EEE) product. Federated database allows multiple physical databases to be accessed from a single query, and EEE supports a highly parallel database structure, using multiple partitions that can be distributed across platforms. These features, although not required for the CSE system at this stage, provide the potential for continued growth.

### *Segregation of Operational and Analytical Data*

By using distinct OLTP and OLAP environments, each can grow unrestrained by the other. The OLAP databases will be implemented on DB2 UDB EEE as discussed above.

## Platform Domain

### *Java and Internet Technology*

The nature of Internet technology, as a distributed inter-communicating federation of discrete parts, is inherently scalable. The system will be sited on multiple physical platforms, which can be easily extended.

*Open Standards Adherence*

The adoption of open standards reduces the dependency on a particular physical product or component. This improves the options for upgrading to a more powerful or capable implementation of that component, should that prove to be the best option for increased capacity.

*Best of Breed COTS Products*

The products selected for the CSE system contribute to scalability due to their support of the standards and concepts described here. Products such as WebSphere Edge Server, which provides the network dispatcher capability, WebSphere Application Server which fully supports J2EE for distributed transaction processing, and the pSeries AIX platform, which provides a consistent environment from small single processor machines to the most powerful multi-processor p690. The pSeries offer vertical scalability through either its ability to upgrade (e.g. by the addition of more CPUs, more memory or the attachment of additional disk), or to replace a particular model with one of higher capacity.

*Distributed, Multi-tiered Technical Architecture*

This characteristic also, by virtue of its suitability for distribution of the application's components, is highly supportive of scalability.

*Enterprise Application Integration*

The capabilities of EAI to logically and physically separate the architectural components allows each component to be re-sited, re-structured, or otherwise 'upgraded' without external impact.

*Enterprise Management Tools*

The distributed management capabilities of the tools permit easy horizontal scalability.

**e-Government Domain**

*Java and Internet Technology*

The characteristics of modularity described above for the e-Government domain support scalability by virtue of the ability to scale horizontally by adding new servers, or vertically by adding new containers to an existing server.

## 4A.3.3c.2.4 Adaptability

"The ease of change."

This can be viewed as a summary of the three preceding attributes, as they each addressed aspects of the system that contribute to the ease of change. By virtue of the system's maintainability, modularity, and scalability, so the system's adaptability can be defined.

For this reason, the conceptual design characteristics that contribute to this attribute shall not be listed here. Refer to the matrix for the full list, and to each of the preceding sections for a justification of those characteristics.

## 4A.3.3c.2.5 Portability

"The ability to move system components from one environment to another while maintaining complete system functionality."

### Application Domain

*Java and Internet Technology*

Java is a fundamental enabler for portability. It is a platform independent language and virtual machine environment that can run without alteration on a wide-variety of platforms. Also the architectural patterns that are used in an Internet technology environment, such as servlets, JSPs, and EJBs are platform independent.

*Open Standards Adherence*

The use of open standards avoids proprietary architectures, patterns, designs or products. Proprietary approaches limit portability. The more widely adopted a standard is, the more products and platforms there are to support it.

*Enterprise Application Integration*

While EAI technology does not by itself contribute to the portability of the system components themselves, it does enable those components to be moved to a different platform with restricted impact.

### Data Management Domain

*Open Standards Adherence*

This characteristic supports portability in the data management domain for the same reasons as in the application domain.

*Common Metadata Driven Development*

The use of common metadata enables a physical implementation to be easily re-created from a higher-level definition. In cases where direct portability is not feasible, this characteristic provides a means to re-generate a physical implementation from the metadata. This is a useful characteristic, but is not expected to be required for the CSE system as the technology and products used allow direct portability.

### Platform Domain

*Java and Internet Technology*

More that just the application code and architectural patterns, Internet technology includes other features that contribute to portability, such as the use of a browser user interface, and HTML and XML for communication data formats.

### *Open Standards Adherence*

This characteristic supports portability in the platform domain for the same reasons as in the application domain.

### *Best of Breed COTS Products*

Products such as WebSphere, DB2, and WebSphere MQ, are available to run on many different platforms such as AIX, Linux, zOS and Windows NT/2000. While not all of these platforms are necessary for the CSE system, a factor in the selection of products has been multiple platform support.

## e-Government Domain

### *Java and Internet Technology*

Just as Java is enables portability for the CSE system in general, it is equally significant for the e-Government domain. For instance, although our solution uses WebSphere for both the application server and the web server (IBM HTTP server supplied with WAS), this isn't a hard requirement. A different web server, running on a different platform could be substituted.

## 4A.3.3c.2.6 Openness/Standards

"The compliance of the system component(s) with published standards and interfaces."

This attribute is so fundamental to the alliance's solution that we have identified it as one of our conceptual design characteristics. An overview of some of the standards used in this solution in provided in Section 4A.3.1.5.4. It is inherent to many other conceptual design characteristics, such as Java and Internet Technology, Best of Breed Solution Approach, Best of Breed COTS products, and Security Framework. For this section, we will simply refer to the conceptual design characteristic 'Open Standards Adherence'.

## 4A.3.3c.2.7 Autonomy

"The ability of each component of the system to function both independently and as part of the whole."

The alliance has interpreted this attribute from the perspective of the run-time behavior of the application. The software engineering aspects covering the ability of individual components to be independently maintained, replaced, re-sited, etc, has been addressed in previous sections.

Based on this perspective, autonomy is the ability of individual components of the system to function independently, or put another way, the ability for the system to function without the components being operational. The ability of each component to operate as part of the whole is an inherent capability without which it would not be included in the architecture.

At the core of the system's ability to meet this attribute are time-independent communications, and clear separation of non-dependent components. For instance, asynchronous messaging permits the client and server components to continue to operate, even if the other side is temporarily unavailable. As an example of separation of non-dependent components, consider the IVR interface and the Internet web interface. Each of these should be able to function regardless of the state of the other.

However, there are limitations on the degree (and desirability) of autonomous operation. In general for the CSE system, the lower a component is in the layered architecture, the less autonomous it will be. For instance, if the database is unavailable, neither the IVR interface nor the web interface will be able to operate. The alternative to this is to provide largely or totally separate environments for each of the system's major functions, but this is undesirable for two reasons. First, it is contrary to system engineering goals. This approach introduces redundancy of code and data, complicating maintenance and increasing the amount of computing hardware and other resources needed to support the system. Secondly, it increases the potential for failure and the administrative effort involved across the system as a whole. A better approach, (and one which this solution follows) is to share and re-use components and resources wherever possible, and to design for fault-tolerance.

Having provided this clarification on the meaning the alliance has assigned to this attribute, the rest of the section determines how the conceptual design characteristics meet this objective.

### Application Domain

*Layered Component-Based Architecture*

As discussed above, the architecture avoids dependencies where none are needed. The hierarchical, layered structure is a major factor in this as it permits components within the same layer or lower layers to be unconcerned about the availability or not of other components within the same or higher layers. Where communication between components in the same layer exists, the preferred mechanism is to use asynchronous messaging or an event-driven approach.

*Enterprise Application Integration*

EAI provides the enabling technology and tools for asynchronous messaging.

### Data Management Domain

*Segregation of Operational and Analytical Data*

At a fundamental level, there is no need for any run-time dependency between operational and analytical processing. This is one area where duplication of data and a physically distinct environment is appropriate. Not only have these two capabilities few real dependencies, they actively benefit form separation so that they do not impose upon the operation of the other. In the CSE system solution, they can operate totally independently (not considering occasional replication).

### Platform Domain

*Distributed, Multi-tiered Technical Architecture*

Where designed as such and supported by the software architecture, the distributed technical architecture provides the platform independence to enable discrete logical components to operate independently.

*Enterprise Management Tools*

The administration tools also permit administrative activities such as starting / stopping components, changing configuration values, and installing / removing products to occur for individual components, or one instance of a replicated or cloned component.

### e-Government Domain

*Java and Internet Technology*

The e-Government domain is an area where certain functionality can be independent from the rest of the system's operations. Static information, such as general information that is available to the public, can be made available even if the rest of the system is temporarily unavailable. Any actions that would require data from the system, such as case or participant information or update would require the system to be available.

## 4A.3.3c.2.8 Flexibility

"The ability to easily adjust system component interaction(s) and behavior as required."

There is potential overlap in definition between flexibility and the software engineering attributes of maintainability, modularity, and adaptability. To differentiate between the two, flexibility is interpreted as the ability to react quickly to changing conditions, whether temporary or long-term. This can be through some means of adjusting the system, or through the ability of the system to be unconcerned with or to self-adjust automatically to the changes. Where adjustments are required, they must be able to be applied through dynamic, non-programmatical means. This is considered different to the software engineering attributes that facilitate alterations in the system's construction.

The types of system adjustments that would necessitate a flexible response include the following:

- Changes in system load (e.g. frequency or volumes)
- Changes to environment (e.g. communications protocols or source / target mappings (transparency of location))
- Changes to business rules or data (e.g. data format or data transformations)
- Other environmental changes like user administration and business process definitions

## Application Domain

### *Java and Internet Technology*

This characteristic provides flexibility through the ability to move and re-structure components transparently and dynamically. For instance, new web servers can be added dynamically to accommodate increased load, or deploying them to different application server containers can alter the distribution of EJBs. Technologies such as CORBA for object interaction and the use of URLs for client to server communication support this ability.

### *Enterprise Application Integration*

EAI is fundamental to this characteristic through its mapping of interacting partners using GUI tools, which support externalized definitions. Partners can be added or removed, their location and communications protocols can be changed, and even data transmission formats and transformation rules can be dynamically altered. As long as the data content or business logic does not have to change in any of the communicating partners, these changes can be managed through the EAI tools.

### *Workflow Driven*

The workflow component contributes to flexibility through its ability of to administer and amend business processes using GUI tools. Changes can be made such as adding or changing users, their roles, the groups they belong to, etc. This could be for 'permanent' changes such as new or promoted staff, or for temporary conditions like assuming certain responsibilities while another person is absent. Changes can also be made to the business processes themselves, such as changing the conditions which govern a decision to route work to a supervisor.

*Externalized, Centralized Rules and Decision Data*

This characteristic contributes to flexibility through the use of table-driven decision data and code tables, which allow dynamic changes. As this data is held in DB2 tables, it can be dynamically updated. The CSE system will not provide custom GUIs to make these changes, but procedures will be set up for requesting changes that can then be applied by the database administration team using DBA tools. These changes would not be required to manage the system's operational health like some of the others, but would only be needed to react to changes in the business environment.

**Data Management Domain**

*COTS Data Intake, Validation & Transformation Tools*

These tools offer similar, GUI driven, externalized capabilities for defining and managing the data intake and data warehouse replication as described for the EAI tools above.

**Platform Domain**

*Enterprise Management Tools*

The tools provide centralized capabilities for monitoring and administering the system. This enables issues to be detected, and adjustments to be made from a single, coordinated 'command center'.

*Security Framework*

The security administration tools equally permit dynamic changes and adjustments to be made.

**e-Government Domain**

*Java and Internet Technology*

As described previously under maintainability, the use of this technology and supporting, state-of-the-art tools, permits a lot of flexibility in managing, configuring, balancing and extending the system. Many of these changes can be accomplished without code changes, by use of the administrative tools or presentation / deployment tools. The sort of changes that would require code changes would also be likely to affect other areas of the system, such as the internal application. It is unlikely that changes specific to the public web interface would require changes at the EJB, business object or database level.

## 4A.3.3c.2.9 Data Accessibility

"The availability of data, both locally and remotely."

Data is accessible either directly, using BI or data administration tools, or more commonly, through the functionality or the application. Therefore, this attribute will be addressed in terms of accessibility of data through both of these means. The attribute will also be addressed in terms of availability from the perspective of system down time, i.e. the percentage of time that the system is able to provide access to the data.

## Application Domain

### *Layered, Component-Based Architecture*

In as much as this characteristic enables a distributed implementation approach (see platform domain), which contributes to failover techniques to improve availability, this characteristic also can be seen as a contributor.

### *Java and Internet Technology*

This characteristic contributes in two ways. It too supports a distributed implementation for improved availability, but it also contributes to accessibility by virtue of the thin-client multi-channel architecture. Given the appropriate authority and access rights, a user can access the system from anywhere, through a CSE system LAN, the Internet, or the IVR system.

### *Enterprise Application Integration*

This characteristic contributes to accessibility by expanding the scope of client types that can access the system to include other automated systems. System functionality and data can be accessed and shared by a wider-variety of 'clients' than would otherwise be feasible.

## Data Management Domain

### *Best of Breed COTS Products*

The BI tools included in this proposal such as Brio Intelligence and DB2 OLAP Analyzer provide browser interfaces to permit access across the Internet. The Brio suite also includes the Quickview product. This is a Brio report viewer that will be distributed (dynamically via web download), to the CSE system workers for their use in viewing published reports and queries. This capability dramatically improves access to data for the normal system user. In addition, the supervisory and analytical users who have a need for the more powerful reporting and OLAP tools will have the ability to view, run, and create (depending on privileges) reports, ad hoc queries and data analyses.

### *Common MetaData Driven Development*

Data modeling will define and describe the system's data, and document this metadata in a number of repositories (e.g. ErWin and Rational Rose). These will be coordinated through use of the Metadata Object Facility (MOF) and the Common Warehouse Meta-Model (CWM) that will tie together the complete data definition and usage model for the CSE system.

The use of a comprehensive metadata strategy is not just for the system's developers. It is also crucial to those system users who will be using the BI tools to create and execute reports and queries. They have to understand the data to produce meaningful output.

### *Segregation of Operational and Analytical Data*

This characteristic improves the availability of both OLTP and OLAP data. Neither is affected by performance implications of load on the other, nor issues about down time

for administrative purposes. Planned down time can be managed to the best convenience of each environment.

### Platform Domain

*Distributed, Multi-tiered Technical Architecture*

The ability to provide parallel operation for load-balancing and failover strategies improves aspects such as response time and availability, both of which contribute to accessibility.

### e-Government Domain

*Java and Internet Technology*

Data accessibility (or perhaps more correctly "information and service accessibility), is one of the cornerstones of the use of Internet technology. The ability for external 'users' of the system, such as case members, employers, genetic test labs, financial institutions and so on, to gain access to the system, day or night, from wherever they happen to be attached to the Internet, to view and / or update their appropriate data, is the real power of the technology.

## 4A.3.3c.2.10 Interoperability

"The ability to work cooperatively between heterogeneous environments."

The ability to fulfill this objective is largely due to a standards-based distributed architecture, with loose coupling between components. There are a number of conceptual design characteristics that support this capability. As these have been described in this context previously, the conceptual design characteristics that support this attribute shall not be listed here. Refer to the matrix for the full list, and to the preceding sections for a justification of those characteristics.

## 4A.3.3c.2.11 Appliance Connectivity

"The ability for wide variety of information appliances to attach or connect to the system and provide a useful service or perform useful functionality."

This attribute is interpreted to refer to a multi-channel architecture that can support different client types and be easily extended in the future to accommodate additional clients types.

### Application Domain

*Layered Component-Based Architecture*

The multi-channel architecture, with common application and business objects, can support a wide variety of different client types, each sharing the same business functionality (as appropriate).

*Java and Internet Technology*

Internet technology supports varied connectivity with standards and protocols, such as servlets, and EJBs. Although not yet significant for the CSE system, this ability extends to the future connection of other types of devices such as wireless devices through complementary technology such as the Wireless Markup Language (WML) and Wireless Access Protocol (WAP)

*Open Standards Adherence*

Adherence to standards such as those mentioned above increase the range of compatible appliances.

*Enterprise Application Integration*

EAI supports multiple protocols and standards that are appropriate to connectivity of a wide variety of appliances.

**Platform Domain**

*Open Standards Adherence*

Adherence to standards increases the range of compatible appliances.

**e-Government Domain**

*Java and Internet Technology*

Appliance Connectivity is another fundamental feature of Internet technology. Although the initial scope of the CSE system does not call for such features, the ability to extend system access to users with mobile, wireless devices such as PDAs or web-enabled phones is built in to the technology.

## 4A.3.3c.2.12 Maneuverability

"The summation of the attributes that positions the enterprise to both act and react to the dynamics of the Program administration."

As stated, this attribute is a summation of the others. Each of the preceding eleven attributes can be seen to contribute to the overall maneuverability of the system. The conceptual design characteristics specified while reviewing these attributes, and the justification for their inclusion, are applicable in support of maneuverability. These characteristics are listed in the matrix.

# 4A.3.4 Conceptual CSE System Solution

***This section presents the Conceptual CSE System Solution. The Conceptual CSE System Solution represents the solution from two points of view, the Conceptual CCSAS Business Problem Viewpoint and the Conceptual Operations Viewpoint.***

## 4A.3.4.1 Overview

This section describes the Conceptual CSE System Solution. It is structured as follows:

- 4A.3.4a Conceptual CCSAS Business Problem Viewpoint
- 4A.3.4b Conceptual Operations Viewpoint

# 4A.3.4a Conceptual CCSAS Business Problem Viewpoint

## 4A.3.4a.1 Introduction

***The alliance's approach to solving the California Child Support Enforcement Program's business problems is two-fold. The program is faced with the need to attain certification and eliminate sanctions and at the same time create a next generation system that focuses on improving business processes and practices that in turn lead to improved performance.***

In Section 3.1 Understanding the Business Problem, we described California's business problems and the impact those problems have on the child support program. In this section, we present our proposed solution and discuss how it addresses you're the State's business problems.

## 4A.3.4a.2 Business Problems

### 4A.3.4a.2.1 Certification

***The State is not in compliance with the automated systems requirements of the Family Support Act of 1988 (FSA '88) and the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA). The alliance's two-phased***

***approach provides the opportunity to pursue certification much earlier than a single phased approach.***

The alliance's two-phased approach provides the opportunity to pursue certification much earlier than a single-phased approach.

Certification, or the lack thereof, presents problems in two areas. First, it subjects California to significant federal sanctions. Second, and perhaps more importantly, it prevents California from realizing the program benefits that can be achieved with a certifiable system. As described in Section 4.1 – Business Solution Narrative, we propose a two-phased approach. Our two-phased approach puts California into position to achieve the benefits of a statewide system much earlier than would be possible using a single-phase project approach.

Figure 4A.3.4a-1 shows the CSE system elements for Version 1 and Version 2. Overall, a child support enforcement system must provide the ability to process functions for three different viewpoints - the State Disbursement Unit (SDU), the central State office, and the LCSAs. These three sets of functions are provided by three different elements of the overall system architecture. For Version 1, the LCSA element, the SDU element, and the Statewide Services element should be thought of as subsystems comprising the overall California child support system.

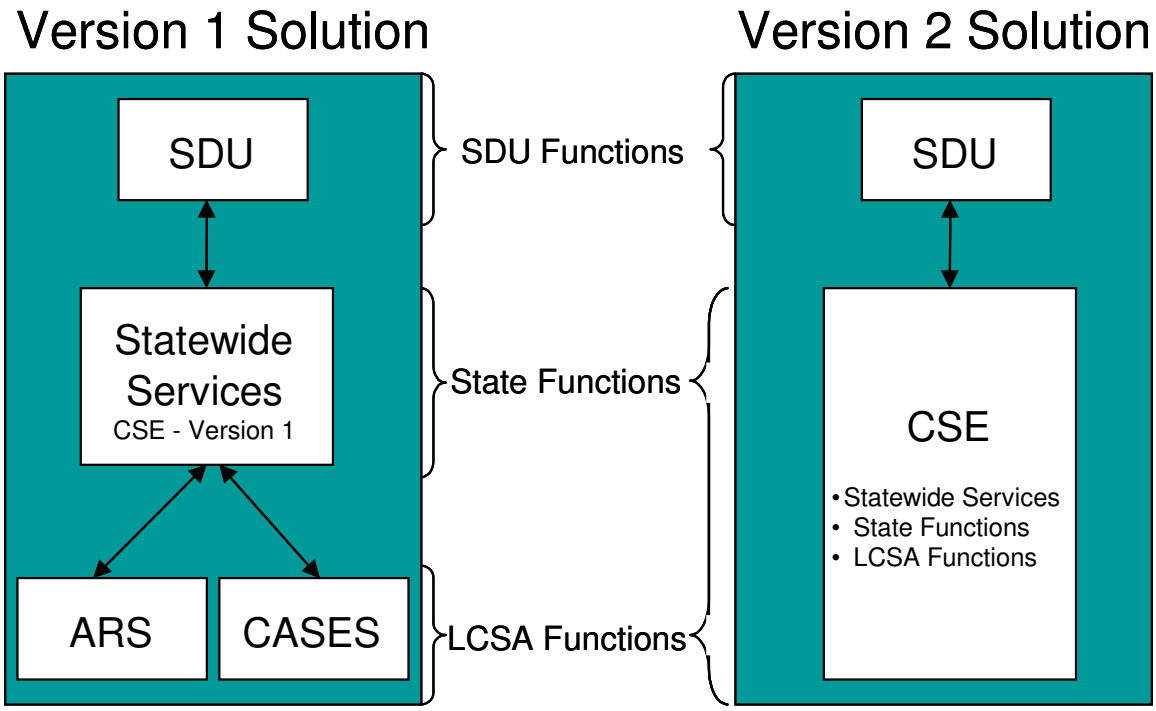



**Figure 4A.3.4a-1 Version 1 and Version 2 CSE system Configurations** – *Multiple subsystems constitute the CSE system in Version 1 and Version 2.*

The federal government does not certify systems simply for the sake of certification. Rather, certification requirements have been defined because when states meet these requirements, their program performance is improved. For this reason, we discuss some of the certification requirements to show how the Version 1 solution contains many of the characteristics of a certifiable system. By having those characteristics, California will be able to achieve improved program performance.

The federal government has specified system requirements for a comprehensive, automated, statewide child support enforcement system. These requirements are specified in a document entitled *Automated Systems for Child Support Enforcement: A Guide for States* (the Guide). This document provides a set of general requirements as well as specific system functional requirements.

In the description of general requirements, the Guide states that the system must be *comprehensive*, *statewide*, *operational*, *efficient and effective*, and *integrated*. Irrespective of federal certification, these adjectives represent desirable traits of any system. The Version 1 solution meets these criteria with the lone exception of having a *single* statewide system. CSE system Version 1 includes multiple subsystems performing county functions. Among other benefits, CSE system Version 1 enables California to:

- Achieve paternity establishment percentages
- Analyze, process, and report data that is complete and reliable
- Improve the child support program

In our design, we take into account the need for controlling, accounting and monitoring factors in support of the collection and paternity determination process, how the system supports single data entry, synchronizes data and supports linkages that are transparent to the users.

Figure 4A.3.4a-2 summarizes the specific functional requirements documented in the Guide and illustrates which subsystem meets each requirement. The summarized certification requirements are listed down the left-hand column. The subsystems for Version 1 and Version 2 are listed across the top columns. The body of the matrix indicates which of the subsystems satisfies each requirement.

| Certification Requirements | | VERSION 1 | | | | VERSION 2 | |
|---|---|---|---|---|---|---|---|
| | | Statewide Services | ARS/ CASES | SDU | | Statewide Services | SDU |
| **Case Initiation** | | | | | | | |
| | Manual Case Entry | | X | | | X | |
| | Interstate Referrals | X | X | | | X | |
| | IV-A/IV-E/Medicaid Referrals | | X | | | X | |
| | Maintaining Case Data | | X | | | X | |
| | Non IV-D Orders | X | | | | X | |
| | FCR Interface | X | X | | | X | |
| **Locate** | | | | | | | |
| | Address/Asset Location for State/Federal Sources | X | | | | X | |
| | Tracking of Activities | X | | | | X | |
| | FPLS Interface | X | | | | X | |
| **Establishment** | | | | | | | |
| | Paternity Establishment Tracking | | X | | | X | |
| | Support Order Tracking and Document Production | | X | | | X | |
| **Case Management** | | | | | | | |
| | Case Activity Determination | | X | | | X | |
| | Case Updates from IV-A/IV-E/Medicaid Referrals | | X | | | X | |
| | Case Data Tracking | | X | | | X | |
| | Case Event Monitoring | | X | | | X | |
| | Order Review and Adjustment | | X | | | X | |
| | Case Closure | | X | | | X | |
| | Interstate Case Management | X | X | | | X | |
| **Enforcement** | | | | | | | |
| | Initial and Periodic Re-initiation of Enforcement Actions | | X | | | X | |
| | Income Withholding Establishment | | X | | | X | |
| | Tax Refund, Administrative (incl. Passport denial), and UI Offsets | | X | | | X | |
| | Lien and Bond Enforcement | | X | | | X | |
| | Credit Reporting | | X | | | X | |
| | IRS Full Collection | | X | | | X | |
| | Spousal and Medical Support Enforcement | | X | | | X | |
| | Administrative Enforcement Interstate | | X | | | X | |
| | FIDM | | X | | | X | |
| **Financial Management** | | | | | | | |
| | NCP Billing | | X | | | X | |
| | Process Payments Received | | X | X | | X | X |
| | Inbound EFT | | | X | | | X |
| | Outbound EFT | | X | | | | X |
| | Accounting Information | | X | | | X | |
| | Distribution | | X | | | X | |
| | Disbursement | | X | | | | X |
| | IV-A Collection Notices | | X | | | X | |
| **Reporting** | | | | | | | |
| | Federal Reporting | X | X | | | X | |
| | Online Worklists | | X | | | X | |
| | Reporting of Accounting Data | | X | | | X | |
| | Program Performance Reporting | X | X | | | X | |
| | Support Review/Analysis of Data | X | X | X | | X | X |
| **Security and Privacy** | | | | | | | |
| | Safeguards for Accuracy, Integrity, Completeness, Access to Data | X | X | X | | X | X |
| | Retrieval, Maintenance, and Control of Software | X | X | X | | X | X |
| | Retrieval, Maintenance, and Control of Data | X | X | X | | X | X |
| | Backup Procedures | X | X | X | | X | X |
| | Year 2000 Processing | X | X | X | | X | X |

**Figure 4A.3.4a-2 Certification Requirements –** *The CSE system for Version 1 and 2 satisfy functional certification requirements – indicative of a solution that will improve child support operations.*

The Version 1 solution provides most of the required functions for statewide certification. However, these functions are spread across the multiple subsystems (CSE system, SDU, CASES, ARS). In Version 2, we continue to expand the functions provided by the CSE system. At the conclusion of Version 2, the CSE system, integrated with the SDU application, will provide the functions required to achieve federal certification.
The alliance team members have led multiple states to federal certification of their statewide child support systems. We have incorporated our experiences from other states into the solution. We provide a robust certification planning process. We know the amount of preparation needed to respond to federal questionnaires, to demonstrate system functions (including the federal financial test deck), and to conduct federal reviews. Our approach calls for working with DCSS and CCSAS Project staff to prepare for the federal certification review so that we can conclusively demonstrate that the CSE system meets the federal certification requirements. However, the road to certification begins long before the certification review. We recommend involvement from federal government personnel "early and often" in the project. By keeping federal personnel engaged in the project, validating that requirements are captured accurately and that designs meet those requirements, we can create an environment of "no surprises".

#### 4A.3.4a.2.1.1 Summary

The Version 1 CSE system provides California child support functions on the path toward a certifiable system. Our phased approach allows California to realize benefits years earlier than would be possible using a traditional development approach. The use of two types of LCSA-level subsystems, an SDU subsystem, linked to a Statewide Services component begins to deliver the business value that comes from a single statewide system. Version 2 extends and completes the single statewide system from the foundation established in Version 1, which will meet the remaining requirements of the SCP and delivers a certifiable system to California. The alliance has significant experience working with states in the certification process. We have prepared responses to send to the federal government prior to the review, and we have participated in federal review sessions. We bring individuals to the CCSAS project who have helped other states successfully complete federal certification reviews.

> The alliance brings its experience in working through certification in other states.

### 4A.3.4a.2.2 Worker Effectiveness

***Worker effectiveness and accountability is constrained by the lack of timely, adequate and accurate data; the lack of uniformity; and limited system functionality and automation.***
Section 3.1 – Understanding the Business Problem, related multiple problems in California's current environment to Worker Effectiveness. The following pages describe CSE system components that directly address the Worker Effectiveness problem. First, we present the components of the Version 1 system that address worker effectiveness, and later we discuss the elements of the Version 2, best of breed solution, that address worker effectiveness.

### 4A.3.4a.2.2.1 CSE System Version 1

The Version 1 system is composed of five primary functional elements:

- LCSA-level functions (provided by ARS and CASES)
- State Case Registry (provided by Statewide Services)
- Locate (provided by Statewide Services)
- Federal Reporting (provided by Statewide Services)
- State Disbursement Unit Integration (provided by Statewide Services)

The functions introduced by the Statewide Services portion of the CSE system Version 1 have an immediate positive impact on Worker Effectiveness.

CSE system Version 1 brings immediate worker effectiveness benefits.

*LCSA-level Functions*
The LCSA-level functions for Version 1 will be provided by the existing ARS and CASES applications. Worker effectiveness benefits for these applications are not explicitly reviewed as, with the exception of the effect of new statewide services described next, they will not differ from what is in place today.

*State Case Registry*

CSE system Version 1 introduces the availability of the statewide caseload to the workers in each county.

The SCR provides immediate benefit to Worker Effectiveness with the Version 1 rollout. Probably the most important benefit of the SCR to the State is the availability of a statewide view of child support data. The solution calls for an expansion of the Federal Case Registry (FCR) extract that ARS and CASES send to DCSS today. Currently, the FCR extract is not extensively used (if at all) beyond the purpose of communicating information to the FCR. We plan to store this LCSA data into the CSE system database and use the data to perform Statewide Services.
One important benefit this provides is the ability to find address data for the NCP that has already been captured in the SCR. Once an LCSA worker finalizes case setup, that new information is transmitted to the SCR via the expanded FCR process. As this occurs, the Statewide Services modules query the SCR to determine if the members involved in the new case are already present on the SCR. If they are present, the upload process compares the new information provided with the existing information. If the existing SCR information includes data that does not exist on the new data sent by the LCSA, the additional SCR data is forwarded back to the county. In this way, LCSAs receive the most up-to-date case member information that is available for the entire State.
Should the new data received from the counties contain more information than was previously available on the SCR, the SCR is updated with the new information, and data updates are sent to other counties who track the same case members.

*Elimination of Duplicate Work*
The SCR provides a statewide view of demographic, address, and employer data. By providing this information to counties in a proactive manner, LCSA caseworkers are not required to research the information once this research has already been done by another caseworker. Caseworkers across the State benefit from the good casework completed by any other caseworker in the State.

*Increased Performance Statistics*

Sharing data in a timely manner provides opportunities to begin core casework processes earlier in the life cycle of the case.

Because address and employer data is shared in a timely manner, caseworkers can more quickly begin the casework at the heart of child support – paternity establishment, support order establishment, and enforcement. No longer are these processes delayed because of inefficient sharing of information. By beginning these processes earlier, the State will have the opportunity to establish paternity for more children, establish more support orders, and collect more child support. By doing so, the State's incentive payments are positively impacted because of better performance against federal performance measures.

*Enabler for Other Statewide Services*

The SCR provides the data needed to deliver other functions in the Statewide Services. Consolidating member and address data allows for a centralized locate processing. Federal reporting can be enhanced with streamlined data consolidation and new data analysis functions. By tracking current support and arrears balances, statewide allocation of payments can occur so that the Statewide Services can integrate with the SDU.

*Non IV-D Orders*

The Version 1 solution allows for tracking non IV-D support orders. We will build CSE system screens to capture member, case, and order data so that the SCR will contain non IV-D information. To have a federally compliant State Disbursement Unit, the SCR must contain non IV-D wage withholding orders. The screens used to capture the member, case, and order data will evolve into the screens that will be used in the Version 2 solution. By using these screens in a limited capacity, we can capture the data needed to maintain a complete SCR.

*Locate*

The SCR provides the leverage to consolidate locate activities across the state.

CSE system Version 1 provides streamlined and enhanced locate services. Today, the State operates with a variety of different processes to obtain locate services. Each individual LCSA assesses locate needs, and sends locate requests to the State (via the California Parent Locator Service [CPLS]), to the FCR (via the FCR extract), to the Federal Parent Locator Service (FPLS), and to other jurisdictions (other states and counties). These locate requests are sent by each LCSA for each individual requiring locate services. It is common for the same individual to be a case member in multiple LCSA applications, such that the same individual is sent for locate services multiple times.

*Immediate Sharing of Statewide Locate Data*

CSE system Version 1 eliminates the need for multiple caseworkers across the State to conduct the same searches and casework in order to locate an individual. Bringing locate processing to the Statewide Services allows efficient sharing of data and reduces duplicate work by caseworkers. Reducing the duplicative locate workload for caseworkers will free valuable time in caseworkers already full schedules.

*A Smarter Approach to Locate*

The locate function in CSE system Version 1 contains a hierarchical approach to locating an individual. As the need for locate services is identified, the locate "engine" first searches data sources for which we have real-time access to data. This includes

the consolidated statewide member data available in the SCR and will expand to other external sources with which we can establish real-time data access during Version 2. The CSE system database in Version 1 – the SCR –- also contains a tracking structure to allow results to be tracked by locate source. In doing so, we can begin to track which locate sources provide the highest likelihood of delivering a verified address. As a statistically significant number of results are accumulated, it will be possible to prioritize potential matches based on previous success with the available data sources. The prioritization of potential matches will be evaluated as a Version 2 capability.
By prioritizing the "most likely" locate responses, this structure reduces the time caseworkers spend performing manual follow up. This is in contrast to the current situation, where multiple LCSAs send locate requests for the same individual, multiple, un-prioritized potential matches are returned to caseworkers in each LCSA, who then duplicate each others work, manually processing the same list of potential matches. Caseworkers can be assigned to research only the potential matches with the highest likelihood of being verified. This will allow caseworkers to confirm more addresses for NCPs in any given day, week, or month – ultimately resulting in more support orders and more payments for child support cases. Section 6.3 of our proposal – Benefit Identification and Characterization – quantifies the benefit California can achieve.

*Timelier CSENet Processing with Less Worker Effort*

The introduction of selected CSENet transactions replaces current highly manual processes.

Today, the California Central Registry (CCR) processes inbound CSENet transactions. Personnel at the CCR sort through the electronic transactions, organizing the information by county. A worker then faxes or mails the transactions to the individual LCSAs. With the SCR, rather than manually sorting through the inbound transactions, Statewide Services can check the SCR through an automated process to determine which LCSA should receive each transaction, and the transaction can be formatted into an email and be immediately sent to the appropriate LCSA. This saves time for workers at the CCR and provides more timely information to the individual LCSAs.

*Managing the Address History*

Address standardization and historical address repositories make the alliance's locate processes "smarter".

Other features of the locate engine include the use of address standardization routines and maintenance of address histories. These features also increase worker effectiveness. Today, when an individual must be located, a request is sent out to multiple locate sources, and matches are returned. It is not uncommon for the locate sources used by the child support program to have data that is out of date. In some counties, the caseworker deletes the old address from the system, and the NCP remains in locate status. However, this initiates a cycle where each month when the NCP is sent out for locate, the same locate source sends back the same "old" address. The caseworker is notified of a potential address that needs verification. The caseworker may not remember that the address is bad, and again spends valuable time just to reconfirm that the address is not good.
To alleviate this inefficiency, the SCR will retain old addresses so that when locate sources provide the same address over and over, the automated processing can determine that it is a "recycled" address and ignore the potential match. By including

address standardization routines, the SCR stores addresses in consistent formats, so that address duplicates are not stored due to varying ways of listing addresses (e.g., Main St. vs. Main Street).

*Federal Reporting*
The federal reporting component of CSE system Version 1 includes tools and processes to provide timely and accurate information to State management. Browser-based forms with built-in data validation provide quicker access to counties' data by State personnel. It also provides accurate consolidation of data across counties to prepare for data transmission to the federal government.

*Data Driven Decision Making*
By providing more timely consolidated information, CSE system Version 1 allows State management to make proactive decisions for addressing performance problems. CSE system Version 1 provides performance-related data to State and LCSA managers to enable them to compare LCSAs' performance and to address poor performance while there is still time to correct problems, before reporting results to the federal government.

*Better Visibility into Information Systems*

The alliance's approach to the Federal Reporting provides more insight to the counties' data.

The CSE system Version 1 provides better insight into child support program operations. The Federal Audit Extract is a data file that contains the individual data elements that were "counted" in order to come up with the end result for the reported item. For example, an LCSA reports on the number of children for whom paternity was established. When the LCSA reporting module processes a child and determines that paternity was established in the time period being reported, it adds to the total count of paternities established, and reports information on the child to the Federal Audit Extract file. By doing this, the Federal Audit Extract file contains the detailed information substantiating the total count of paternities established.

For data items included in the Federal Audit Extract, CSE system Version 1 allows access to further detail regarding the reported data's source information. When viewing a reported total on the screen, the user will be able to click on a data item to see individual cases, members, etc. that were included in the count of the reported data item. This allows for online auditing of the information presented in the federal report. It also provides the ability to obtain various views of the data being reported. For example, DCSS management can view the statewide totals for the results of OCSE-157. Alternatively, they may also view the results county by county. This allows for a comparison of county performance. State management can identify high and low performing counties and analyze root causes behind the differing performance levels. The efficiency and control that automation of this process brings increases overall worker effectiveness.

*Early Implementation of State Disbursement Unit*
Integration of the State Disbursement Unit improves overall worker effectiveness. SDU vendors bring highly efficient payment processing automation and processes to states. This removes payment-processing responsibilities from the counties and places the responsibility with a centralized organization. Most importantly, a central payment-processing center alleviates the burden on employers who might have to send income withholding payments to as many as 58 LCSAs.

A gradual approach to implementing the SDU functionality helps to ease the effects of the transition.

The implementation of an SDU for many states has proven to be a significant disruption in daily operations until the SDU processes are fine-tuned and the employer and NCP community have effectively adopted the new processes. A gradual process for transitioning SDU functionality, as outlined in our approach, helps to ease the effects of the transition on the CSE community, allowing caseworkers to remain focused on critical casework, as opposed to dealing with SDU-related issues.

### 4A.3.4a.2.2.1.1 Summary of CSE System Version 1 Worker Effectiveness Benefits

CSE system Version 1 addresses many problems related to Worker Effectiveness. These problems are primarily addressed through the Statewide Services subsystem, most of which are enabled by the consolidation of data into a statewide view. Our approach calls for a continuation beyond CSE system Version 1. The following pages describe how we will enhance the CSE system by incorporating system enhancements for CSE system Version 2 to further address worker effectiveness challenges.

### 4A.3.4a.2.2.2 CSE System Version 2 - “Best of Breed”

CSE system Version 2 provides additional worker effectiveness benefits.

CSE system Version 2 provides enhanced functionality to address the Worker Effectiveness problem. This section highlights components of the solution by the functional applications and business/control services defined in our System Architecture (Section 4A.3.2 – CSE System Architecture). Figure 4A.3.4a-3 summarizes the features of CSE system Version 2 that address the Worker Effectiveness problem.

| Business/ Common Support Service | Description of Functional Components |
|---|---|
| Case Initiation & Update | **Initial Case Entry**<br>The CSE system will include a case entry process that streamlines the case and case member data entry process. The series of screens will be designed to be consistent with the paper application form to increase efficiency of data entry.<br>**Duplicate Member Check**<br>When entering case members, the CSE system will check members already in the system across the State to identify potential matches. This helps to prevent duplicate case members from being entered into the system, while allowing case members to be involved with multiple cases across the State.<br>**Self-Service Application**<br>The CSE system e-Child Support Customer Self-Service function will allow case members to complete applications over the Internet, saving data entry time for caseworkers. |
| Obligation Management | **Real-time Balance Regeneration**<br>The CSE system will include several components that increase worker effectiveness related to Obligation Management. This includes a Balance Regeneration function, which allows real-time (or asynchronous) recalculation of a case balance after modifications to support order or payment histories. Our experience in Wyoming has shown this to be the single most used function in the entire child support application. It allows caseworkers to develop accurate case balances without having to use a calculator and hard copy reports. The caseworker can focus on making the data in the system represent reality (a complete payment history and accurate history of support order terms). Once these are completed, the system calculates and stores the appropriate financial transactions required to produce an accurate balance.<br>Our experience also shows us that workers are often reliant upon the impact of adjustment activity to resolve urgent issues related to payment processing or enforcement actions. Systems that require one to several days to effect a change in balances due to overnight batch processing requirements can be debilitating to case worker productivity.<br>**Multiple Views of Financial Information**<br>Using a member-based data construct allows a single individual to be attached to multiple cases. This is true for CPs, NCPs, and children. The CSE system will include the capability to view financial balances from multiple viewpoints. For example, users can view summed balances for an NCP's cases, or balances for a single case. From a CP's perspective, a user can view arrears owed to a CP across the CP's cases, or for a single case. These multiple views are part of the CSE system, so caseworkers do not have to spend time with a calculator and/or spreadsheet to accumulate these totals. |

| Business/ Common Support Service | Description of Functional Components |
|---|---|
| | **Elimination of Duplicate Cases Open Solely to Track County-Specific UAP Balances**<br>It is not unusual for California to maintain duplicate cases for the same individuals across counties. Today, this is necessary in order for counties to preserve welfare arrears owed to a particular county.<br>The CSE system will allow cases to be worked by a single county - whatever county is judged appropriate by policy or preference. To preserve welfare arrears owed to a particular county, our statewide view of the data allows welfare recoupment to run against a consolidated accounting for public assistance expenditures. CSE system Version 2 tracks unreimbursed assistance pool (UAP) balances for each county. This means amounts retained to offset welfare arrears (or foster care expenditures, etc.) can be split across counties who have an interest in the UAP. This split will be designed based on DCSS policy preferences (i.e., prorated, last-in-first-out, etc.). By grouping the welfare recoupment decisions at the person level rather than at the case level, counties no longer must keep an arrears-only case open solely for the purpose of preserving welfare arrears.<br>By eliminating the need to maintain separate child support cases to track welfare arrears owed to counties, the CSE system reduces the casework required to manage the single case. Rather than having multiple caseworkers pursue redundant enforcement techniques, the case is assigned to a single caseworker to achieve the same results.<br>**Automated Review and Adjustment**<br>The CSE system will include automated processes to identify support orders eligible for review and adjustment. By automating this process, more cases can be reviewed and adjusted as appropriate, allowing for increases in child support collections when merited. Automation of this process saves caseworker time required to identify and select support orders for review. |
| Disbursement | **Electronic Payments Established Using Self-Service**<br>The CSE system e-Child Support Customer Self-Service function will allow case members and employers to set up electronic payments and disbursements without the need to speak to a caseworker. By shielding caseworkers from processing simple requests, caseworkers can maintain a more effective use of their time. Electronic payment and disbursements further increase worker effectiveness when compared to the effort required to process paper checks for collection and disbursement. |
| Enforcement | **Enforcement Thresholds and Tracking**<br>The CSE system will include pursuing automated enforcement techniques when the NCP/case meets thresholds. It tracks enforcement attempts and results (when possible) so that statistical analysis can be completed using automation. This increases worker effectiveness because high impact enforcement techniques can be identified and low impact techniques can be assessed for whether they are worth the time required for caseworkers to process. |
| Locate | **Consolidation of Locate Processing**<br>The CSE system will enhance the locate functions built during Version 1. Where appropriate, we will develop direct interfaces with the various locate sources that are currently brokered through the CPLS. The CSE system e-Child Support Customer Self-Service allows case members to provide leads on address and employment information. By allowing case members to become more involved in providing information for the case, caseworker time remains focused on more complex casework. |

| Business/ Common Support Service | Description of Functional Components |
|---|---|
| | **Consolidated Employer Database**<br>The CSE system will include a consolidated statewide employer database, which contains more accurate and consistent data regarding employers. This increases worker effectiveness by providing the best employer information available in a single location. |
| Case Work Management | **Prudent Use of Work Lists**<br>The CSE system will include the prudent use of caseworker work lists (otherwise known as alerts, ticklers, etc.). From our experience, we have seen that a primary cause of worker ineffectiveness is a system that produces a mountain of relatively unimportant work list items. When informational alerts are sent in excess, meaningful items on the work list are difficult to find.<br>**Automate Actions, but Provide Override Capability**<br>The CSE system, as it relates to work lists, will improve the use of caseworker time. For example, for actions that do not require worker action, rather than sending an "action required" alert, we will send an informational alert that specifies the action that will be automatically taken unless the caseworker manually overrides the action. In this way, the types of transactions that are rarely over-ruled based on the caseworker's judgment are processed without requiring any caseworker action.<br>The CSE system further offers the flexibility to define workflow paths that require approvals of certain actions while other actions can follow a more automated path. If these paths are effectively managed, those actions requiring worker action are not buried under many other requests that do not really require the approvals they are requesting. The key goal is to involve the caseworker in the workflow path only when they can add value to the process.<br>**Direct Navigation**<br>The Casework Management pages will also provide direct navigation from the work list to the page where the caseworker must take action. Once the action is taken by the caseworker, the CSE system deletes the action item from the worker's list. These features of the CSE system reduce the time required for the caseworker to navigate in the system and keep the caseworker's work list contained to items requiring action.<br>**Sharing of Caseworker Best Practices**<br>As best practices are identified for caseworkers, California will be able to implement them across the entire state. The LCSAs will operate the CSE system. A business process that is successful for one LCSA will not be prevented from being used by other LCSAs due to system constraints. |

| Business/ Common Support Service | Description of Functional Components |
|---|---|
| Customer Service | **Call Center Ticket Tracking**<br>The CSE system will provide pages to track Call Center issues. When a case member or other customer contacts the Call Center, this will often result in the need for caseworker action. To efficiently process and track such requests, the appropriate caseworker will be assigned a work list item and the details for the item will appear on a Customer Service page. When the worker takes action, this page will be updated with the action taken, and the ticket can be closed. This represents an efficient entry, assignment, action follow-up, and closeout of customer service issues.<br>The customer self-service aspects of the CSE system also contribute to increased worker effectiveness. Our approach offers two vehicles for self-service, the Interactive Voice Response (IVR) and the e-Child Support Self-Service application. These tools can provide the CSE community with quick self guided access to participate in managing their cases. Call takers or case workers are not forced to address the more mundane calls that can offer high volumes of service requests, such as recent payment inquiries. This allows the call takers and caseworkers to focus on the more urgent cases where their services are needed the most. |
| Program Monitoring | **Expansion of Federal Audit Data Extract**<br>The CSE system will include an expansion of the Federal Audit Data Extract. We expand this extract to contain the source records for most of the data elements produced in key federal reports. By expanding the extract, managers can view the detail behind most of the data items on the report instead of only the data items currently included in the extract. This will provide managers with increased ability to monitor and analyze data so that better decisions can be made for operating the child support program. |
| Document Generation | **Document Editing Capabilities**<br>The CSE system will include a robust document generation utility. Caseworkers will be able to view pre-populated forms and documents, and will be provided the ability to modify the forms before printing (i.e., for those forms initiated by the worker rather than those produced automatically by the system). |

| Business/ Common Support Service | Description of Functional Components |
|---|---|
| Appointments and Hearings | **Appointment Register**<br>Our approach to the 'calendaring' functionality within CCSAS began with the realization that it would be inappropriate to try to build a commercial-quality custom calendaring capability when robust commercial applications are available (and already in use in the counties). We do, however, recognize that there is a CSE business need to enter and capture key schedule events related to CSE business processes. The alliance solution provides a workable, commercially reasonable, and effective solution to meet the CSE business needs. Our solution includes a custom-built 'appointment register', that provides the following capabilities:<br><br>• A GUI interface to allow CCSAS CSE users to access the register's functionality.<br>• Functionality to schedule court hearings – based on time slots provided by the courts via inbound interface<br>• Ability to request test lab appointments to be scheduled with the lab and to receive appointment date / time back from lab (outbound & inbound interface).<br>• Functionality to schedule appointments for workers.<br>• Functionality to check for availability based on other appointments / hearings in the register.<br><br>This custom-developed register would co-exist with the existing COTS calendaring capabilities available in the counties. We recognized that the events managed by the register would need to be made available to be integrated into the counties' COTS calendaring products. To this end, and to reasonably accommodate the lack of uniformity of these COTS products across the counties, the solution provides outbound notification of appointments in the form of a standard format data 'record' that can be imported into the counties' calendaring products. |
| Wage Withholding Management | **Automatic Wage Withholding**<br>The CSE system will include automatic wage withholding for new support orders. These forms will be automatically produced saving caseworkers time that was usually required to prepare the documentation packages. |
| | **Self-Service Capability for Wage Withholding**<br>The e-Child Support Customer Self-Service application provides employers access to view wage withholding information for their employees. |
| Service of Process | **Self-Service Reporting for Service of Process**<br>The e-Child Support Customer Self-Service application contains the capability for process servers to provide service results over the Internet, which saves data entry time for caseworkers. |
| Reporting & OLAP | **Multiple Output Formats for Reports**<br>The CSE system will include the ability to distribute reports in multiple formats. By producing reports in PDF format, reports can be previewed prior to printing. This can save caseworkers time by allowing them to discover errors they have made before printing a report. For example, if a worker intended to run a report for casework performed by a specific worker, but instead ran the same report for workers in the LCSA, the worker could preview the report, save the time it would take to print the report (and the paper), and re-request the report with the correct parameters. |

| Business/ Common Support Service | Description of Functional Components |
|---|---|
| | **Interactive Reports**<br>Version 2 will provide the ability to interact with reports through sophisticated tools that allow drill-down, and the ability to view data using graphs/charts. These tools increase insight into the child support data, and thus the overall child support program. This saves caseworker time that has been previously spent manually accumulating data and building charts and graphs through a variety of standalone office tools.<br>**E-mail and Web Distribution of Reports**<br>By allowing reports to be e-mailed or posted to the web, the CSE system reduces caseworker time and expense required to mail hard-copy reports. |
| Interstate Case Processing | **Expanded Interstate Processing**<br>The CSE system will include expanded interstate processing capabilities. This will save caseworker time from having to manually complete interstate action request forms. Instead, the worker can request an interstate action on the system, and electronic requests will be sent to the other states. |
| Business Event History | **Direct Navigation**<br>The CSE system will log events for a case and person – events that are required for logging by federal requirements, or events deemed important by the State to track specific dates and times (Note: These will be measured against performance and transaction volume considerations). It allows direct navigation from the page listing the case events to the page showing details of the event that was logged. This feature of the solution reduces time required for the caseworker to navigate in the system. |
| Document Management | **Imaging**<br>The CSE system will include the ability to image and index incoming documents that are part of a case file. Establishing imaging services in LCSA offices saves time required to share these imaged documents across offices.<br>Storage of documents will be performed electronically so that caseworkers save time retrieving previously sent forms electronically, rather than having to find the physical hard copy of the document. By storing the documents electronically, time is saved because caseworkers do not need to make extra copies for their files. Further, sharing of documents is simplified, as caseworkers no longer must call or e-mail other caseworkers who have the hard copy of a form. Instead, an electronic copy of the form can be accessed by any caseworker with appropriate security to access the form. |

**Figure 4A.3.4a-3 Functional Components** *– CSE system Version 2 brings "best of breed" concepts.*

### *4A.3.4a.2.2.2.1 Summary*

CSE system Version 1 addresses several worker effectiveness challenges – mostly from the consolidated statewide view of the data. However, as you would expect, CSE system Version 2 delivers the robust features of the solution and thus provides the majority of worker effectiveness improvements.

## 4A.3.4a.2.3 Customer Service

***Customer service is constrained by the lack of timely, adequate, accurate and accessible data; clear and understandable communication of information; lack of uniformity; and limited system functionality and automation.***

California's child support program serves many different stakeholders – CPs, NCPs, employers, financial institutions, caseworkers, other states, and other third parties. Providing consistent customer service has proved to be difficult given the current environment of multiple systems, and localized delivery of services.

CSE system Version 2 addresses customer service via a combination of methods that serve internal and external customers. Each of these features are introduced below and described in more detail later:

The alliance's customer service approach includes multi-channeled access and a single point of contact.

- DCSS Application Help Desk – A unit is available to support DCSS employees on the use of the CSE system.
- Web-based User Guide and Training Materials – System users have access to self-guided procedural and training support.
- Customer Service Support Center – External customers (case members, employers, etc.) can call a support center designed to address questions and issues.
- Interactive Voice Response – A phone system is available for case members to obtain information about their cases.
- CSE system e-Child Support Customer Self-Service – A web-based interface is available for child support stakeholders to perform self-service functions.
- General Process Improvements – The implementation of the CSE system provides other improvements to customer service because of the consolidation of data into a statewide database.

### 4A.3.4a.2.3.1 DCSS Application Help Desk

The primary purpose of the Help Desk is to support system users from the child support program on the operation of the CSE system. The Help Desk will have two parts – one to address functional issues and another to address technical issues. The Help Desk is accessed via a single phone number for users across the State. A script response management process provides consistent, reliable service to system users. Call tracking software is used to monitor service and to provide statistical analysis of Help Desk performance (average calls per day, average time to complete a call, etc.)

### 4A.3.4a.2.3.2 Web-based User Guide and Training Materials

CSE system Version 2 includes both a Software User Manual and context-sensitive online help. Additionally, interactive e-learning training modules are available to system users. These components should serve as the first line of support for system users.

### 4A.3.4a.2.3.3 Customer Service Support Center

The primary purpose of the Call Center is to answer questions and provide information to external customers (case members, employers, etc.). The Call Center provides support on the use of the CSE system e-Child Support Customer Self-Service application and IVR, as well as information to customers who prefer to speak directly with a person instead of using less personalized methods. The Call Center will be accessed via a single phone number for customers across the State. Similar to the Help Desk operations, a script response management process provides consistent, reliable service to each customer. Call tracking software is used to monitor service and to provide statistical analysis of Call Center performance.

The customer service organization addresses internal and external stakeholders.

Call Center personnel will be equipped to address the most commonly occurring customer issues. When call center personnel are unable to directly address customer issues they will be able to log the customer concern in the call center application, and the issue will be routed to the appropriate caseworker or the State Disbursement Unit.

### 4A.3.4a.2.3.4 Interactive Voice Response (IVR)

CSE system Version 2 includes an IVR component for case members to obtain case-related information. The IVR will process a set of services similar to those provided by the CSE system e-Child Support Customer Self-Service application. The IVR will provide direct call routing to the Call Center, if such assistance is needed.
Functions provided by the IVR include dissemination of general information, access to case balances, status updates on child support payments and disbursements, and options to make electronic payments on a case.

### 4A.3.4a.2.3.5 CSE System e-Child Support Customer Self-Service

The Internet has the power to bring down the barriers that stand in the way of quality customer service and agency efficiency. The alliance brings an Internet solution to the CCSAS project to provide a new level of customer service.
The CSE system e-Child Support Customer Self-Service application lets parents and employers perform tasks and exchange information that until recently could be handled only on the phone or in person with agency staff.
Through the use of CSE system e-Child Support Customer Self-Service, case members can:

Customer self service allows call takers to spend time on more critical issues and enables members to take advantages of the efficiencies brought by the Internet.

- Inquire about disbursement status
- View payment history
- View arrearage balances
- Apply for child support services
- Provide updates for address and employment information
- Provide information for locate activities

- Use a child support guidelines calculator
- Read laws and regulations
- Request the review and modification of child support orders
- Review case activity
- Have support payments automatically deposited

CSE system e-Child Support Customer Self-Service provides the level of customer service that clients increasingly expect. Today's young parents are often experienced Internet users. They know the ease and convenience of eCommerce, especially in matters of a personal nature, and they expect this same level of service from the government.

CSE system e-Child Support Customer Self-Service puts information in the hands of parents when they need it—nights, weekends, and holidays. By accessing the Internet at home, work, or in libraries, clients quickly receive accurate information that was previously available from staff only during office hours.

In the pages that follow, we have included screenshots of application pages we have used in another state. We show them to give the reader a better understanding of the functions available in the CSE system e-Child Support Customer Self-Service application as well as a portrayal of the look and feel of the application. These screenshots should not be interpreted as what we propose for CSE system Version 2 – rather, they will serve as building blocks. Our team will work with the State to define user interface requirements and to further refine the design of the application.
Figure 4A.3.4a-4 shows a screenshot of the main menu for the CSE system e-Child Support Customer Self-Service application.

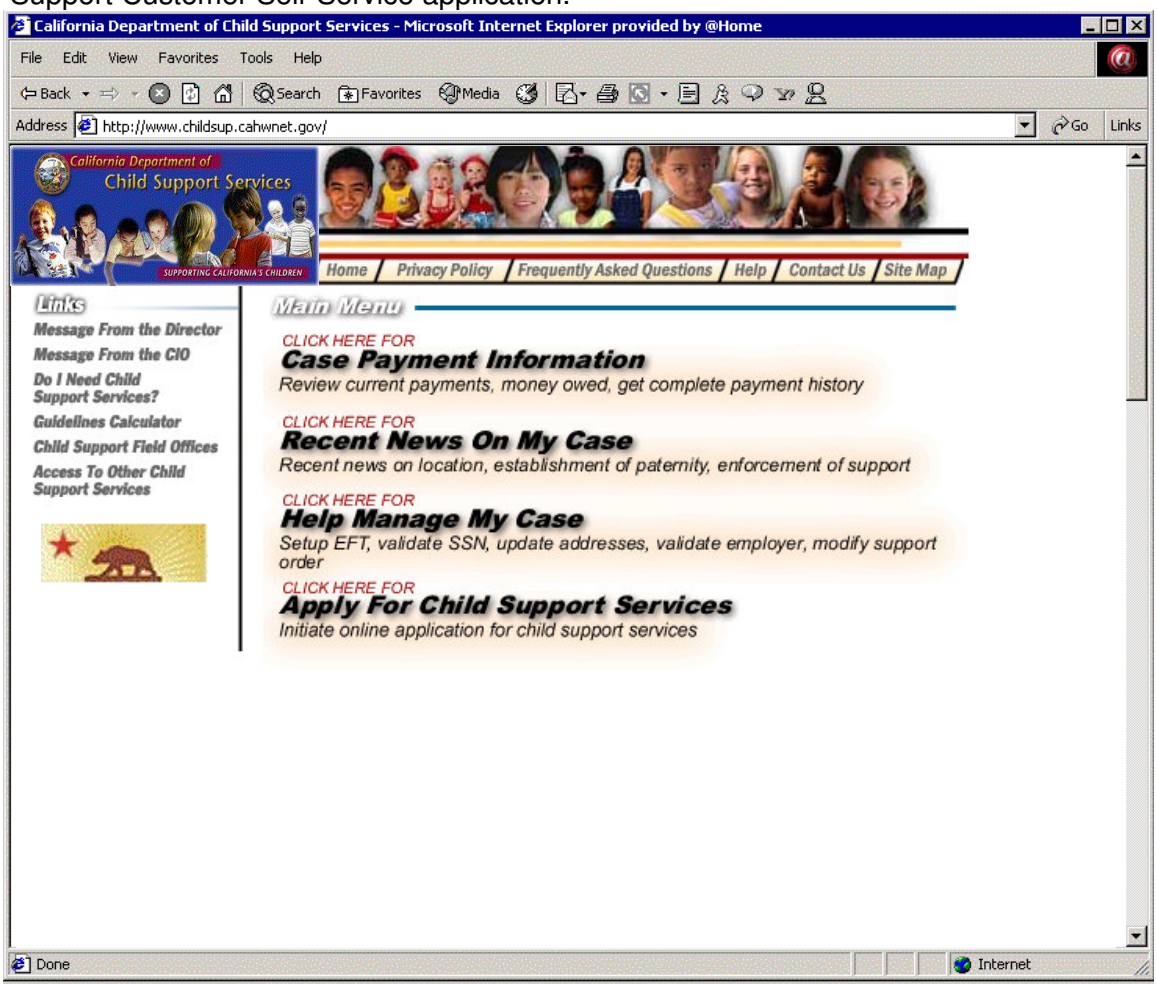



**Figure 4A.3.4a-4 CSE System e-Child Support Customer Self-Service Application – Main Menu** - *The CSE system e-Child Support Customer Self-Service application provides interactive data and services for case members, employers, and other stakeholders.*

### *4A.3.4a.2.3.5.1 Case Members*

*General Information*
Case members are able to obtain general information, such as state and local office addresses and phone numbers, public service messages from the State, and/or links to other websites about child support.
*Apply for Services*

Case members can access the child support application form, complete the form, and electronically submit it for processing. Figure 4A.3.4a-5 shows a sample screenshot of the page used to apply for child support services.

**Figure 4A.3.4a-5 CSE System e-Child Support Customer Self-Service Application – Apply for Child Support Services** – *Potential case members can use a self-service application to apply for child support services.*

*Guidelines Calculator*

Case members have access to the child support guidelines calculator to determine approximate amounts of child support that would be due for specific scenarios.

*Data Updates*

Case members can provide information updates to the child support program such as address/phone number changes and “hot tips” for address and employer data for other individuals. Figure 4A.3.4a-6 shows a sample screenshot of the menu that allows case members to “manage” their case by providing information over the Internet.

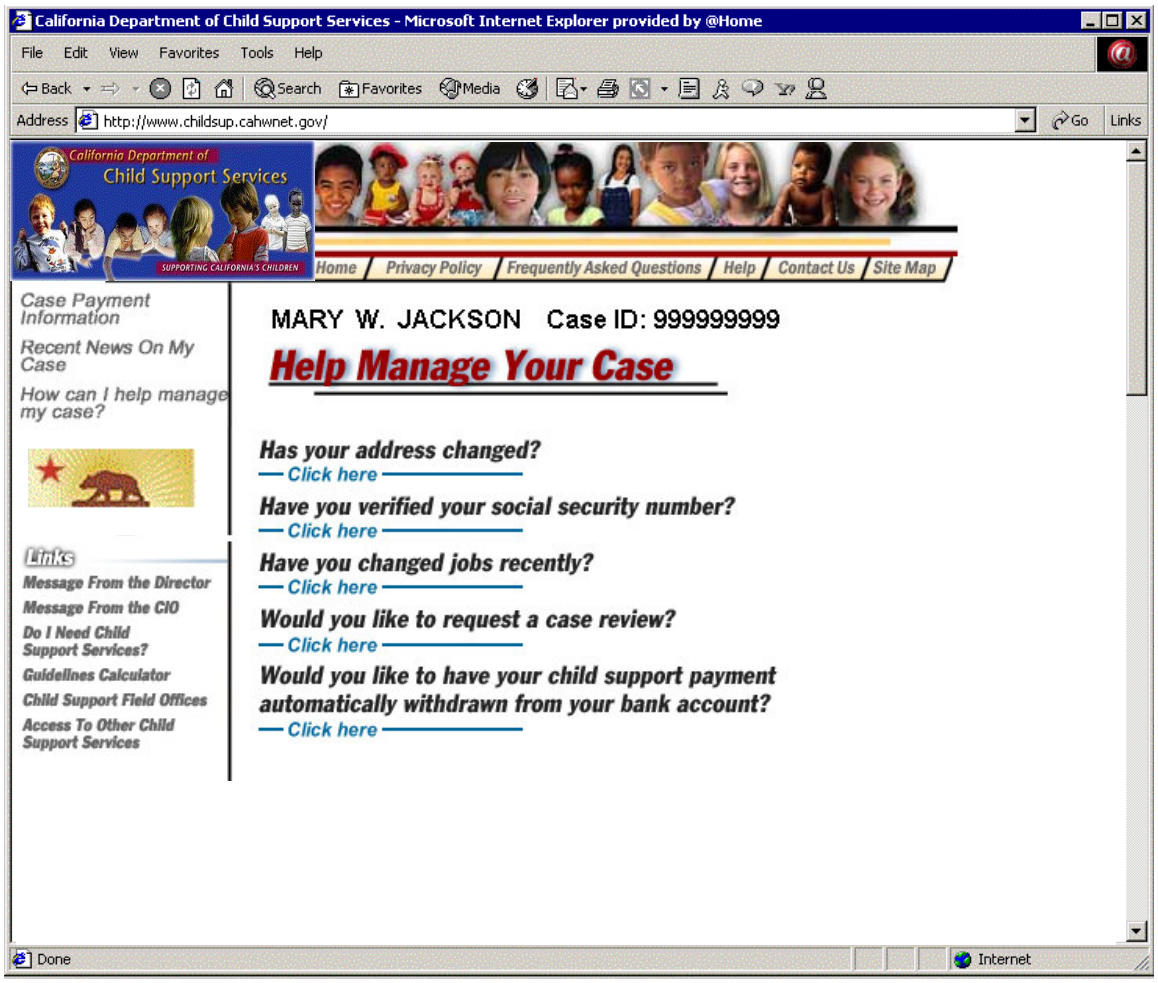



**Figure 4A.3.4a-6 CSE System e-Child Support Customer Self-Service Application** – *Manage Your Case– Case members can use a self-service application to provide data updates and request specific services.*

*Electronic Payment Options*

Case members can provide bank routing information so that they can submit and/or receive child support payments electronically.

*View Financial Information*

Case members can check case balances, view payment histories, and check the status of child support payments and disbursements. Figure 4A.3.4a-7 shows a sample screenshot of the menu used to obtain payment-related information.

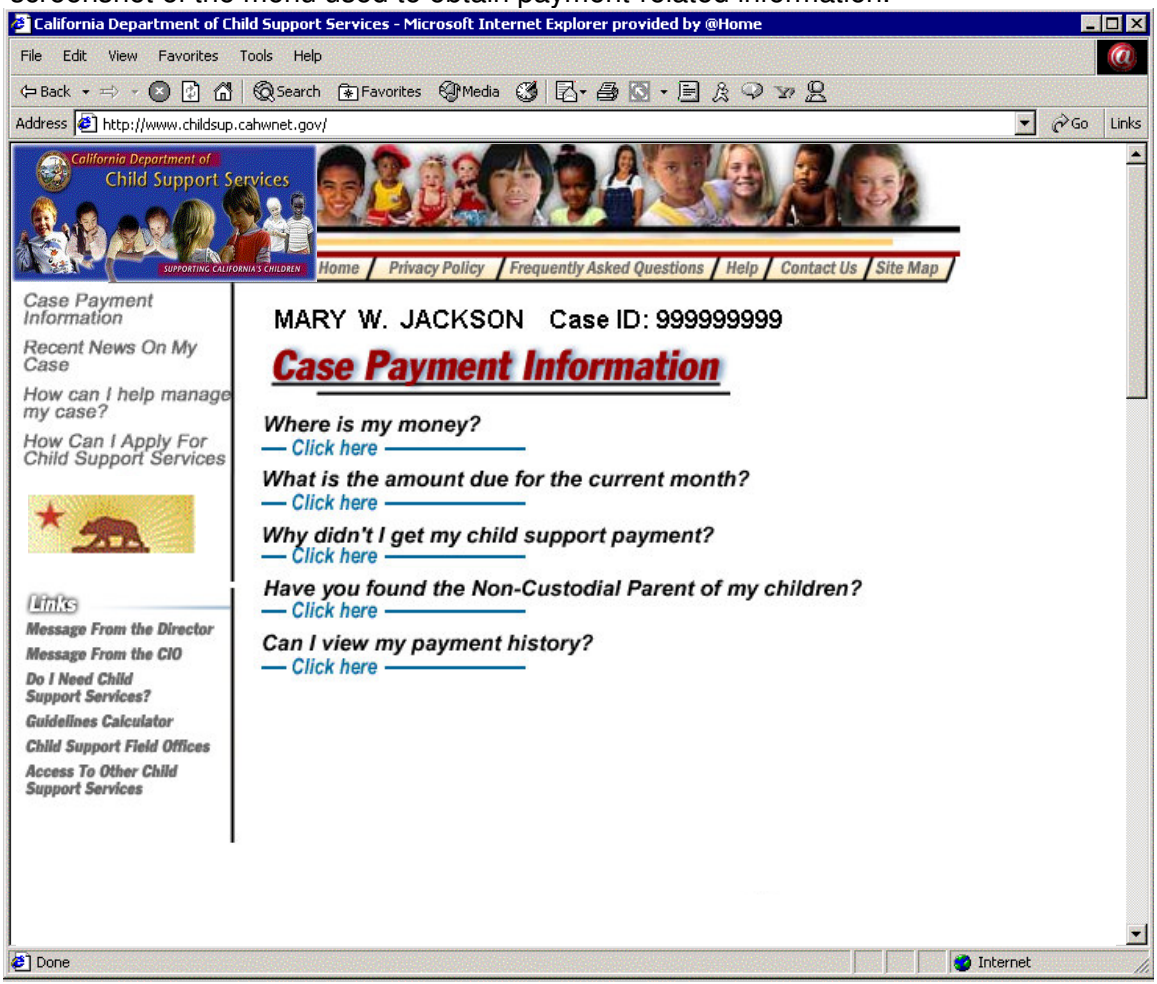



**Figure 4A.3.4a-7 CSE System e-Child Support Customer Self-Service Application – Case Payment Information–** *Case members can use a self-service application to provide data updates and request specific services.*

*Subscription to Electronic Document Delivery*

Case members may be able to request electronic delivery of correspondence that would normally have been delivered through the mail. By providing an e-mail address, case members can receive documents in a more timely and convenient manner, while saving postage costs for the State.

### *4A.3.4a.2.3.5.2 Employers*

*General Information*

Employers also can obtain program information of a general nature, such as procedures and instructions for processing wage-withholding orders.

*Wage Withholding Information*

Employers can view a roster of employees who have wage withholding orders set up.

*Process Electronic Payments*

Employers can set up electronic payment capabilities or make one-time electronic payments.

#### *4A.3.4a.2.3.5.3 Other States*

*General Information*

Caseworkers from other states can obtain program information of a general nature, such as central registry contact information.

*Information Requests*

Caseworkers from other states will be able to send electronic requests for information to be processed by the California Central Registry.

#### *4A.3.4a.2.3.5.4 Other Functions*

*Service of Process Results*

Service of process providers can access the CSE System e-Child Support Customer Self-Service application to provide results of service attempts.

### 4A.3.4a.2.3.6 General Process Improvements

CSE System Version 2 will deliver customer service improvements related to financial institutions and employers. Because the CSE system includes a consolidated statewide view of data, the number of duplicate requests sent by the child support program will be significantly reduced. For example, today, an employer may receive an employment verification request from multiple counties because the employee is a participant on cases in more than one county. With the CSE system, the data is consolidated into a statewide database. Automated processes acting on the consolidated data can recognize that the individual is involved in multiple cases and send communication to the employer on a single form. This makes it much less likely for duplicate requests to occur.

The consolidation of statewide data and processes eliminates duplication and improves efficiency.

The State has other customer service improvement opportunities that are unrelated to the particular system being implemented. We plan to establish a Communications team who will address both internal and external communications. Communications can be targeted to various subsets of the child support stakeholder groups in order to most effectively get across customer service messages. These outreach communications will be crucial to getting external stakeholders on board for the positive (albeit significant) changes that are forthcoming.

### 4A.3.4a.2.3.7 Summary

California's child support program serves many customers with different needs. We recognize that the State views customer service as a high priority, as demonstrated by the number of business goals that refer to increased customer service. CSE system Version 2 includes robust components to address customer service, based on an anytime/anywhere/any-type approach. This is the type of approach needed to provide high quality customer service in today's customer-centric business environment.

## 4A.3.4a.2.4 System Maintainability

***System maintainability is constrained by disparate systems, inadequate documentation, the lack of open system architecture, and business changes.***

The State's architectural best practices and the features of the alliance solution combine to deliver a maintainable solution.

System maintenance for the California child support program is difficult, costly, time consuming, and inefficient. It also produces inconsistencies in the program's operations. The initial groundwork to build a more maintainable system has been defined through the State's architectural best practices. The CSE system incorporates these best practices to facilitate a system that is more maintainable. In addition to these architectural best practices, the CSE system will improve system maintainability by:

- Creating a single, statewide system, for consistent application of business rules
- Using component-based development and a proven methodology which results in "fix in one place"
- Creating a single maintenance and operations organization
- Isolating and centralizing business rules
- Using Enterprise Application Integration technologies and approaches to separate messaging from business logic
- Reusing architectural assets such as the General Reusable Netcentric Delivery System (GRNDS)
- Defining an enterprise-wide data dictionary that supports a consistent data model

### 4A.3.4a.2.4.1 A Single, Statewide System

With six separate computer applications, the California child support program has never had the opportunity to exhibit cost effective, consistent system maintenance services. Six different systems result in six different implementations when state and federal legislative actions require system changes. Six different implementations can result in varying interpretations of requirements and varying end results.
The CSE system delivers a single application for use by the entire state. This makes "fix in one place" coding possible (along with proper development techniques, to be discussed later in the section).

### 4A.3.4a.2.4.2 Component-based Development and Proven Methodology

Components offer reuse. Reuse provides quality, ease of maintenance, and leverage for future development.

One of the main benefits of a component-based approach is the opportunity for reuse. Done properly, reuse leads to more stable and higher quality software, localizes the impact of changes to the business or a particular component, eases maintenance of software systems, and leverages previously built components for future system enhancements. Components are frequently designed for reuse to achieve these benefits.

We intentionally design components with well-defined interfaces and behaviors. These interfaces are available for other developers to leverage at build time and for other software components to call at run time. In addition, we design components to hide their inner mechanisms from other components—all that is visible to other developers and other components are the interfaces and external behaviors. This design technique, known as encapsulation, not only increases maintainability of the system, but also encourages reuse. Encapsulation hides implementation details inside reusable components. With these details hidden, other developers can focus on the components' interfaces—what the components do, rather than how they do it. This facilitates reuse, because developers can reason about components at a higher level, without worrying about the internal details.
Our designers also focus on extensibility. As new components are required, it is often easier to extend an existing component with known behaviors and interfaces than to start from scratch with a brand new component. This is also a form of reuse that can lead to the benefits previously described.

***Figure 4A.3.4a-8 shows the features and benefits of our development methodology.***

| Features | Benefits |
|---|---|
| Provide Architecture, Data and Application Separation | Isolates and localizes changes in the system; insulates business functions from dependencies on other system components and the complexities of communication interfaces. |
| Establish a Layered Architecture | Layering allows independence from the underlying vendor's hardware/software. |
| Establish a Modular Architecture | Modularity facilitates analysis and increases the reusability of the functions. Fundamentally, it breaks down a complex problem – the CSE system – into smaller and simpler parts. |
| Consider Portability | Portability allows applications to be transferred from one computing platform to another with minimal effort and cost. |
| Provide Configuration Management Tools | Configuration management provides consistency between the infrastructure components and the overall environment as components are changed. |
| Adhere to Standards during Development | Adhering to established standards will simplify maintenance efforts, increase portability across platforms, provide a more consistent look and feel, and provide for an improved understanding of the architecture by people new to the project or less involved. |
| Prepare, Train, and Educate Maintenance Team | The maintenance team must be prepared, trained, and educated in order to effectively maintain and modify the architecture. |
| Provide Reusable Testing Models | Reusable testing models will allow modifications to be delivered quickly and efficiently. Automated test tools and reusable manual test scripts, test data, and expected results allow repeatable execution of tests, increasing the ability to regression test the system. |
| Use Proven, Reusable Architecture | By leveraging well-tested, quality components from a reusable architecture, a project team can reduce overall project risk and jump-start architecture development. For longer-term projects, a reusable architecture can be used as insurance against changes in the underlying platform. |

**Figure 4A.3.4a-8 Features and Benefits of the Alliance Development Approach** – *Our development approach results in flexibility, reusability, and maintainability.*

### 4A.3.4a.2.4.3 A Single Maintenance and Operations Organization

The solution takes advantage of the opportunity to consolidate the State's multiple maintenance and operations (M&O) organizations into a single unit. Our M&O organization supports the application in a timely, cost-effective, consistent manner. Creating the right organization is required to be able to provide effective system maintenance. But, the first step to improving system maintainability is building a maintainable system. The following paragraphs discuss how we will build a maintainable system.

### 4A.3.4a.2.4.4 Isolated/Centralized Business Rules

Our development approach for the CSE system isolates key business rules to increase system maintainability. We will provide frameworks and guidelines for developers to build these rules into the CSE system. Isolating and centralizing business rules in this manner facilitates "fix in one place" coding.
In some cases, we make use of table-driven business rules. Then, changes in these business rules do not require software changes. Examples of potential table-driven business rules are:

- Arrearage accrual and categorization – System administrators can define the sequence in which arrearage "buckets" are filled to support the various distribution and arrearage categorization requirements.
- Payment distribution sequence – System administrators can define the sequence in which child support debt is satisfied within the application.
- Security/access control – Access control to pages and tables are maintained using Read/Write/Delete specifications within the application.
- Automation controls – While business processes are uniform from LCSA to LCSA, the level of automation can be configured within the application.
- Caseload allocation – Allocation routines are defined within the application.
- Enforcement thresholds – Thresholds can be set using dollar amounts or number of months of delinquency within the application.

### 4A.3.4a.2.4.5 Employ an Enterprise Application Integration (eAI) Framework

The CSE system Version 2 includes the use of an eAI framework for integrating end-to-end business processes and data across the numerous interfaces in place. This increases the State's ability to respond and adapt to changes in interface requirements. Figure 4A.3.4a-9 illustrates where eAI fits within the enterprise infrastructure.

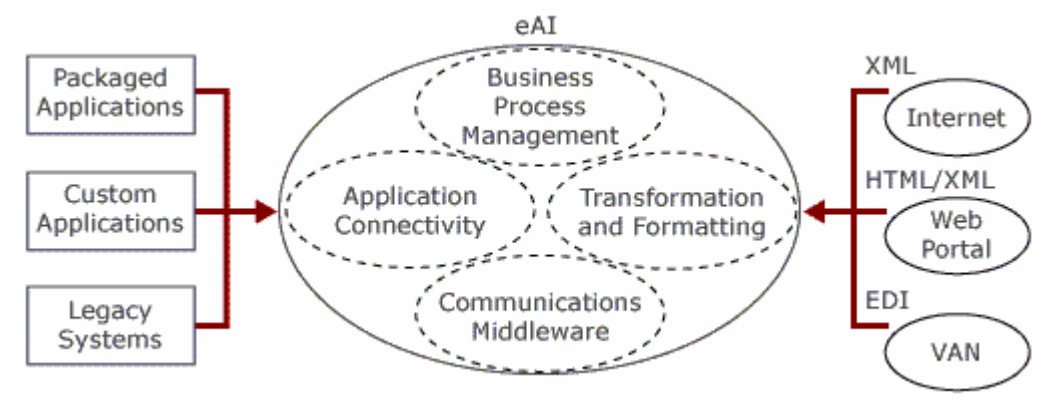



**Figure 4A.3.4a-9 eAI Framework** – *eAI improves system maintainability by managing data mappings and transformation for numerous CSE interfaces and externalizing these functions from the CSE system.*

This framework will particularly provide value when used to manage locate, SDU, and IV-A interfaces. Where appropriate, the eAI bus will allow real-time (or near real-time and asynchronous) access to external data sources.
We will build a single locate identifier module, pass a superset of information to the eAI bus, and the eAI bus will perform the data mappings and transformation to send messages to the numerous locate sources (which require separate data layouts). Likewise, interfaces with IV-A agencies can be accomplished with a single inbound and outbound application module for each function, rather than separate modules for each function and each IV-A system.
The eAI framework provides a user interface to manage the data mappings and communication specifications. This is accomplished in isolation from the CSE system modules that feed and receive the data. Separating these functions eases system maintenance efforts.

### 4A.3.4a.2.4.6 Use of Architecture Assets

Architectural assets to support “fix in one place”.

The GRNDS architecture asset supports system maintainability through reuse, consistency, and layering principles. GRNDS centralizes reusable logic for common architecture services, thereby supporting “fix in one place.” It improves consistency across the application, as the application developers use GRNDS in a particular way; consistency improves maintainability. It forces developers to follow strong architecture layering principles, dividing up where they put presentation logic, business logic, and data access logic. A well-layered system is more maintainable. Section 3C.12.2 System Architecture Design discusses these concepts in more detail.
GRNDS improves the efficiency of application developers. It provides a toolkit of reusable Java frameworks for services like error handling, logging, state management, database access, architecture layering and separation, etc. This hides complex technical details from application developers, thereby allowing them to focus on designing and programming business functionality. More details on GRNDS can be found in Section 3C.12.

### 4A.3.4a.2.4.7 Use of an Enterprise-wide Data Dictionary

The enterprise-wide data dictionary facilitates consistency for data, relationships, and constraints.

Large projects like CCSAS, with multiple data sources, benefit from a common, enterprise-wide metadata model. This model is essentially a common data dictionary. The dictionary not only includes attribute types, definitions, and constraints; but also relationships between these attributes. Then, for example, applications can share a common view of the CCS Case entity, as well as its relationship to the Case Member entity.

Having an enterprise-wide dictionary will facilitate, for example, development of the Statewide Services functionality. The common definition of CCS Case can be used as input to:

- A relational database model for storing CCS Case information in the statewide database (which can then be generated into actual DDL)
- An XML file for gathering CCS Case information from the counties
- The enterprise-wide component model including the CCS Case class (which can then be generated into actual Java code)

The dictionary will be used for building applications, application-to-application (A2A) integrations, and business-to-business (B2B) integrations.

### 4A.3.4a.2.4.8 Summary

System maintainability is the result of proper organizational planning, execution of proper development techniques, reuse of proven architecture principles and assets, and an understanding of the functional requirements so that specific implementations of development techniques are properly applied. The CSE system combines these aspects to build a software architecture that aligns with the State's architectural principles and objectives.

## 4A.3.4a.2.5 Implementation

***Implementation of the new system is constrained by disparate systems, complex business rules, number of locations, and changes in the way of doing business.***

Many factors throughout the State provide the challenge associated with the implementation phases of the CCSAS project.

Implementation may be the most challenging phase of the CCSAS project. The solution for implementation addresses the difficulties and characteristics specific to California – the large size of the State, the varying caseload volumes in each county, the as-is county environments, the parallel system efforts taking place with key external entities (e.g., IV-A programs), and the operating costs associated with the old and new environments.

We surround the specific implementation activities with a proven methodology and a rigorous change management approach. This facilitates a successful transition from today's business and automation environment to the new statewide system. We complete the transition in a way that limits disruption to LCSA operations and helps to reduce impact to the child support program's performance.

## 4A.3.4a.2.5.1 Approach

### *4A.3.4a.2.5.1.1 Methodology*

The solution employs a methodology that allows the implementation organization to develop, grow, and incorporate lessons learned. The methodology is predictable and repeatable – important characteristics given that the CCSAS project must complete more than 58 implementations.

A predictable and repeatable approach is the cornerstone of the alliance's implementation approach.

The alliance implementation methodology, as shown in Figure 4A.3.4a-10, is comprised of seven implementation disciplines that work to ready a site for transition across four main implementation steps.

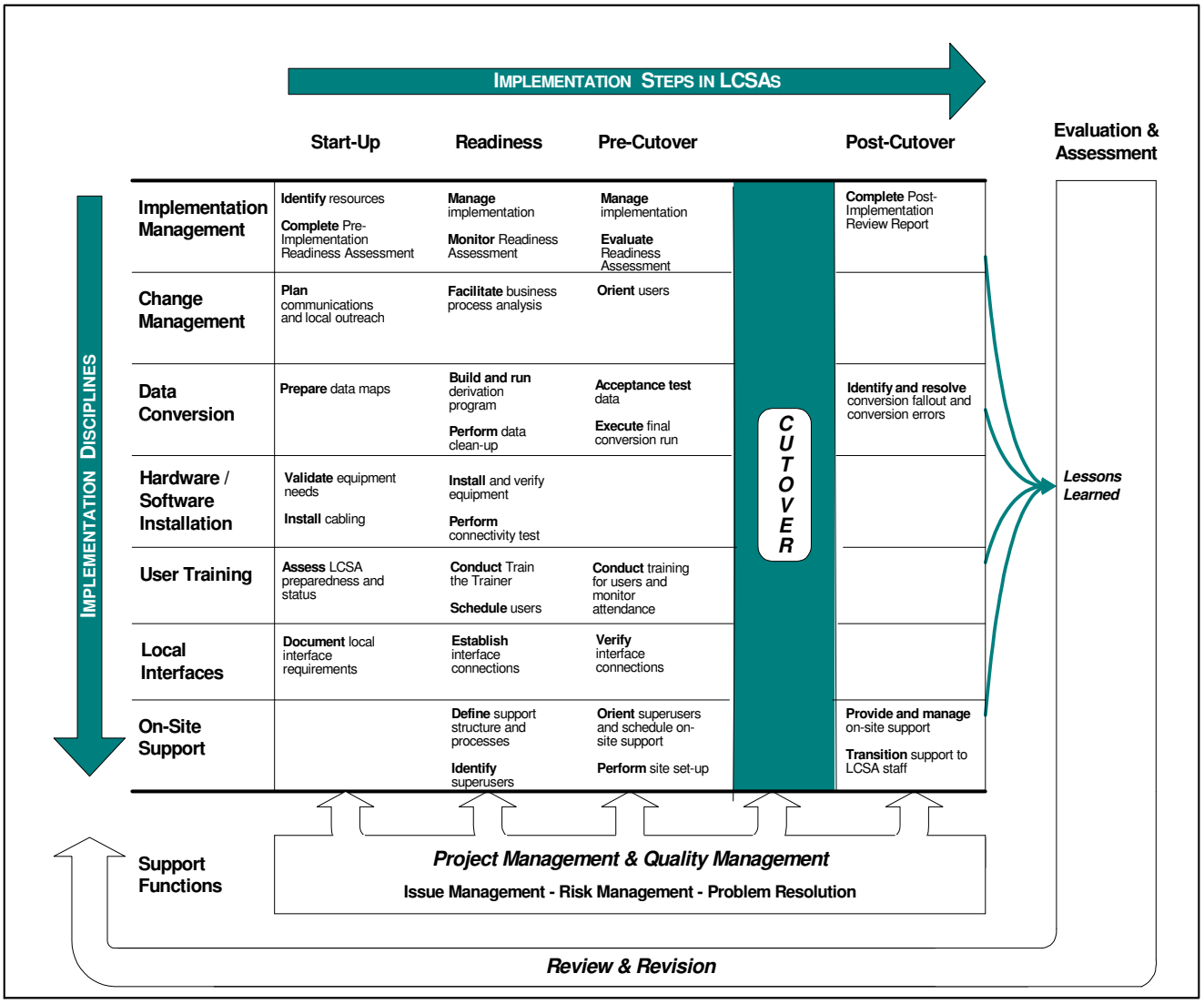



**Figure 4A.3.4a-10 Visual Representation of Implementation Methodology** – *The seven implementation disciplines work throughout the four implementation steps to prepare each site for transition.*

The alliance implementation approach uses seven key disciplines that encompass the major transition activities to be performed on the CCSAS project. Figure 4A.3.4a-11 shows the specific definition and areas of responsibility associated with the seven disciplines.

**Implementation Disciplines**

- Site Implementation Management –Coordinates activities necessary to implement a new system in a site, including managing the key relationships with the LCSA Director and LSCA Coordinator, and managing the efforts of the alliance staff working in the county. Activities from conversion to training to on-site support are a part of the overall Implementation Management coordination and monitoring responsibilities.
- Change Management – Provides outreach and orientation communications about the project to align expectations and manage the impact of change on users and external entities. Also includes business process analysis work to promote uniform processes.
- Data Conversion – Develops a conversion strategy for each data source requiring conversion and performs data conversion.
- Hardware and Software Installation – Installs the hardware, software, and cabling for sites prior to cutover, including installation and verification activities.
- User Training – Develops and delivers training to users, including developing e-learning modules and installing a Learning Management System.
- Local Interfaces – Establishes connections and validates county-specific interfaces, such as the TANF and county court interfaces.
- On-Site Support – Performs site set-up activities to allow necessary components for system implementation to be in place and operational prior to cutover. Provides support to users after cutover to allow a smooth transition and reduce disruption.

**Figure 4A.3.4a-11 Seven Disciplines of Implementation** – *Our team will provide skilled resources for each of the implementation disciplines.*

### *4A.3.4a.2.5.1.2 Continued Review and Revision of Approach*

Our implementation solution includes tasks to facilitate continuous improvement. This approach is viable given the length of time over which implementations will occur. With a two-phased approach, we will perform implementations over the course of three years (one year for interim transitions to CASES, plus two years for transitions to the CSE system). By planning at the outset to review and revise our approach and by allocating time in our schedule for this revision, our implementation process will improve as we implement more counties.

### *4A.3.4a.2.5.1.3 Readiness Metrics*

Readiness Metrics drive the implementation planning activities and provide a visible means for aligning expectations, monitoring progress, mitigating risk, and meeting schedules.

*4A.3.4a.2.5.1.4 Team Organized for Effectiveness*

A dedicated manager and a cross-functional team support implementation sites.

The size and complexity of the CSE system implementation led the alliance to create an implementation organization composed of cross-functional site implementation teams. The implementation organization is staffed to provide resources with the experience needed to transition counties and sites to the CSE system, organized by discipline. The benefit of this approach is flexible teaming through a matrix organization that results in specialized staff that is organized by discipline and is tailored to meet the specific needs of each state-level and local implementation site.

Each LCSA implementation is managed by a dedicated implementation manager who serves as the single point of contact for transition activities in that county. (Note: An implementation manager may serve multiple counties.) Our goal is to streamline communications and avoid overlapping or uncoordinated requests of LCSA staff, and to provide a single accountable party who has ultimate responsibility for implementation activities.

Reporting to the implementation manager is a team with appropriate experience across each implementation discipline. This team stays with the county through the entire transition, providing consistent resources who become knowledgeable in the operations of that particular LCSA.

Many of the discipline staff will specialize by consortia system, as this is a variable that provides a common bridge between the LCSAs. These consortia specializations are therefore the primary factor in matching staff resources to LCSA teams to take full advantage of prior experience with similar site transitions. This targeted staffing model allows the implementation organization to incorporate process improvements as we move forward with the project. Figure 4A.3.4a-12 shows a graphical representation of how we staff implementation teams.

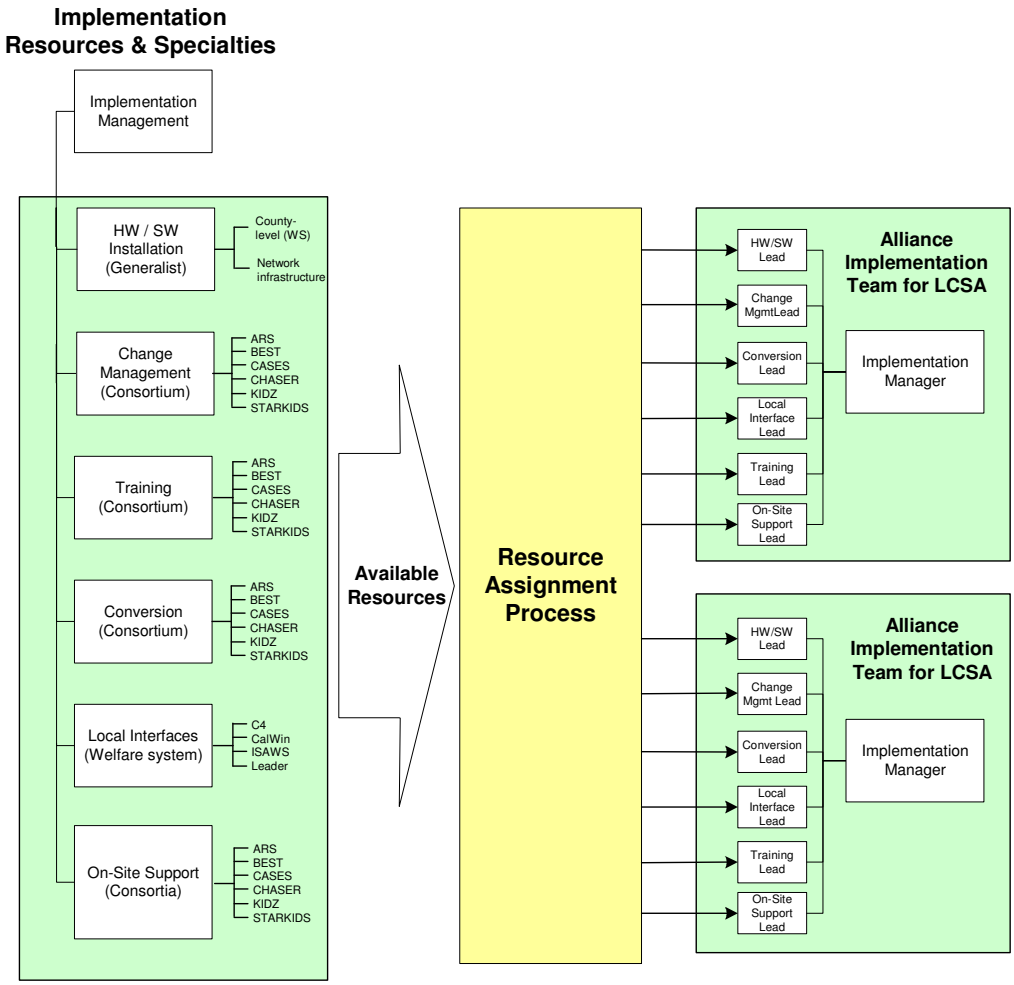



**Figure 4A.3.4a-12 Targeted Staffing Model** – *Cross-functional teams with experience in change management disciplines as well as consortium experience provides a framework for an efficient allocation of resources.*

### *4A.3.4a.2.5.1.5 Strong management procedures*

The alliance approach to implementation includes integration and use of structured, proven project management policies, standards and procedures that are established for various aspects of the project. By using an integrated approach to project management, the implementation organization has ready access to the same tools, methods, and procedures used by the Project Office for overall management of the project. This hastens the identification, resolution, and mitigation of issues and risks, increasing the likelihood of the project's overall success.

### *4A.3.4a.2.5.1.6 Strong Partnerships and Sponsorship*

Our approach aligns expectations and promotes effective communication between project sponsors such as DCSS, FTB, and LCSA Directors. To achieve these objectives, the alliance employs a joint planning process involving DCSS staff, LCSA staff, and project staff throughout the implementation of each site.
This joint planning process is designed to provide a well-coordinated effort and to take into account the need to involve multiple representatives from the discipline areas at

each site. The same planning process will be used with LCSAs for both Phase I and Phase II of the project.
The alliance also supports DCSS with a project-wide sponsorship effort. Sponsorship is the public commitment and demonstrated participation of leadership in project activities in order to execute and achieve the desired change. The alliance brings methodologies and proven practices from previous large-scale implementations where effective sponsorship occurred.
Sponsors have the ability and passion to affect the implementation via direction setting, decision-making, and allocation of resources. The alliance has developed a structured and comprehensive approach to achieving effective sponsorship through outreach and communications initiatives, described in the change management section in 3C.13.2.

### 4A.3.4a.2.5.2 Summary

Alliance team members have successfully implemented other large systems in California (CWS/CMS).

The alliance recognizes the challenges associated with the CSE system implementation. Our proven methodology provides the framework needed for successful transitions. We recognize that as we begin transitions, we will likely identify improvements to our approach, so we allocate time to review initial results and make revisions to our plan.
We develop readiness metrics to determine that sites are prepared for transition. Our team is organized to distribute the right personnel with the right qualifications across the State to execute transitions. The implementation teams are backed by strong management processes and are supported by strong sponsorship, facilitating a meaningful partnership between the alliance, FTB, DCSS, and LCSA personnel.

## 4A.3.4a.3 Conclusion

A solution focused on the business problems positions California to achieve its business and technology goals.

California's child support program is faced with many problems in its current environment. The CSE system addresses each of the five major business problems, and puts the State in a position to achieve its business and technology goals.
When compared to other states, California's child support program falls short regarding Certification, Worker Effectiveness, Customer Service, System Maintainability, and Implementation. The CSE system allows the State to turn these business problems into California's strengths. California will no longer be viewed as the last to build a statewide child support application. Instead, California will be nationally recognized for developing the first of the next generation of child support applications – certifiable, maintainable, providing worker effectiveness and world-class customer service, and implemented successfully across 58 counties. California will set the standard for statewide child support enforcement systems.

# 4A.3.4b Conceptual Operations Viewpoint

***Computing environments for child support agencies within the social services enterprise are often very complicated. Child support systems require scalable, reliable, and effective solutions to accommodate the wide range of end-users' requirements. The message to the alliance is clear – the challenges facing California call for a next generation system solution that is able to support the dynamic nature of the Child Support Program and its users.***

## 4A.3.4b.1 Introduction

The alliance understands that the success of this project is based on developing a system that solves the business problems for end users and delivers a productive solution to assist them with their day-to-day activities. Our approach of a custom developed solution with next generation features will establish California as a leader of Child Support program improvements while at the same time providing a more productive system for end-users. It addresses California's specific business needs as opposed to inheriting the policies, processes, and procedures inherent in a transfer system. We concur with and applaud the CCSAS Project team's position that a comprehensive understanding of the business problems and end-user productivity requirements is fundamental to a successful statewide implementation. To that end, the alliance has sharply focused its efforts to design a solution that will enhance the workers' ability to get their job done, without adding the complex, administrative overhead that can sometimes come along with a new system.

Our approach of a custom developed solution with next generation features will establish California as a leader of Child Support program improvements while at the same time providing a more productive system for end-users.

The purpose of this Section is to describe the key operational features and system characteristics from a user's point of view. Our approach will use the business functions and related proposed services to describe those features. The message to the alliance is clear – the challenges facing California call for a next generation system solution that is adaptable, scaleable, and able to support the dynamic nature of the Child Support Program and it's users. Processing efficiency and effectiveness must be improved at

The message to the alliance is clear – the challenges facing California call for a next generation system solution that is adaptable, scaleable, and able to support the dynamic nature of the Child Support Program and it's users.

every level of the organization: the LCSA caseworkers, financial workers, and DCSS staff. Statewide automation creates an opportunity to continually improve efficiencies, creating significant economies of scale as caseworkers, across California, become increasingly more proficient in the use of the statewide CSE system.

## 4A.3.4b.2 Business Problems

We recognize the importance of a smooth transition and address the user needs in a manner that facilitates acceptance and utilization of the system in the administration of the child support program.

A brief description of the five Business Problems is listed below. Of these, four of the five problems touch those who are in some way involved with the child support system. Those business problems and how they are addressed can *impact* a user's ability to get his or her job done or responsibility met in a timely, effective, and efficient manner. Our approach is focused on the people who will use the system. We recognize the importance of a smooth transition and address the user needs in a manner that facilitates acceptance and utilization of the system in the administration of the child support program. This realization was a key design point when the alliance planned its proposed solution, when the components were selected, and when architectural decisions were made.

**Business Problems:**

1. ***Certification.*** The State is not in compliance with the automated systems requirements of the Family Support Act of 1988 (FSA '88) or with the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA).

*…Users*

*Impacts…*

2. ***Worker Effectiveness.*** Worker effectiveness and accountability are constrained by the lack of timely, adequate, and accurate data, by the lack of uniformity, and by limited system functionality and automation.

3. ***Customer Service.*** Customer service is constrained by the lack of timely, adequate, accurate, and accessible data, clear and understandable communication of information, lack of uniformity, and limited system functionality and automation.

4. ***System Maintainability.*** System maintainability is constrained by disparate systems, inadequate documentation, and the lack of open system architecture.

5. ***Implementation.*** Implementation of the new system is constrained by disparate systems, complex business rules, number of locations, and changes in the way of doing business.

## 4A.3.4b.3 Proposed Solution - Overview

The alliance solution will pave the way for the California's Child Support Program to effectively address the business problems and requirements contained in the BRL. To do so, the alliance has assembled a solution that is both powerful and flexible, designed around the latest technologies. Our approach recognizes the impact of a new system and business processes on people and incorporates activities to reduce the impact on users. The proposed solution will support a variety of users and multiple channels for those users to access the system. They are:

- Internal users, LCSA personnel, and State staff, via the intranet
- External users, members, employers, and the general public, through valuable self-service facilities provided via the Internet and phone-based access channels

Support for these channels will be provided through authorized browser and telephony services support within the solution.
The CSE system must address the business problems and requirements of California's Child Support Program while providing a flexible and productive set of user applications. The alliance's proposed solution navigates those critical challenges through the thoughtful application of the latest technology and user channels (access points). The result is a very robust solution that is flexible enough to support both the Child Support Program's current and future business needs as those needs emerge and future requirements become evident.
Our innovative response to California's CSE automation challenge supports the State's vision for a state-of-the-art solution. Furthermore, because our solution will be designed and constructed with a clear understanding of DCSS' overall program goals, our best-of-breed system will be a valuable tool for introducing uniformity of process across the State. When combined with DCSS' vision for the child support community, our solution will place California at the forefront of innovation and establish the State as a leader in the next wave of Child Support Program improvements.

## 4A.3.4b.4 Proposed Solution – An Integrated End-User View

The alliance solution uses an e-business end-user-driven architecture. Historically, IT architectural solution styles have advanced through many evolutionary stages. *Proprietary mainframe host-centric*, *distributed*, and *client server* architectures represent just a few of the generations of solution types that have been used over the years. With the advent of the Internet, business solution designers understand that a new "bar" has been set. The alliance's e-business solutions take advantage of the best techniques and technologies to deliver the richest, most efficient, and "access from anywhere" set of applications that will give end users the tools and access points to move freely into the modern business world that the Internet has created.

An overall view of the CSE system technical architecture is shown below in Figure 4A.3.4b-1.

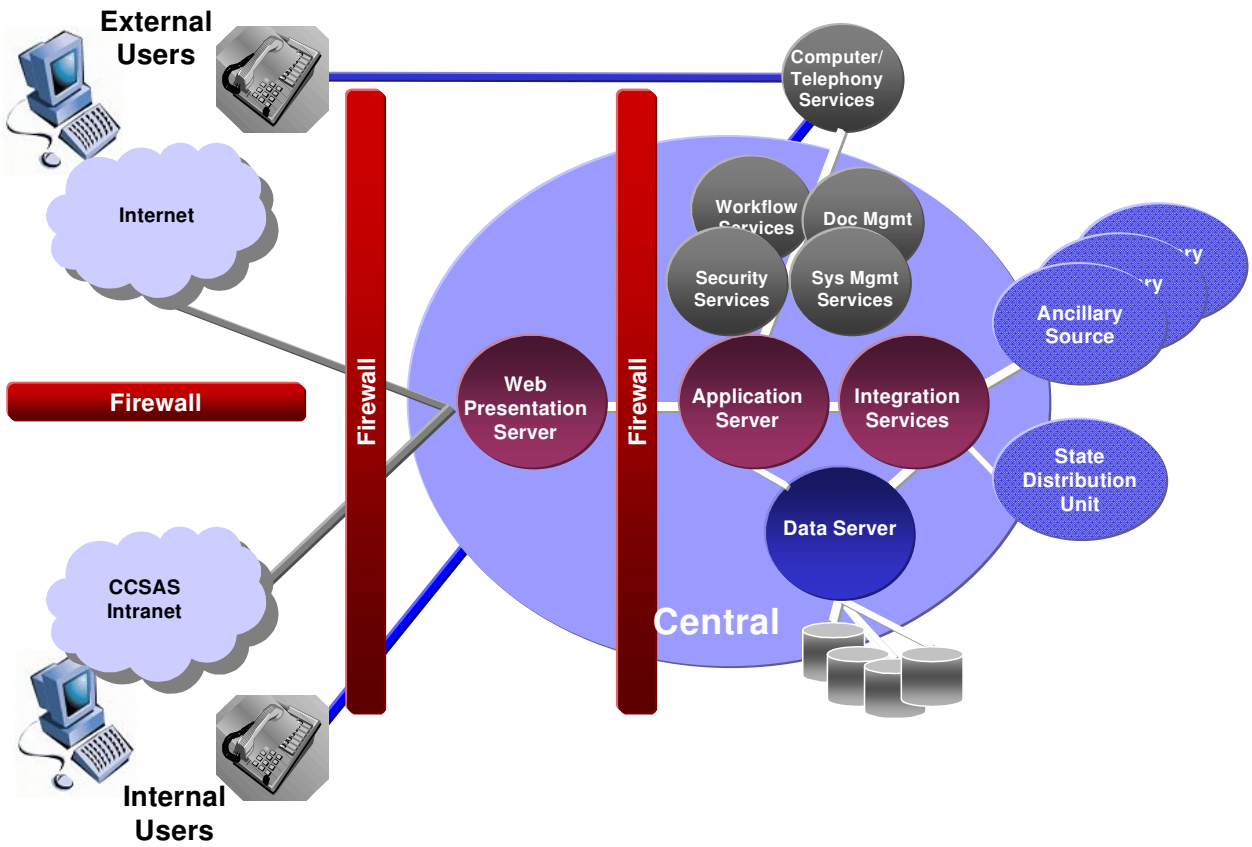



**Figure 4A.3.4b-1 The CSE System Technical Architecture Overview –** *Both internal and external users will benefit from the alliance's advanced design of the CSE system.*

In brief, the alliance has designed the proposed solution with the following end-user operational objectives and goals in view:

- Increase worker efficiency and effectiveness.
- Improve customer service and enhance productivity.
- Design a flexible, easy-to-use, easy-to-access set of applications.
- Reduce the dependency on the manual paperwork processes.
- Eliminate process bottlenecks and improve service levels.
- Increase process control, accountability, and flexibility.
- Provide meaningful, easy-to-access training.
- Track and monitor processes that are essential to achieving a closed-loop process improvement cycle.
- Provide a smooth transition for users of current systems to the new proposed solution.

- Reduce the time for implementation to reduce the impacts and disruption that may occur to the end-users with a new system install.

Shown below is an end user's aerial view of the **key** operational features in the alliance's solution. Each of these features will be described, in turn, on the following pages.

**Figure 4A.3.4b-2 Key Operational Features – User's View -** *Knowing the needs of the end user is a vital part of the design process.*

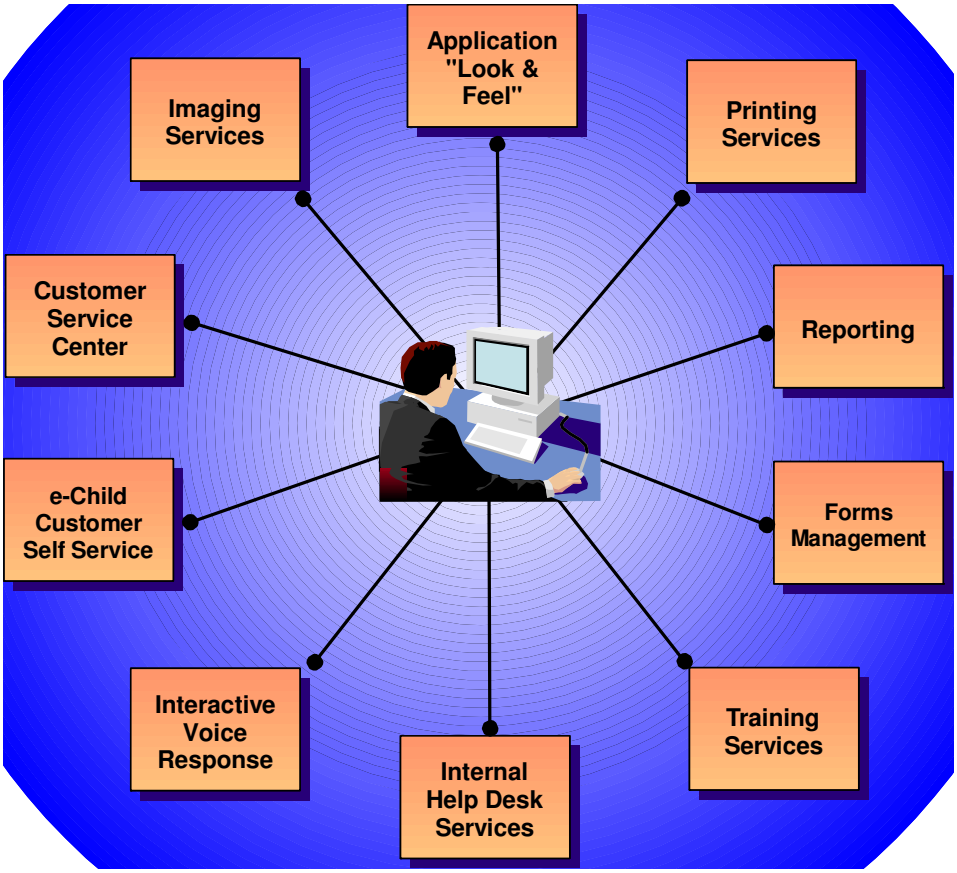



Figure 4A.3.4b-3. on the following pages lists and describes the key operational features that an end user would find to be important in his or her day-to-day activities.

| Operational Feature | Description |
|---|---|
| Application "Look & Feel" | • The Application "Look & Feel" represents the graphical user interface provided to an internal user of the system<br>• A browser-based set of applications that are accessible from any Intranet-connected computer<br>• A consistent, common "look & feel" found in browser-based applications, to reduce training and navigational time<br>• Accessibility to applications, no matter where the worker is located – easy access to improve user productivity and efficiency<br>• A set of applications that will have extensive common functionality and common |

| Operational Feature | Description |
|---|---|
| | "access points" for business functions, regardless of the channel used (i.e., voice, Internet or Intranet) |
| e-Child Customer Self Service | The CSE system e-Child Customer Self-Service is a set of applications that allows parents and employers to perform tasks and exchange information with the system that until recently could only be handled on the phone or in person with agency staff. This is a vital component that saves valuable caseworker time while allowing case members to complete applications over the Internet<br>Through the use of the CSE system e-Child Support Customer Self-Service, case members will be able to:<br>• Inquire about disbursement status<br>• View payment history<br>• View arrearage balances<br>• Apply for child support services<br>• Update addresses and employment information<br>• Provide information for locate activities<br>• Use a child support guidelines calculator<br>• Read laws and regulations<br>• Request the review and modification of child support orders<br>• Review case activity<br>• Have support payments automatically deposited |
| Customer Service Support Center (Call Center) | The primary purpose of the Call Center is to answer questions and provide information to external customers (case members, employers, et cetera). The following description is dependent on the results of the Customer Service Support Center Call Assessment, to be produced as part of the contract.<br>• The Call Center provides support on the use of the CSE system e-Child Support Customer Self-Service application and IVR, as well as information to customers who prefer to speak directly with a person.<br>• The Call Center will be accessed via a single phone number for customers across the State.<br>• A scripted response management process provides consistent, reliable service to each customer.<br>• Call tracking software will be used to monitor service and to provide statistical analysis of Call Center performance.<br>• Call Center Ticket Tracking will provide case members or other customer contacts with efficient processes for requesting services and tracking follow-up requirements.<br>• Call Center Ticket routing and appropriate caseworker assignment to input the actions that were taken, providing a full-circle integrated process. |

| Operational Feature | Description |
|---|---|
| Training Services | • Leverages the "anytime, everywhere" capability of the Internet to deliver desktop e-learning Provides a browser-based User Guide, training materials, and "How To" instructions that will be organized in a logical manner to allow a worker to easily locate information<br>• Training for both Version 1 and Version 2 will be packaged as a tailored framework of instructor-led training and coach-assisted e-learning programs that will promote learner retention and early proficiency on the job |
| Help Desk Services | The primary purpose of the Help Desk will be to support internal users on the operation of the CSE system.<br>• The proposed solution will provide a Single Point of Contact (SPOC) Help Desk and an enterprise-wide Problem Management system for CSE system users. Option 2 and 3 users will be referred to the alliance's SPOC Help Desk from the County's Help Desk for problems within the alliance's responsibility.<br>• The Help Desk will have two parts; one to address functional issues and another to address technical issues.<br>• The Help Desk will be accessed via a single phone number for users across the State.<br>• Call tracking software will be used to monitor the quality of service given to the internal users.<br>• Key word searchable databases will be used to resolve known problems quickly.<br>• Web-based self-help facilities will be available for those users who prefer that kind of Help feature.<br>• Before a problem record is closed, the problem's resolution will be confirmed with the end-user.<br>• . |
| Imaging Services | • Paper documents will be scanned and indexed for capture and electronic storage so that they can be subsequently retrieved from any desktop.<br>• Electronic access to stored "documents" will be available via Web browsers, using intranet/Internet technology.<br>• All documents will be stored in a central image repository allowing for county, cross-county and State access and views.<br>• The proposed imaging solution will enable the CCSAS project and LCSA staff to significantly improve the productivity for internal users enabling them to focus more on important issues and less on clerical paper issues.<br>• The Imaging platform will also collect and store critical printed forms / documents and store them as part of the electronic case folder.<br>• A forms redesign process is recommended to include bar-code values on turn-around documents, where feasible. The bar-code values will speed up the capture of documents by electronically reading the indexing (bar code values) information. |

| Operational Feature | Description |
|---|---|
| | • A set of index values will be captured or extracted from the documents as attributes for use with the electronic case folders.<br>• "Single view" of all relevant documents in the form of an electronic case folder will be available to caseworkers and other appropriate personnel.<br>• All captured documents will be stored as PDF files for items in the electronic folder. |
| Printing Services | Several printing options will be available to improve the productivity of the end-users and caseworkers: (a) Print Preview, (b) Local Print, (c) Central Print and (d) Certified Mail Print.<br>• Printed forms will be archived in PDF format for subsequent access.<br>• The printing subsystem will be a centralized system, managing both local and central resources.<br>• The system will allow users to print to their local printer(s) closest to them while in their local office.<br>• In addition, users will be able to select a local printer while in a sister office or remote location.<br>• Local printers are defined as those printers installed by the alliance and managed by the proposed printing solution.<br>• Local printers will all be duplex capable printers with rated speeds of 25 pages per minute.<br>• Printers were calculated at a ratio of 1 printer to 20 caseworkers, where the office has 20 or more caseworkers.<br>• If less then 20 caseworkers per office, two printers will be supplied for redundancy.<br>• For Central Batch Print jobs the alliance will provide a “print file” in an industry standard format and media to then be printed at a State printing facility of choice.<br>• Central Print will address information for delivery through the U.S. Postal Service, in compliance with U.S. Postal Service standards that provide for the lowest cost for delivery.<br>• |
| Forms Management | • Forms and report templates will be created and maintained centrally and will be made available to print either centrally or locally “on demand”.<br>• Multi-language static forms will be supported where provided by the State.<br>• Dynamically-generated documents can shrink or grow to accommodate the data, allowing for customer-focused documents.<br>• Caseworkers will be able to personalize documents for further clarification and for providing individual customer service.<br>• A graphical template design and development tool will enable an administrator to |

| Operational Feature | Description |
|---|---|
| | easily create even the most complex electronic documents that will re-create the look and feel of existing paper documents.<br>• Support will be provided for many types of document outputs – from local print, to high-volume central batch print, to e-mail and PDF.<br>• Users will be able to direct documents to multiple output types. |
| Reporting | • Selected end-users will be supplied with easy-to-use reporting and analytical tools that will provide rapid, cost-effective access to data, thereby reducing the user dependency on programmers to generate information.<br>• Tools and processes will provide timely and accurate information to DCSS.<br>• Data will be captured from operational and external source systems. It will be cleansed, transformed, and loaded into a data warehouse.<br>• Users will be able to "drill down" on data to see additional detail. When compared with traditional child support systems in use today, this new method will permit a variety of data views.<br>• The proposed solution will allow a user the ability to distribute reports in electronic format. By producing them in electronic format, reports can be previewed prior to printing or viewed online as an alternative to printing. This saves caseworkers' time by allowing them to discover and correct errors that were made before printing a report.<br>• The proposed solution will also allow a user to e-mail a report, if needed, reducing the time, effort, and expense a caseworker would have to put forth to mail hard-copy reports to other caseworkers and employers.<br>• The main reporting tool to be used for the CSE system will be Brio Intelligence. This is actually a suite of tools that provide capabilities of varying power and sophistication depending on the user. |
| Interactive Voice Response (IVR) | • The CSE system will include an IVR component for case members to obtain case-related information.<br>• The IVR will process a set of services similar to those provided by the CSE system e-Child Support Customer Self-Service application.<br>• The IVR system will provide multi-language support.<br>• The IVR will provide direct call routing to the Call Center, if such assistance is needed.<br>• Functions provided by the IVR include dissemination of general information, access to case balances, status updates on child support payments and disbursements. |

**Figure 4A.3.4b-3 Key Operational Features Described -** *These are the key operational features that an end user would find to be important for day-to-day activities.*

## A.3.4b.5 Conclusion

The alliance understands the issues and importance of delivering a solution that not only addresses the business problems but also provides operational features to enhance the usability of the system for both internal and external users.
The message is clear, processing efficiency and effectiveness must be improved at every level of the organization for LCSA caseworkers, financial workers, and DCSS staff. Statewide automation creates an opportunity to continually improve efficiencies, creating significant economies of scale as caseworkers across California become familiar with the CSE system and increasingly more proficient in the use of this extraordinary statewide system.
In this section of the proposal we have reviewed the key operational features that will enhance the worker's ability to get his or her job done. It is crucial not to lose sight of those who will use the CSE system day in and day out. We know that their needs must be kept in mind when any new solution is designed and implemented.

# 4A.4 CCSAS System Environments

***The alliance solution for the eight requested systems environments delivers the critical technical underpinnings of the CSE system through an innovative combination of state-of-the-art hardware and software.***

There are many ways to address a problem set. As described in other areas of this document, the application functionality needed for the CSE system requires a great and varied set of solution components. Together, many of these components comprise the various 'services' that are utilized by the application in supporting the business requirements of the CSE program.

Decomposing the system requirements is the first step in defining a quality solution.

The subsections which follow use logical and physical architecture models to describe the systems environment proposed by the alliance for the CSE system. The description of the logical model divides the problem domain into a set of service-providing components. These components can be realized through the application of a number of physical platforms, software packages and components that are developed. Physical models are used to describe the hardware and software chosen to provide those aspects of the proposed design and how they will be configured to make that happen.
This section is organized in a way that maximizes our ability to describe both the major aspects of these environments and some of the major reasons for our choices in platform and positioning of these items.

- **Introduction**. The issues and items discussed within this Introduction are those that broadly impact and shape every environment. Within this section, we attempt to define major decisions, components and structures as well as provide some insight into the overall Architecture. Within the Introduction, we first present some of the major considerations we utilized in choosing the appropriate solution sets.
- **Logical Technical Architecture**. In this section, we present a series of views of the systems environment proposed by the alliance. These views are used to help decompose the problem set into manageable components. A primary aim in the definition of the components that are defined in these views is the logical separation of facilities and capabilities. The Logical Technical Architecture depicts the various Services that the system must provide. The physical components used to realize the architecture are described in the System Environment subsections.
- **Network Services**. The CSE system wide area network (Intranet) will be provided by the State, outside the scope of this contract, and will interconnect the LCSA sites, alliance Project Office, e-Business Hosting Facility, and the Internet. This subsection details the network characteristics as proposed by the alliance. These characteristics will need to be supported by the State provided WAN.

- **Hardware**. Large mission-critical systems, such as the CSE system, require reliable, scalable, industry-proven hardware solutions. The alliance has chosen two key hardware platforms to support these requirements. This subsection is intended as a supplement to the system environments described later in this section.
- **Software**. The alliance has proposed numerous software packages that will form the foundation of the CSE system. This section describes the various software components, features, benefits, and use within the CSE system environment. This section is also intended as a supplement to the system environments described later.
- **Environments**. The descriptions of the proposed CSE system environments. These are arranged as separate subsections, as follows:

  - Production Environment
  - Production Simulation Environment
  - Performance Testing Environment
  - Testing environment
  - Data Conversion Environment
  - Development Environment
  - System Administration Environment, and
  - Training Environment

## 4A.4.0.1 Introduction

The proposed solution employs a multi-tiered, services oriented approach to supporting the requirements of California's Child Support Program.

There are many ways to solve a problem. As described in other areas in this response, CSE application functionality requires an adaptable, scalable, and varied set of components. Selecting the correct set of components, however, requires that a basic set of targeted attributes be considered. The selection of the appropriate components, and the proper distribution of those components, requires careful consideration.

Among the basic functions and characteristics that the CSE system should support are the following:

- Multi-tiered services oriented architecture
- Subject data based on formal data analysis
- Open standards database access
- Comprehensive subject data-change history
- Subject and change history data-centric reporting
- Subject and change history data-centric outputs
- Process boundaries supported by data and messages

In addition, the following technical goals have been set as aspects of the proposed architecture. The CSE system, as delivered, should:

- Provide for ease of system maintenance and enhancement through the exploitation of open architecture and standards
- Provide a cost effective automated system
- Provide quality results in a reasonable timeframe
- Manage change to business areas and mitigate implementation risks
- Minimize the adverse impact of project development on existing operations over the course of the project

### 4A.4.0.1.1 Fundamental Concepts and Drivers

A "supportable" architecture is extensible and administrable.

In order to create a successful, long-term solution, the architecture chosen to support the solution must support the required functions – and be *supportable* itself. In this context, the term 'supportable' means many things. At a minimum, the proposed system must support the business processes that are being housed within the defined components. Moreover a supportable architecture allows the underlying components to be managed and operated more effectively. It means that any single component or set of components will be replaceable in the event that new or better technology becomes available. Importantly, the underlying subsystems of a supportable architecture must be discrete enough that each can be extended both

*horizontally* (e.g., by the addition of components) or *vertically* (e.g., by the addition of ”horsepower” to an existing component.)

The alliance architecture reaches these goals by utilizing discrete services to support the required business functionality. A ‘services oriented architecture’ separates various capabilities into discrete functional groups. This type of offering is naturally suited to extension.

The alliance architecture employs a ‘multi-tiered’ architectural style. A multi-tiered architecture facilitates scalability -- both vertically and horizontally. By separating concerns across tiers, the architecture provides the State the opportunity to extend the processing power and performance of the solution in the future without the need for wholesale replacement of its systems components.

One of the fundamental keys to the success of a large or complex project is the ability of the hardware and software to work together to form a complete solution. By selecting hardware, software and tools that work together as a whole, based on common standards, the alliance is developing a system that is flexible and can take advantage of technological advancements as they become available.

Open and industry-wide standards increase the robust nature of the architecture.

Key to this capability is the application of open, industry-wide standards and products and technology that support them. A primary key of a robust architecture is choosing a deployment that provides extensive flexibility. The proposed solution for the CSE system utilizes products that are compliant with and enforce open standards. These standards-based choices provide greater flexibility in the choice of product sets to be deployed. This aspect of the architecture also increases interoperability, which better allows for the extension of architecture.

### 4A.4.0.1.1.1 Open and Industry Standards

The alliance has a commitment to open and industry standards for hardware and software; we are leveraging such standards in the CSE system architecture. In choosing the solution components for the CSE system environments, the alliance strove for compliance with open and industry standards for the key project platforms. The following quote from IBM’s CEO, Lou Gerstner, clearly presents the commitment that IBM, one of the alliance members, places upon cross-platform and industry-wide standards.

> ***If you understand "end to end" and what it really means, the need for standards-based computing is very easy to understand. The infrastructure must be open, and it must be based on cross-industry standards so you can connect to those millions of people and businesses wherever they are and connect to those billions of devices whatever they are.***
> ***- Lou Gerstner, CEO, IBM Corporation***

An example of this commitment to open and industry standards is the choice of the WebSphere Application Server as the key application-serving component in the proposed solution. WebSphere Application Server 4.0 is fully J2EE 1.2 compliant. But WebSphere's drive towards embracing open and industry standards is not limited to J2EE.

The newest release of WebSphere has a strong open standards orientation -- including a strong commitment to XML and Open Source computing and communities. For example, WebSphere 4.0 incorporates the Xerces XML parser and the Xalan XSL processor; both of which are available under an open source agreement. It also includes support for Internet-based Web Services technologies through a whole new series of widely agreed-upon standard protocols and definitions, such as SOAP, WSDL, and UDDI. And the array of platforms where WebSphere is available has been further expanded with this release; it now includes support for Linux, Windows, AIX, Solaris, HP, iSeries, and the zOS operating system.

> The alliance has a commitment to the components chosen for the CSE system solution.

Another advantage of the alliance solution is integration. For the CSE system we have selected open standard hardware, software and tools that have been integrated on many projects. These technologies include some of the most proven e-business components. These technologies from hardware: IBM eServer, pSeries, and xSeries platforms; to software: WebSphere, IBM DB2/Universal Database, WebSphere MQ Series, IBM HTTP Server are backed by the stability and research of IBM. IBM has a corporate commitment to each of these products to maintain and enhance them over time.

Standards have played a critical role in the development of the Internet. Communications technologies such as TCP/IP have made networking ubiquitous. HTML and XML are technologies that support portable and interchangeable data and documents across heterogeneous systems. Java has enabled the development of business logic that can execute on any system. And Unix, and its Open-Source brother, Linux, is rapidly becoming the development platform for applications that will be deployed across a broad range of systems and operating environments.

### 4A.4.0.1.1.2 Thin-Client Approach

In support of the aim of 'supportability', the proposed architecture uses a 'thin-client' – browser-based – approach to presenting most end-user interactions. This approach provides increased manageability while minimizing end-user workstation requirements. In addition, the proposed approach utilizes the alliance's vast experience in large-scale browser-based applications to provide for outstanding performance and increase scalability.

A 'thin-client' approach must utilize effective techniques to support high-performance access to static and dynamic content.

Business transactions, when presented across a 'browser-based' interface can be termed 'dynamic content'; pages presented on the browser contain elements that vary based upon the particular user interaction. Conversely, the content presented by the majority of the World Wide Web sites is primarily static.

Various solutions have been used to effectively 'serve' static content with high degrees of performance and availability. However, most solution designers have found that supporting the dynamic content behind the On-Line Transaction Processing (OLTP) characteristics of a system like CSE to be a much bigger challenge. Fortunately, the alliance has a vast amount of experience and resources to assist in supporting these types of applications. In particular, IBM, one of the alliance partners, has significant background in this area.

IBM's High Volume Web Serving group has pioneered many new techniques for efficiently serving ultra-large user populations on thin clients while addressing the challenge of managing large amounts of changing data – even while handling very large system peak loads. The techniques that have resulted from that research have been deployed at some of the most highly-accessed sports Web sites in the world, including those supporting the 2000 and 1998 Olympic Games, Master's Golf tournament, Wimbledon, and the US Open Tennis Tournament. Over the last three years, these sites have maintained 100% availability and met demanding performance requirements despite increases in orders of magnitude in publishing requirements – up to 100,000 changes per day – and in peak hit rates of up to 1.2M hits per minute.

IBM's High Volume Web Serving group has been active in developing Web server accelerators for fast performance. IBM has made significant contributions to scalable Web server accelerators that significantly improve performance by reverse proxy caching. A key feature of this accelerator is that it allows both dynamic and static data to be cached. An API is provided which allows an application to explicitly control the cache contents. The CSE system solution makes use of this accelerated feature.

## 4A.4.0.2 Logical Technical Architecture

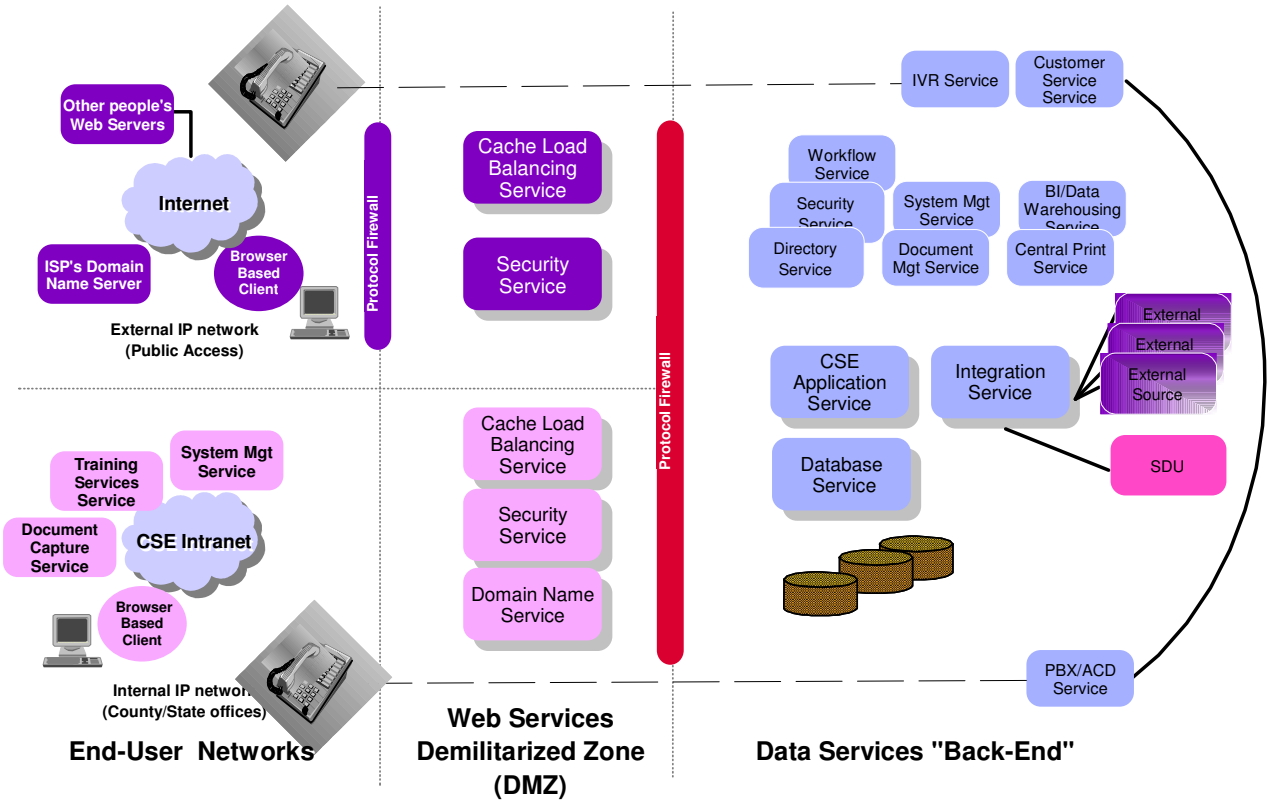



**Figure 4A.4-1 CSE System Logical Technical Architecture -** *This diagram shows the relationship between the technical components in the CSE system solution.*

The following sections provide descriptions for each of the logical components associated with the CSE system logical technical architecture. They are described below in order to provide a common base for understanding the alliance solution to the CSE system requirements.

### 4A.4.0.2.1 End-User Networks

The End-User Networks area defines the components used to access the system.

This section defines the various logical components that reside in the end-user space. That is, these components are used to access and operate the system from LCSA sites and through external, Internet-connected channels.

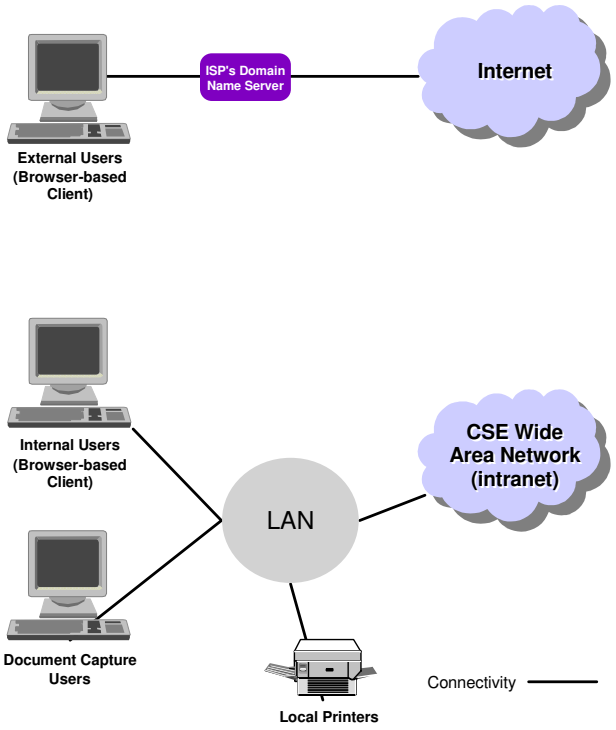



**Figure 4A.4-2 End User Networks –** *This diagram shows the end user networking support employed for users of the CSE system -- external users who access the CSE system via the Internet and users at LCSA sites.*

### 4A.4.0.2.1.1 Browser-based Client

CSE system users will include LCSA caseworkers and DCSS staff primarily accessing the application via a Web Browser. As stated previously, the alliance CSE system solution uses a 'thin-client' for application presentment to the end-user community. The thin-client uses minimal desktop resources, is universally accepted, and can be run on most PCs available today. A 'thin-client' is generally an application that resides (primarily) on the server and is presented as HTML data to a Web Browser located on the end-user's desktop. The concept of a thin client as implied in the alliance solution means that no data or programs are stored locally on the end user's desktop. Amongst other things, this approach greatly reduces system maintenance and facilitates faster implementation of new functions.

### 4A.4.0.2.1.2 ISP's Domain Name Server

External users outside of the CSE system network connect to the system via their own Internet Service Provider. Without a directory to translate Universal Resource Locators (URLs), addressing the World Wide Web would require the knowledge of the TCP/IP dot-decimal address of the system you were trying to communicate with. In order to reduce this complexity, the Internet provides a Domain Name Service. The DNS is analogous to a very large telephone directory, where a named machine can be listed. Each of these entries for the named machines contains one or more dot-decimal address.

#### 4A.4.0.2.1.3 Internet

The Internet is a worldwide public network of networks. It is an INTERnational NETwork. The networks belonging to the Internet use the same protocol for communications, TCP/IP. Utilizing the Internet, computer systems can have access to millions of other systems over a public network. The public network, of course, carries with it its own special risks. The Internet is the access channel for self-service functionality in the CSE system for external users (e.g., case members, employers, and authorized third-parties.).

#### 4A.4.0.2.1.4 Intranet

The CSE system intranet is provided by the State. It provides bandwidth from the LCSA sites, hosting and alliance Project Office facilities for the e-business application, Customer Service Support Center and other CRM applications, reporting, print and image services.

#### 4A.4.0.2.1.5 Document Capture Service

The Document Capture facilities support remote capture and indexing of paper-based documentation.

The Document Capture Service depicted in the Logical Technical Architecture represents CSE application components that will allow for LCSA staff to capture and store various forms of hard-copy (paper) documentation through the application of document scanning technology. After scanning the documents, indexing procedures are used to 'connect' the documentation to the case file and allow for retrieval to the end-user's workstation. This facility, in concert with the Document Management Service facilities in the 'back-end', allows for effective management of the large amount of document-based data used by the CSE program and provides the electronic forms of this documentation securely and immediately available to other LCSA staff. For a detailed description of the Document Management Solution, please refer to Section 4A.5 Appendix C.

#### 4A.4.0.2.1.6 Training Services Service

The Training Services Service depicted in the Logical Technical Architecture represents specific CSE application components that support remote execution and management of training facilities for the State staff that make up the CSE program user community. This enables users to quickly learn and gain skills, or supplement class room course delivery as necessary, freeing them up to more effectively perform their roles in the program.

#### 4A.4.0.2.1.7 Systems Management Service

The Systems Management Service supports remote administration and monitoring functions for end-user environments in the intranet. This service works in concert with the Systems Management Service in the Data Services 'back-end' area of the architecture. This functional area includes support for software distribution, inventory and configuration management, and remote administration as well as providing support for remote monitoring features. Systems Management software agents are installed on each user workstation and feed information to the back end system management infrastructure.

## 4A.4.0.2.2 Web Services Demilitarized Zone (DMZ)

The Demilitarized Zone (DMZ) provides a secure transitional area between the end-user workstations and the secured application area of the Data Services area.

This section defines the various logical components that reside in the Demilitarized Zone space. That is, these components are used to allow front-end access to the CSE system, within a secured area. This secured area is intended to prevent "hacking" and other forms of unauthorized access to the secured data used under the CSE system. Traversing this area accesses the system from CSE program sites and from the Internet.

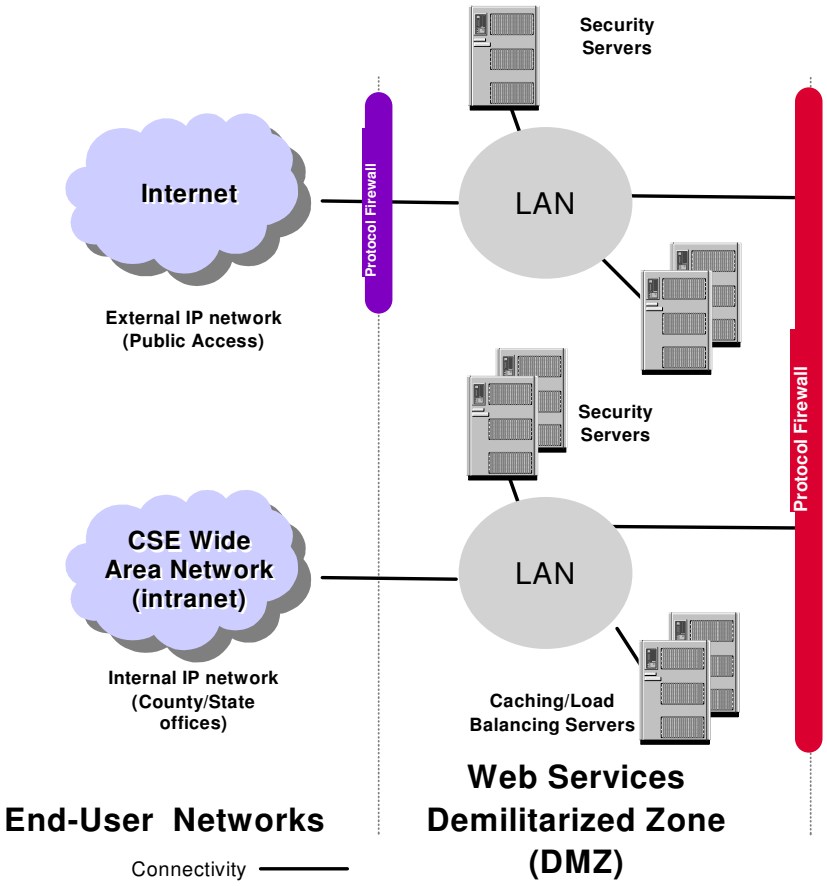



**Figure 4A.4-3 Web Services DMZ** – *This diagram shows the logical components within the CSE system hosting center that control access from both the Internet and the internal CSE system intranet.*

### 4A.4.0.2.2.1 Protocol Firewall

A protocol firewall is a hardware and software system that controls the flow of information between two networks. Firewalls control access from a less trusted network to a more trusted network. In the CSE system Logical Technical Architecture, the firewalls differentiate the components into three logical areas: the end-user networks, the Demilitarized Zone (DMZ) and the protected Data Services 'back-end' service area.

Using the firewalls, the system effectively disallows direct contact from the less secure end-user area (including the Internet) and to the more secure internal Data Services area. Communications must traverse the DMZ, which 'proxies' services through components housed in the DMZ.

#### 4A.4.0.2.2.2 Cache/Load Balancing Service

In the DMZ, cache and load balancing hardware and software spreads the client application services load across a number of systems to maintain system performance, high availability of access, and good response times for end-users. The Cache and Load Balancing Service uses IBM's High Volume Web Serving approach to load-balancing and high-speed cache for improved speed in the handling of static and dynamic content.

#### 4A.4.0.2.2.3 Security Service (DMZ)

The Security Service in the DMZ provides user access control through authentication and role-based access. Requests for access to the CSE system are processed through the Security Service. The Security Service must approve data access requests made to the CSE system. This facility includes mechanisms to manage access, to authenticate and authorize access, and to manage identifications using standards-based services such as Lightweight Directory Access Protocol and the Open Group's Authorization Application Programming Interface (AZN-API).

This facility includes various components for the monitoring, recognition, and automated response of possible security breaches in the system including network monitoring, host scanning, and firewall monitoring.

The DMZ-based Security Service works in concert with similar management components that operate within the Data Services area of the architecture.

### 4A.4.0.2.3 Data Services ("Back-End") Area

The Data Services area is the secured processing area that houses the majority of the control and processing facilities of the CSE system.

The Data Services area houses the CSE system database engine, application server and other back-end systems that are indirectly accessed by the CSE system end users through the DMZ. It also houses management and control functionality as well as underlying system services used by the application itself. Data services provide the user with the timely information necessary to effectively perform his/her role in the process. It also protects the integrity, security and reliability of the data. Data Services is made up of five key service components:

- Customer Services
- Application Services
- Security and Directory Services
- Document Management Services
- Systems Management Services

***Customer Services***

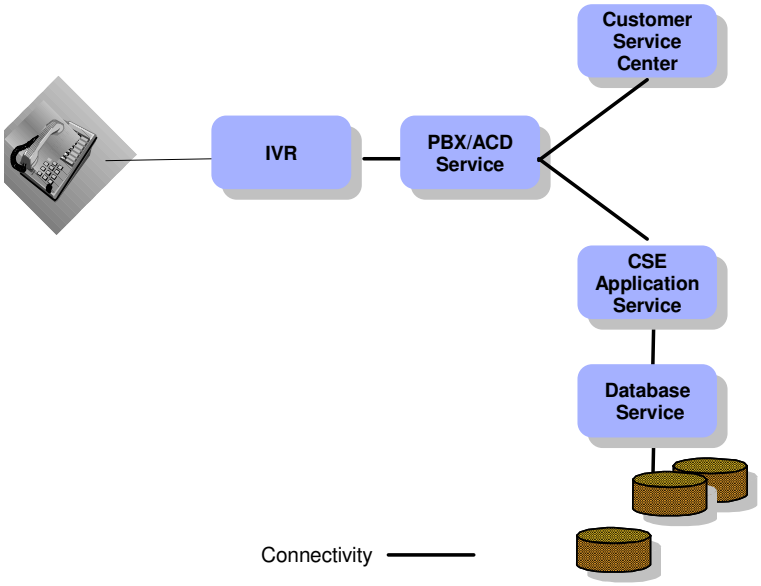



**Figure 4A.4-4 Customer Service Components -** *The Customer Services components provide PBX and IVR features to support live operators and automated system interaction with the CSE application.*

### 4A.4.0.2.3.1 PBX/ACD Service

The Public Branch Exchange / Automatic Call Distribution (PBX/ACD) Service provides connectivity between the Customer Service Support Center CRM applications and the public telephone system. The PBX accepts incoming voice transfers from the Integrated Voice Response (IVR), and facilitates the placement of outgoing calls, sharing a limited set of common telephone trunks. Upon receipt of a call, the ACD can automatically route the call to a given piece of telephone equipment or handset.

### 4A.4.0.2.3.2 IVR Service

The Integrated Voice Response Service represents the set of hardware- and software-based services that provide voice-based interaction with in concert with the Public Branch Exchange / Automatic Call Distribution (PBX/ACD) system. This component allows for scripted data collection and call routing functions to be provided as an adjunct to personnel-based Customer Service Center operations. Extensions to this service will also support presentment of transactions to the telephone customer, where security allows for it. With this facility, users can use a simple telephone to receive program information such as case status.

### 4A.4.0.2.3.3 Customer Service

The Customer Service Support Center represents services that answer telephone calls from the child support community, including CPs, NCPs, and other interested parties. The Customer Service Support Center solution is yet to be finally established, and is dependent on the findings of the Customer Service Center Assessment (CDL TM 072) to be developed as part of the Contract. Conceptually, the CSSC manages channel contacts with customers and provides a bridge into the main child support application

functionality. Technology has enabled much of today's modern society, but the Customer Service Center puts the essential human touch back into the equation. When other methods fail, access to a real person with real knowledge is essential to the workings of any program. The electronic systems complement this access to record the interaction and event preserving the information for case- history purposes

***Application Services***

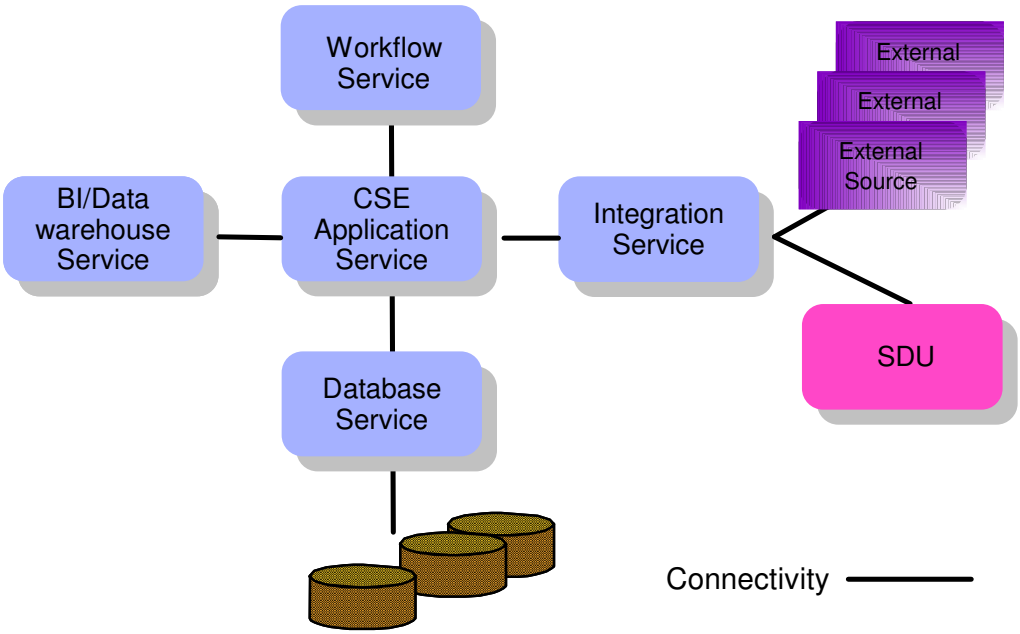



**Figure 4A.4-5 Application Services -** *The Application Services provides key functional building blocks for the CSE application.*

### 4A.4.0.2.3.4 CSE Application Service

The CSE Application Service represents various components that support the operations of the basic CSE application itself. The CSE application separates this processing into two separate areas. This separation allows for the system to be more readily scaled, as the specific requirements for processing differs across these boundaries. This multi-tiered approach also supports further component definition, as defined below. These layers are:

The heart of CSE system processing, the CSE Application Service represents a standards-based, highly scalable solution, responsive to the needs of the CSE program.

- Presentation and Workflow Services
- Business Services

The Presentation and Workflow service area represent Web-based delivery mechanisms and includes support for HTTP Page presentation via Web serving, Web Application Services using Java Server Pages and HTTP Servlet processing to support application workflow processing. This facility represents the "front end" of the application. It serves the application to the end users and communicates with the data services tier to complete the CSE system requests and provide CSE system information. The CSE Application Service is the first

layer of the protected network and systems the alliance has designed for the CSE system. This layer includes items such as the following:

- HTTP Server services - An HTTP Server is a Web application server that includes an HTTP Server and is typically deployed for access by HTTP clients and to host the presentation and business logic
- Web Application Server services -The Application Server node provides the infrastructure to run application logic and works in conjunction with the HTTP Server. The primary CSE application business logic will run from the application server nodes

The Business Services area represents components, developed as Enterprise Java Beans (EJB), that provide aggregate access to the underlying CSE application data. In addition to providing a model-based access mechanism to the underlying data, these EJBs represent discrete business objects, each of which enforces business rules relating to that underlying object in the CSE realm. Using the EJB as a component management facility, the Business services area helps to enforce a standards-based and component-based view of the CSE system environment.

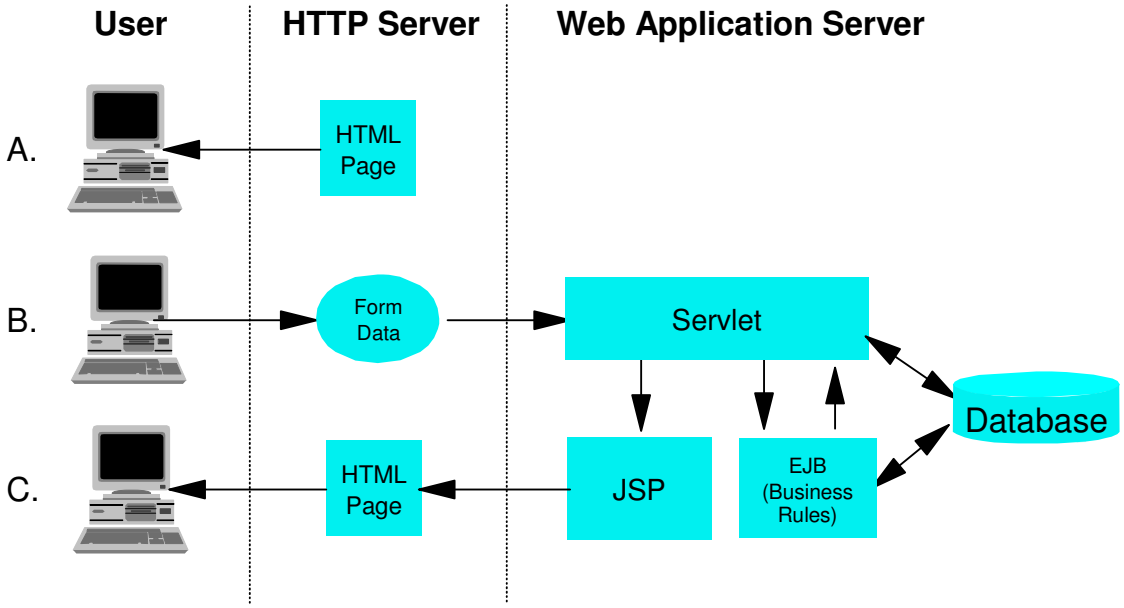



**Figure 4A.4-6 CSE Application Transaction Characteristics –** *The CSE application employs e-business technology in delivering the solution to the end-user. This diagram shows some of the application, data, and presentation logic flows used in the CSE application.*

In practice, the CSE Application Service presents application content to the end-users by executing components in each of these areas. For example, A.) the user is first presented with a static HTML page or a page that was the result of another interaction with the CSE system. The HTTP Server performs this transmission; B.) after entering any needed information, the dynamic components of that page are transmitted back to the HTTP Server, with a request to execute a given 'servlet'. The HTTP Server accepts the incoming stream and passes this call on to the Web Application Server process that executes the steps necessary to perform the given task. In performing this workflow,

data passed from the user may need to be stored. Data may need to be gathered from storage for presentation to the user in a subsequent step. Business rule processing will be performed in order to enforce consistency in the system. These processes are performed by the Business services components. Having performed these tasks, independent data elements are prepared as Java Beans by the servlet. These beans are passed on to a Java Server Page (JSP) with control. C.) The Web Application Server compiles the JSP and a response page is prepared in HTML by the JSP to be returned to the HTTP Server. D.) Finally, the HTTP Server returns the page to the browser on the end-user workstation. The cycle continues.

### 4A.4.0.2.3.5 Integration Service

The purpose of the Integration Service is to interface between any front-end access channel and various external back-end systems. For example, the State Disbursement Unit could interface to the CSE application through the Integration Service. It can perform protocol conversions, message decomposition and re-composition. The integration nodes provide important security functions, enabling the CSE Application Service to access critical interface data without the need for the CSE Application Service to know the logic or address of the systems being interfaced with. The primary mission of these components is to facilitate the managed and traceable exchange of data between different stakeholders in the CSE system and to insulate those stakeholders from changes made by one or more partners in the data exchange interface environment. To do this the Integration Service employs Enterprise Application Integration (EAI) technology to provide a CSE system “EAI bus.”

### 4A.4.0.2.3.6 Workflow Service

The Workflow Service represents an external service that provides workflow-based routing services for application components. Using the Workflow Service, application components can be externally scripted to allow for easier modification of work step modeling based upon Business Process Reengineering changes.

### 4A.4.0.2.3.7 Database Service

The Database Service is the central repository for the CSE application system data. The Database is based on the data model developed by the alliance. The CSE system database represents the primary data store for the On Line Transaction Processing (OLTP) portion of the system (used by the CSE Application Service). This data store is generally normalized in order to support the greatest amount of flexibility to future changes. The Database Service utilizes industry standard, SQL-compliant relational technology. The Database Service supports ‘data sharing’ operations, e.g., the Database Service can be operated upon by multiple physical systems while sharing the same underlying physical storage areas.

### 4A.4.0.2.3.8 BI / Data Warehousing Service

The BI/Data Warehousing facilities represent state-of-the-art reporting and decision support capabilities for the CSE system.

The Business Intelligence (BI) / Data Warehousing Service describes a suite of services encompassing storage, reporting, and analytical tools that support the needs of the CSE program. The Business Intelligence / Data Warehousing Service contains the following components:

- Decision support tools. These tools range from basic query and reporting tools to advanced online analytical processing (OLAP) tools. With the exception of some of the administrator tools, most of these provide a browser-based interface. Depending on the tool and the needs, these tools can use information in a relational database or Hyperion Essebase cube. These tools will be used for the reporting and analysis needs of the CSE system. This includes regular, scheduled reports, occasional or ad-hoc reports, and more complex and demanding analysis.
- Access enablers. These consist of application program interfaces and middleware that allow client tools to access and process business information managed by database and file systems. Database middleware servers enable clients to transparently access multiple back-end heterogeneous database servers. Web server middleware allows Web clients to connect to the database middleware.
- Data management. These products are used to manage the business information of interest to end users and are the core of the Business Intelligence infrastructure. They are used to replicate data from the operational database to the warehouse, and to manage data between various data stores in the warehouse environment. They provide capabilities such as moving and transforming data and scheduling and controlling replication jobs. Up to three levels of information store are used to manage business information. At the top level of the architecture is the global data warehouse, which integrates enterprise-wide business information. This is implemented using DB2 UDB. In the middle tier are smaller, focused data stores – “data marts” – that contain information assembled for a specific purpose, such as data pertaining to one LCSA, or a particular report or analysis need. These data marts are usually designed and structured differently than the warehouse and may be held in relational databases or multi-dimensional cubes. Their data is usually obtained from the global data warehouse, but that data could also be acquired directly from the operational database. At the bottom of the architecture are personal information stores, which contain information that has been tailored to meet the requirements of individual users or a specific application.
- Data warehouse modeling and construction tools. These tools are used to design and build the data warehouse and data marts. Development staff will use these tools to do logical and physical modeling and to generate the actual datastores. There is an overlap between these tools and those used for the operational database design and development. Also in this category are tools that are used by data administrators to define ‘views’ onto underlying datastores that are used by end users in the construction of their ad hoc queries and analyses.

- Metadata management. This component manages the metadata associated with the complete Business Intelligence system, including the technical metadata used by developers and administrators and the business metadata for supporting business users.
- *Administration*. This component covers the aspects of business intelligence administration, including security and authorization, backup and recovery, monitoring and tuning, operations and scheduling, and auditing and accounting.

***Security and Directory Services***

### 4A.4.0.2.3.9 Security Service (Data Services)

The Security Service, in the Data Services area, provides management of roles-based authorization for user access. Primary security policy can be entered and administered using these functions, and this policy can be passed through and enforced by other CSE system components. This facility includes mechanisms to manage access, to authenticate and authorize access and to manage identifications using standards-based services such as Lightweight Directory Access Protocol and the AZN-API.

User access to Data Services may be direct (when using BI tools), or indirect (when accessing the operational database via the CSE application). Users of the application do not directly 'log on' to the operational database, but rather log on to the application which manages their access to resources, including data.

This facility includes various components for the monitoring, recognition, and automated response of possible security breaches in the system including network monitoring, host scanning, and firewall monitoring. Also included are facilities for the automated collection and correlation of data from various CSE system components in order to determine possible security issues based upon aggregated (in addition to stand-alone) trigger events.

### 4A.4.0.2.3.10 Directory Service

The Directory Service, in the Data Services area, includes the primary directory accessible through the standards-based Lightweight Directory Access Protocol (LDAP). This Directory Service provides a single component that is used to validate userid/password. This facility is also used to provide a directory of the various physical components of the system and thereby support the operations of the Systems Management Service in the Data Services area and throughout the CSE system.

***Document Management***

### 4A.4.0.2.3.11 Document Management Service

Full-featured Document Management services offer great potential for increased efficiencies in the CSE system.

Current County CSE systems do not provide a statewide repository nor are they built on statewide standards for forms, imaging, printing, or the routing of critical documents. As we move to a single system, this presents a unique opportunity to increase the capabilities and efficiencies of the CSE program. This lack of a statewide standardization is one of the key

business problems vendors are asked to resolve as part of their solution for the new CSE system.

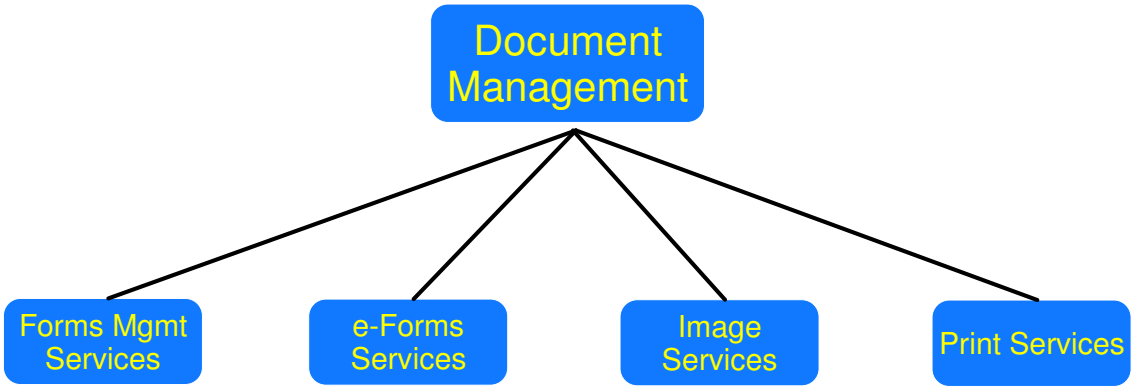



***Figure 4A.4-7 Document Management Services – These services support the CSE system forms, printing and imaging needs.***

The Document Management Service represents a broad set of capabilities in the acquisition, storage, management, presentment, and use of paper-based documentation. This capability can be further differentiated into the following sub-components, working together to answer CSE program needs. For a detailed description of the Document Management Solution, please refer to Section 4.A.5 Appendix C.

- Forms Management Services. Forms Management is concerned with the construction and use of forms in the system. This includes specification of the formatting and layout of forms, including language and data, through a centralized integrated unit that manages the form updates and changes. Forms and report templates will be created and maintained centrally. As part of the Forms Management process, Accelio (formerly Jet Forms) will be used to be consistent with the existing installed base throughout most of the LCSAs. The forms will be output using local print, high-volume central print, e-mail, and Adobe Acrobat Portable Document Format (PDF) files.
- E-forms Services. This service represents a basic facility to prepare and manage the presentation of e-forms that will be used to collect information from end-users. The service provides the following capabilities:
  - Present consistent, easy-to-use data capture forms to customers supporting different browser types and versions
  - Be consistent with the Forms Management “paper” solution, by utilizing the same Extensible Markup Language (XML) form templates database and forms
  - Be consistent with the Forms Management “paper” solution, by utilizing the same designer tool for forms
- Image Services. This service provides the capacity to capture paper documents in electronic format, associate the image to the appropriate CSE entity (such as case or participant), and then store the image permanently in the image data store. These imaged documents become a fixed part of the ‘electronic case folder’ and are accessible statewide. The proposed Image Services component exhibits the following characteristics:

  - Provide the capability to convert hard copy legal or critical documents to electronic media
  - Provide each LCSA with the capability to capture documents locally and then store them centrally for a single Statewide repository
  - Provide electronic access to centrally-stored "documents" available via Web browsers using intranet / Internet technology
  - Provide a "single view" of the relevant document information in the form of an electronic case folder available to caseworkers and appropriate staff personnel
- Print Services. The print solution is a centralized system managing both local and central print resources. It provides support for high-volume printing at central facilities as well as local printing at each LCSA office. High-volume printing is used for correspondence such as billing statements, monthly support statements, and mass mailings to case members. This capability relies on existing State print facilities and is external to the CCSAS CSE project scope. The print services component provides print files to the State print facility for printing, stuffing, and mailing. Local printing is used for low volume work, such as letters, specific requested documents, or custom reports. These print on a 'local' printer (i.e., in an LCSA office), but via a central print 'manager' that allows the worker to direct the output to the appropriate printer.

***System Management Services***

### 4A.4.0.2.3.12 Systems Management Service

The System Management Service supports remote administration and monitoring functions for end-user environments in the intranet. This functional area includes support for software distribution, inventory and configuration management and remote administration as well as providing support for remote monitoring features.

The System Management Service monitors the Demilitarized Zone and the Data Services area to provide early warning of performance and availability problems. It monitors the operations of the various components in the Data Services area and provides facilities for the scripted response to Service Level problems as well as data collection and reporting functions to support trend analysis activities to pro-actively avoid such issues.

# 4A.4.0.3 Network Services

## 4A.4.0.3.1 Introduction

The CSE system solution proposed by the alliance makes it possible for the California's Child Support Program to effectively address the business problems and requirements. To do so, the alliance has assembled a powerful, flexible, and robust solution designed around the latest technologies – hardware and software – and systems design techniques. A key component of that solution is the networking services that tie it together.

The alliance CSE system is an e-business solution. e-business solutions exploit the best techniques and technologies from the marriage of the standards-based and pervasive Internet and traditional information technology applications. That marriage requires effective network services to make it successful. The network services are fundamental to that success.

The alliance proposed the Network Services solution described in this section. The alliance and State have agreed during contract negotiations that the Wide Area Network component will be provided by the State, outside the scope of this Contract. Broadly, this includes the WAN, the circuits to connect to the WAN from each county and State site, and the routers. The remainder of this section describes the proposed solution, without regard to the responsible provider. The proposed solution will be used as the conceptual base upon which the State provided WAN and LCSA Option 3 Site LANS will be designed.

The network services:

- Are based on the TCP/IP protocol and other open and industry standards
- Support secure, high-bandwidth, high-performance data transport
- Are provided through the reasoned application and configuration of industry leading networking products, technologies, offerings, techniques and best practices

Other sections within 4A.4 describe the physical architecture of the CSE system solution execution environments – the "system environments". The CSE system network services provide a common foundational building block that the systems environments use. As such, it is described here for reference as the reader explores the system environment descriptions that follow.

## 4A.4.0.3.2 Overview

CSE system network services are composed of a robust and complex set of networking components. For ease of discussion, those components can be simplified to the following list:

- The CSE Wide Area Network (WAN)
- Numerous site Local Area Networks (LANs)
- The HHSDC network and the automated interfaces with Federal, State, interstate, and intrastate sources accessible through it

- The Internet

Each of these is discussed in more detail below. Figure 4A.4-8 presents a graphical view of this simplified CSE system network services solution.

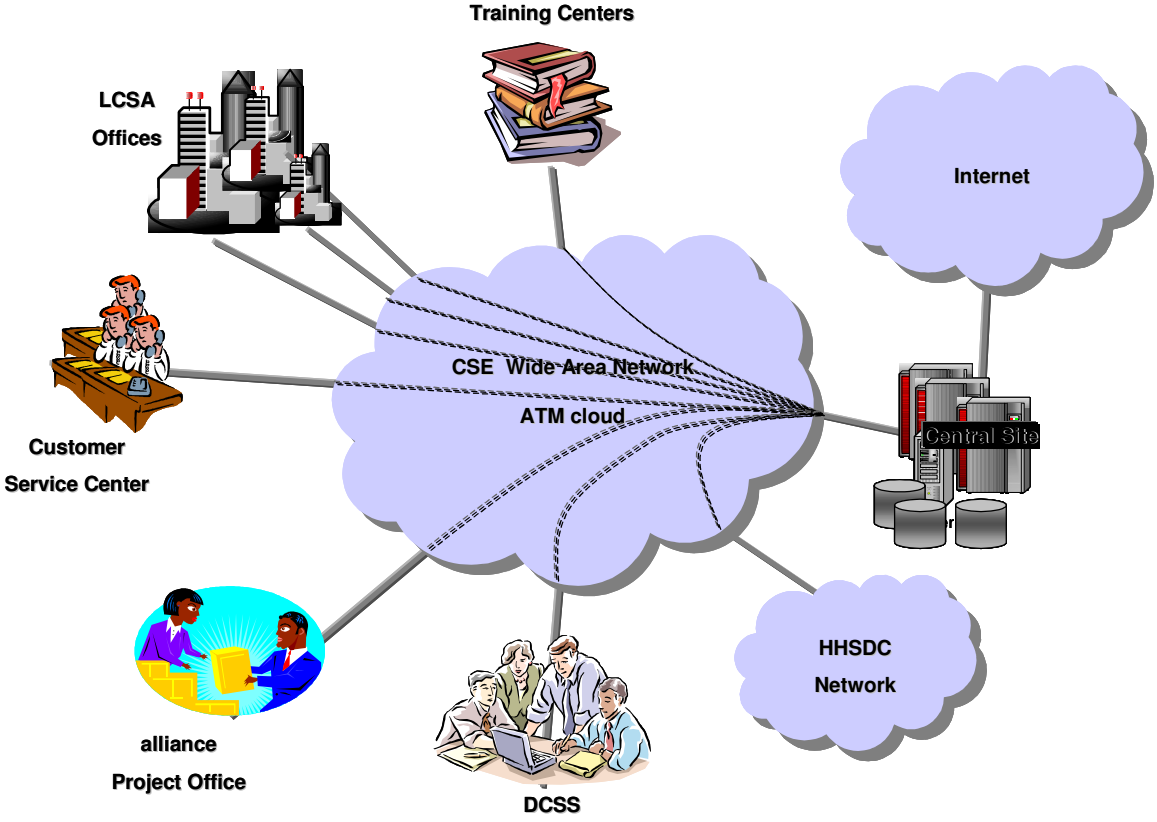



**Figure 4A.4-8 CSE System Network Services -** *The CSE system network services provide comprehensive communications support across the distributed components of the CSE system.*

## 4A.4.0.3.2.1 The CSE Wide Area Network (WAN)

The CSE WAN is the nucleus of the CSE system network services. It provides wide-area transport for the majority of the CSE system networking traffic and is the hub through which most CSE system sites connect. [4]

To the extent possible the CSE WAN is implemented as a "cloud" – a high-bandwidth, secured, backbone network, to support 310 Mbps aggregate throughput – providing a network environment dedicated to the use of the CSE system. It also provides secured connectivity, integrity, and data transport through the cloud in the form of Virtual Private Network "tunnels" – virtual connections that transparently exploit such technologies as firewalls, Triple DES (3DES) and IPsec for traffic screening, encryption, and authentication inside the cloud.

[4] With the exception of external sites connected via the HHSDC network.

As illustrated in Figure 4A.4-8, the CSE WAN connects – directly or indirectly through the HHSDC network – to the major processing points involved in the CSE system solution. Those include:

- The LCSA offices. Most CSE system users are housed in the LCSA offices
- Auxiliary county sites. Non-LCSA or co-location county offices, auxiliary sites have small CSE system application user populations
- The CSE system central site. The central site houses the main processing facilities of the CSE system – systems servers, CSE databases, and the processing logic that executes against those. The CSE system central site is located in the IBM e-business Hosting Center (eBHC) in San Jose
- Regional Training Centers
- The Customer Service Support Center
- DCSS headquarters
- The alliance Project Office
- The HHSDC network for access to automated interfaces with Federal, State, interstate, and intrastate sources.

Most of the connections to these sites are to be provided by redundant communication links and related connection equipment in order to eliminate a network-related single point of failure to each site. To provide a commercially reasonable solution, the auxiliary county sites are expected to be serviced by single links.

The physical links that radiate as connections from the CSE WAN terminate in routers that connect to the LAN switches. These routers define the edge of the CSE WAN. The links vary in both the type of telecom service provisioning associated with them and the bandwidth that they provide. The provisioning and bandwidth provided[5] by site type listed above is as follows:

| Site Type | Provisioning per Site | Bandwidth per Site |
|---|---|---|
| LCSA office[2] | Varies from 2 T1 to multiple DS-3 | 3.088 Mbps – 90 Mbps |
| Auxiliary county sites | T1 | 1.544 Mbps |
| CSE system central site | Multiple DS- 3 | 360 Mbps |
| Training Centers | Varies from 2 T1 to multiple fractional DS-3 | 3.088 Mbps – 18 Mbps |
| Customer Service Support Center | Multiple T1 | 3.088 Mbps |
| DCSS | Multiple T1 | 3.088 Mbps |
| alliance Project Office | Fractional DS-3 | 30 Mbps |

[5] Bandwidth allocations shown are as proposed to be used in the alliance CSE system solution. Bandwidth estimates and resulting allocations were built on the alliance projections of traffic and service objectives for the CSE system by site.

[2] The "2001 California Roster of Child Support Services" was used as the primary source of information to determine LCSA office sites and to design the service to be provided to them. The resulting design is subject to the accuracy and completeness of that information.

| Site Type | Provisioning per Site | Bandwidth per Site |
|---|---|---|
| HHSDC | Multiple DS-3 | 90 Mbps |

**Figure 4A.4-9 CSE WAN Provisioning and Bandwidth -** *This figure shows the provisioning and bandwidth provided by CSE site type.*

### 4A.4.0.3.2.2 Local Area Networks (LAN)

Local Area Networks are used to provide the point-of-presence connection to the CSE system for *internal* CSE system user workstations and servers. Most of those LANs – including those used to support LCSA Option 1 and 2 sites, the predominant site type – have a similar design. That design is pictured in Figure 4A.4-10a.

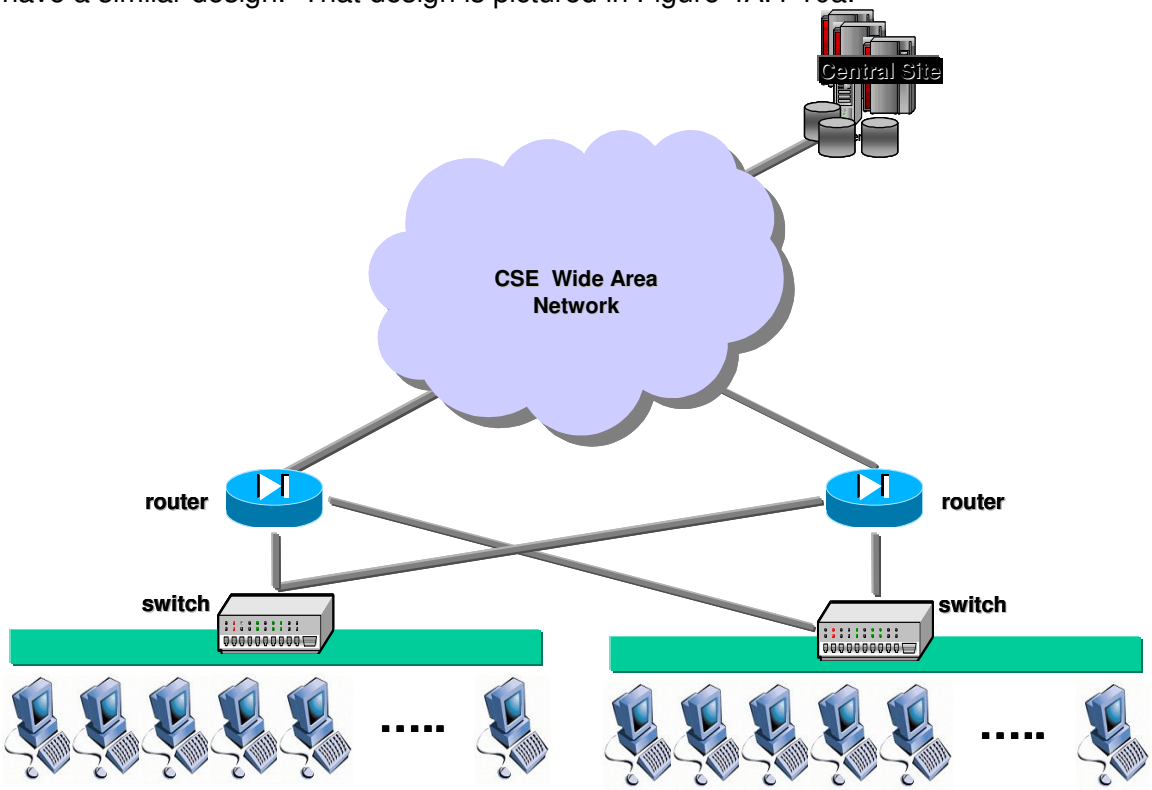



**Figure 4A.4-10a Typical CSE LAN Configuration –** *The LAN configuration approach that's used at most CSE system internal sites – including LCSA Option 1 and 2 sites - is designed to deliver high availability and performance.*

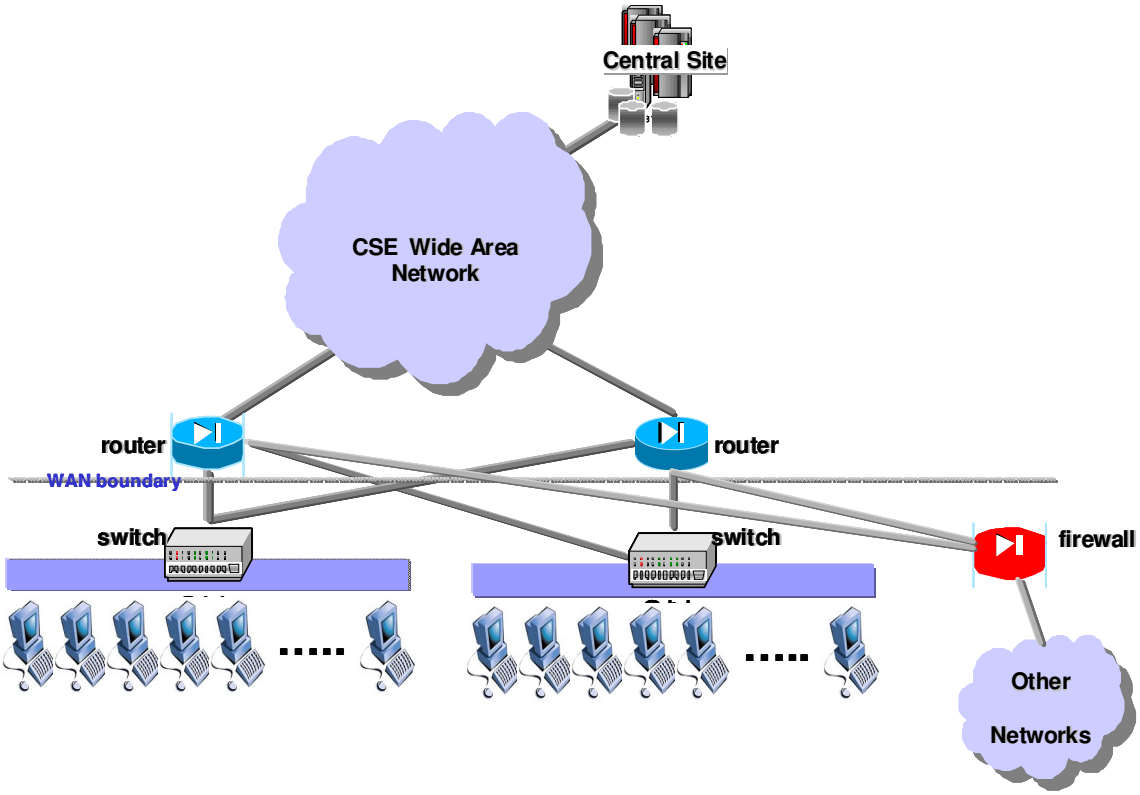
The typical CSE system LAN configuration:

- **Provides high availability**. With the application of redundant links from the CSE WAN, multiple routers and switches, and router/switch cross-connection any site-level single points of failure have been eliminated.
- **Supports high-performance transport**. Local transport is provided by100 Mbps Ethernet LANs. As noted in Section 4A.4.0.3.2.1, the links into the CSE WAN will vary by site and will range from T1 (1.544 Mbps) to DS-3 (45 Mbps).

- **Is supported through a reasoned configuration of quality components**. Routers and switches from Cisco Systems, Inc. form the foundation of that support. The choice of the specific routers and switches applied to each site is a function of the number of users expected at that site and the type of work they perform. Routers from the 7200, 3600, 2600, and 1700 Cisco product line are used in the typical CSE system LAN configuration. Cisco Catalyst 4000, 3500, and 2950 Series switches are also used in support of these sites. (Router and switch product descriptions are available in Section 4A.4.0.3.3, Products.)
- **Provides secure, dedicated access**. The use of a CSE dedicated LAN and CSE dedicated routers and switches at the option 1 sites means that only CSE host traffic will be transported on each LAN and have access to the CSE WAN.

### *4A.4.0.3.2.2.1 Option 3 Sites*

The logical design of the LANs used to support LCSA Option 3 sites is depicted in Figure




4A.4-10b.

**Figure 4A.4-10b Typical CSE LAN Configuration (LCSA Option 3 site) –** *Like other CSE LAN configurations, the LAN configuration that's used at LCSA Option 3 sites is designed to deliver high availability and performance. It's also designed to provide the ability to attach other networks while maintaining the integrity of the traffic on the CSE WAN.*

An LCSA Option 3 site LAN exhibits the same characteristics and support described for the typical CSE system LAN configuration, including LCSA Option 1 and 2 sites. However, Option 3 site LANs may include connections to other networks. Because of this capability, Option 3 site LANs include local firewall protection to ensure that it transports only traffic associated with CSE hosts. The firewall will be configured to prevent unsolicited access from the external networks, but allow CSE workstations to access and receive responses from external servers.
\
This configuration proposes a LAN that is dedicated to CSE devices and is secured against non-CSE traffic. A configuration that mixes CSE and non-CSE devices on the same LAN, would need additional security mechanisms to secure the routers and WAN.

The implementation and administrative activities to enforce security policies will be the responsibility of the Option 3 county.

### 4A.4.0.3.2.3 CSE Central Site

The CSE system central site houses the main processing facilities of the CSE system – systems servers, CSE databases, and the processing logic that executes against those servers and databases. As a result, the central site brings with it extensive network services requirements, particularly in the areas of availability, performance and capacity, and security. The network service of the central site is configured with the following features to address those requirements:

- **High bandwidth**. The central site is connected to the CSE WAN by 8 DS-3 (360 Mbps total) links and to the Internet with 100 Mbps of bandwidth. Internal to the site, 100 Mbps and Gigabit (Gbps) Ethernet LAN segments are used to support the connection to those outside links and for internal server-to-server traffic.
- 
- **Virtual LAN (VLAN) technology**. VLAN technology is used in the central site to segment traffic for performance-related control and security. So, for example, with VLAN technology the traffic associated with non-production system environments like Development can be isolated so that it will not impact the performance of the Production Environment. Access to an environment – say, Training – can also be controlled.
- 
- **Layered firewall implementation**. Traffic that enters the central site from any outside link passes through at least one firewall in search of its intended destination. Traffic originating in the Internet must pass through two. There is a pair of protocol firewalls situated between the Internet and the protected Web Services tier of the CSE system. Another set of protocol firewalls is configured to protect the tier from incorrect access attempts initiated by internal intranet traffic. In order to further isolate the Web Services tier, another set of redundant firewalls sits between the Web Services tier and the back-end business servers. This layered firewall implementation creates a “Demilitarized Zone (DMZ)” in the central site that protects servers inside from direct access by Internet or intranet users. Access to and from the “outside world” is mediated by requiring access to a DMZ hosted server first.

- **High-end router, switch and specialized traffic appliances**. The central site design applies the Cisco 7507 router, Cisco`s premier high-end router platform and traffic appliances from Alteon.
-
- **Centralized DNS** / **DHCP services**. The CSE application uses a centralized DNS / DHCP approach. Servers in the central site perform the DNS name look-up, and the DHCP IP address allocation for CSE workstations. This simplifies maintenance and increases controllability as opposed to a distributed approach where DHCP servers are maintained in each remote site location. The solution is feasible due to the protected nature of the CSE WAN, where only CSE workstations are permitted access. Option 3 counties can opt to use local DNS / DHCP servers they provide, if so desired.

A logical view of the network infrastructure of the CSE system central site is presented in Figure 4A.4.0.3-3. It presents the central site network from the viewpoint of the VLANs that are in place in the central site and illustrates how they interconnect. It also serves to simplify one's view of this network. The network supporting the central site is complex. There are many – over 50 -- physical devices connected to each other as well as to the WAN links that enter and exit the site. And the number of logical images that must be supported is even greater with the application of pSeries LPAR facilities in the configuration of the system environments server solutions.

The "tubes" in Figure 4A.4.0.3-3 represent VLANs. The diagram illustrates the way central site network traffic has been segmented into VLANs to provide traffic isolation for performance and bandwidth management, security and control. Traffic distribution logic in the redundant firewalls and routers in this configuration is key to making this work. That logic makes performance and bandwidth management, security and control come alive through its management of the routing/filtering of the central site traffic across the VLANs.

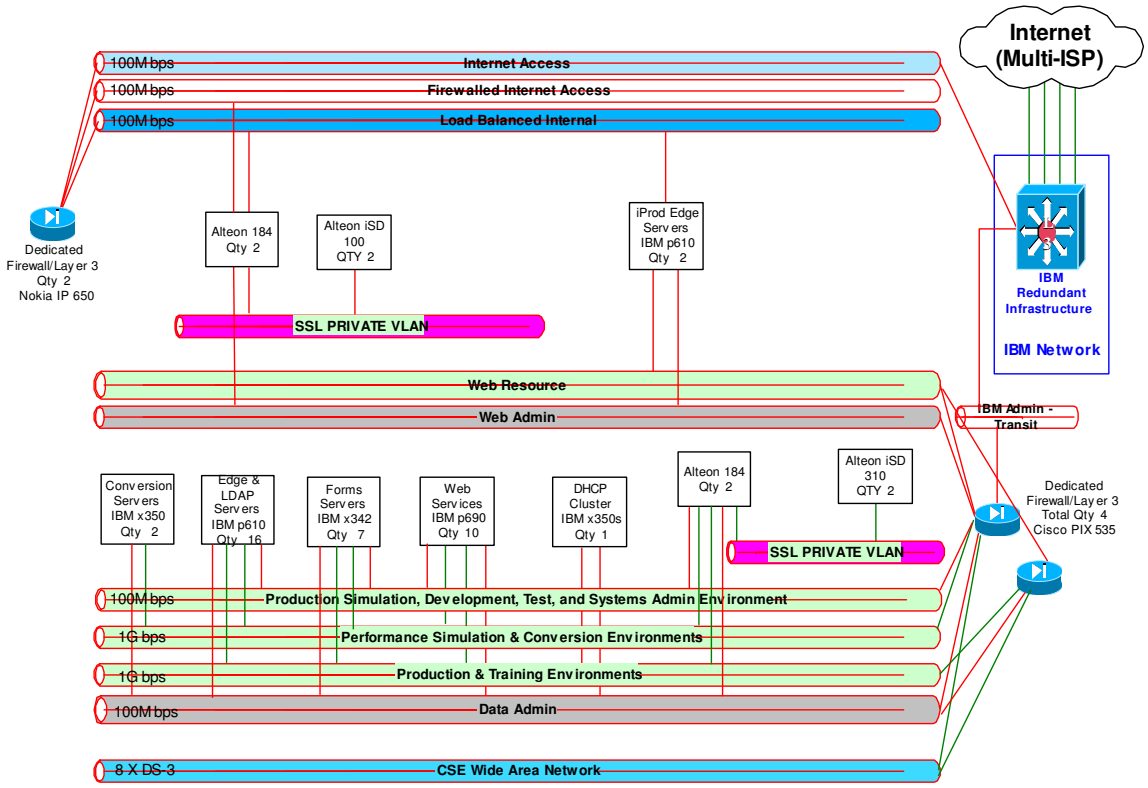



**Figure 4A.4-11 CSE Central Site Network Services -** *Virtual LAN (VLAN) technology employed in the CSE central site services enables traffic isolation for performance and bandwidth management, security and control.*

## 4A.4.0.3.2.3 The HHSDC Network

The CSE WAN connection to the HHSDC network is an IP interface used to provide connectivity to HHSDC-based information sources which the CSE system requires. That connection also serves as a gateway to other automated interfaces with Federal, State, interstate, and intrastate sources accessible from HHSDC (e.g., FPLS, FCR, and CSENet.). The CSE WAN connects to the HHSDC network at the router level, avoiding the need for non-CCSAS traffic to traverse the CSE firewalls or otherwise gain access to the central site.

## 4A.4.0.3.2.4 The Internet

The Internet is the access channel for self-service functionality in the CSE system for external users (e.g., case members, employers, and authorized third-parties). Internet connectivity to the CSE system is provided via direct, high-bandwidth connection into the CSE system central site. Two OC3 links to the Internet terminating in the IBM e-business Hosting Center – and protected by an redundant infrastructure of Cisco PIX and Nokia IP firewall devices -- are used to supply up to100 Mbps bandwidth while eliminating a single point of failure. In addition, VPN tunneling support grants secured, authenticated access to the internal CSE system application for authorized remote users.

## 4A.4.0.3.3 Products

The alliance is using Cisco and Nokia network products to provide routing, switching and firewall support to the CSE system. The following subsections describe the key features of the selected network products.

### 4A.4.0.3.3.1 Routers

#### *4A.4.0.3.3.1.1 Cisco 7500 Series Router*

The Cisco 7500 is used to support the high traffic demands of the links connecting the central site with the CSE WAN. Cisco 7500 series is Cisco's premier high-end platform of data, voice, and video routers, which includes the Cisco 7505, the Cisco 7507, and the Cisco 7513. These systems combine Cisco Systems` proven software technology with exceptional reliability, availability, serviceability, and performance features to meet the requirements of today's most mission-critical networks. The Cisco 7500 series provides information system professionals with the flexibility they need to meet the constantly changing requirements at the core, backbone, and distribution points of the network.

Cisco 7507 and Cisco 7513 feature dual CyBuses. Network interfaces reside on modular interface processors, which provide a direct connection between the CyBus and the external network, and support any combination of ATM, multi-channel T3, Ethernet, Fast Ethernet, FDDI, IBM channel attachment, multi-channel E1 and T1, HSSI, synchronous serial, Token Ring, Packet OC-3, DPT OC-12 and Gigabit Ethernet interfaces.

The Cisco 7507 contains seven slots.
Cisco 7500 series runs Cisco IOS software, the industry-leading networking software. Cisco IOS software provides for robust, reliable networks by supporting both LAN and WAN protocols, optimizing WAN services, and controlling network access. In addition, Cisco IOS software allows centralized, integrated, and automated installation and management of networks.

The Cisco 7500 series offers software feature sets and feature licenses, which allow you to select the package that best meets your needs. You can select from many different feature sets, which can be enhanced with additional feature licenses. If requirements change in the future, you can upgrade to a higher-level feature set and add another feature license.

#### *4A.4.0.3.3.1.2 Cisco 7200 Series Router*

Cisco 7200 routers are used in the large, high traffic CSE sites outside of the central site. The Cisco 7200 provides exceptional performance/price, density and availability. It also introduces industry-leading serviceability and manageability features. By leveraging the modularity of the Cisco 7200, customers have scalable solutions based on differing requirements for density, performance, and availability.

Benefits of the Cisco 7200 series routers include:

- Accelerated services using PXF technology
- Flexible Modular Interfaces including OC-3 and DS-3
- Fast Ethernet and Gigabit Ethernet, Packet Over

- Sonet
- IP and ATM Quality of Service – QoS/CoS
- Modular design and small 3U footprint
- MPLS VPN and Full L2TP Support
- Feature Rich IP services and PPP termination support
- Multi-service features support

The VPN Acceleration Module works to significantly boost performance in the Cisco 7200 Series Router and Cisco 7100 Series VPN Router. Providing high-performance, hardware-assisted encryption, key generation, and compression service for site-to-site VPNs, VAM is an integral part of the SAFE Blueprint.

Cisco 7200 includes a Multi-service Interchange (MIX)-enabled back plane to support switching of DS-0 time slots via MIX interconnects to each port adapter slot. These MIX interconnects enable integration of data, voice, and video on a single system. New multi-service solutions are now offered to enhance these capabilities in the Cisco 7200.

### *4A.4.0.3.3.1.3 Cisco 3600 Series Router*

The Cisco 3600 router is used in medium-sized CSE sites outside of the central site. The Cisco 3600 Series is a family of modular, multi-service access platforms for medium and large-sized offices and smaller Internet Service Providers. With over 70 modular interface options, the Cisco 3600 family provides solutions for data, voice video, hybrid dial access, virtual private networks (VPNs), and multi-protocol data routing. The high-performance, modular architecture protects customers' investment in network technology and integrates the functions of several devices into a single, manageable solution.

Cisco extended the successful Cisco 3600 Series with the Cisco 3660 multi-service access platform. The Cisco 3660 provides higher densities, greater performance, and more expansion capabilities. The additional power and performance of the Cisco 3660 platform enables new applications, such as packetized voice aggregation and branch office ATM access ranging from T1/E1 IMA to OC-3.

### *4A.4.0.3.3.1.4 Cisco 2600 Series Router*

The Cisco 2600 router is used in medium-sized CSE sites outside of the central site. The Cisco 2600 series modular architecture offers network managers and service providers a branch office solution that provides the versatility needed to adapt to changes in network technology, as new services and applications become available. With full support of the Cisco IOS software, Cisco 2600 modular architecture provides the power to support the advanced Quality of Service (QoS), security, and network integration features required in today’s evolving enterprise and service provider networks.

The Cisco 2600 series shares modular interfaces with the Cisco 1600, 1700 and 3600 series, providing a cost-effective solution to meet today's branch office needs for applications such as:

- Secure Internet/intranet access with Firewall protection
- Multi-service voice/data integration
- Analog and digital dial access services
- Virtual Private Network (VPN) access
- Inter-VLAN routing
- Routing with Bandwidth Management
- Delivery of high-speed business class DSL access

The Cisco 2600 series features single or dual fixed LAN interfaces, a network module slot, two Cisco WAN interface card (WIC) slots, and a new Advanced Integration Module (AIM) slot. LAN support includes single and dual Ethernet options; 10/100 Mbps auto sensing Ethernet; mixed Token-Ring and Ethernet; and single Token Ring chassis versions. WAN interface cards support a variety of serial, ISDN BRI, and integrated CSU/DSU options for primary and backup WAN connectivity, while available network modules support multi-service voice/data/fax integration, departmental dial concentration, and high-density serial options. The AIM slot supports the integration of advanced services such as hardware-assisted data compression, hardware-assisted data encryption services for Virtual Private Networks (VPNs) and a dedicated high performance ATM hardware accelerated coprocessor-enabling voice and data traffic over ATM networks, while preserving external interface slots for other applications. The Cisco 2600 series routers include an auxiliary port supporting 115Kbps Dial On Demand Routing, ideal for back-up WAN connectivity.

#### *4A.4.0.3.3.1.5 Cisco 1700 Series Router*

Cisco 1700 routers support the smallest sites attached to the CSE WAN. The Cisco 1700 Series of modular access routers are designed and priced to provide a cost-effective integrated e-business platform for small and medium-sized businesses and enterprise small branch offices. They provide flexibility and manageability to meet the most demanding and evolving e-business requirements such as multi-service data/voice/video/fax integration, business class digital subscriber line (DSL), and comprehensive security features.

The Cisco 1700 Series Modular Access Routers are optimized to provide comprehensive e-business features such as virtual private networks (VPNs), security firewalls, business-class DSL and multi-service integration of data, voice, video, and fax. The routers deliver high-speed WAN connectivity for communications over the Internet and between remote office sites.

### 4A.4.0.3.3.2 Switches

Cisco Catalyst switches support the local LAN switching requirements of the various sites in the CSE network services environment. Each switch is attached to two routers

via copper cabling. Cisco Catalyst 4000 switches are used in the largest sites. Catalyst 3500 and 2950 switches are employed to support medium and small sites, respectively.

### *4A.4.0.3.3.2.1 Cisco Catalyst 4000 Series*

The Catalyst 4000 family provides an advanced switching solution for enterprise and metro Ethernet customers deploying Internet based applications. It delivers intelligent network services and control required for a converged wiring closet while also offering high performance Layer 3/4 switching capabilities to allow for deployment in branch office backbones or Layer 3 distribution points. It provides intelligent Layer 2 and Layer 3/Layer4 services up to 64 Gbps, 48 Mpps in a modular form factor for 10/100/1000-Mbps Ethernet Switching. The modular Catalyst 4000 family extends the same feature set with identical software code base, along with the same enterprise functionality as the Catalyst 6500/5000 Family, delivering a consistent end-to-end solution.
Catalyst 4000 Family Ethernet switches offer a broad range of density and functionality. These switches are available in a chassis-based form factor with flexible modular configurations that provide a broad range of port densities for 10/100 Mbps to 1000 Mbps speeds

### *4A.4.0.3.3.2.2 Cisco Catalyst 3500 Series*

The Cisco Systems Catalyst 3500 series XL is a scalable line of stackable 10/100 and Gigabit Ethernet switches that deliver premium performance, manageability, and flexibility, with unparalleled investment protection. This line of low-cost, high-performance switching solutions provides next-generation stackable switching. Catalyst 3500 XL stacks allow management of the switched ports from a single IP address and provide interconnected switches with an independent high-speed stack bus that preserves valuable desktop ports.

Cisco Catalyst 3500 series XL switches take stacking to a new level with revolutionary Cisco Switch Clustering technology and GigaStack GBICs. With Cisco Switch Clustering, users can manage over 380 ports from a single IP address, and connect up to 16 switches, regardless of physical location, with a broad range of Ethernet, Fast Ethernet, and Gigabit Ethernet media. Cisco Switch Clustering is supported on the Catalyst 3500 XL, 2900 XL and Catalyst 1900 switches.

The Catalyst 3500 series XL switches feature Cisco IOS software and Cisco Visual Switch Manager (CVSM) software, an easy-to-use Web-based management interface. High-performance Catalyst 3500 series XL switches are available in either Standard or Enterprise Editions. Enterprise Edition switches offer advanced software features, including complete 802.1Q and ISL VLAN support, TACACS+ security, and fault tolerance through Uplink Fast.

### *4A.4.0.3.3.2.3 Cisco Catalyst 2950 Series*

The Cisco Catalyst 2950-24 and 2950-12, members of the Cisco Catalyst 2950 Series Switches, are standalone, fixed-configuration, and managed 10/100 switches providing user connectivity for small to mid-sized networks. These wire-speed desktop switches offer Cisco IOS functionality for basic data, video, and voice services at the edge of the network.

- Wire speed stand-alone 10/100 switching

- Basic Cisco IOS functionality
- Clustering capable, CMS software
- Manageable through CiscoWorks network management software
- Embedded Remote Monitoring (RMON) software agent

### 4A.4.0.3.3.3 Firewalls

#### *4A.4.0.3.3.3.1 Cisco PIX Firewall*

The Cisco PIX Firewall is the dedicated firewall appliance in Cisco's firewall family and holds the top ranking in both market share and performance. The Cisco PIX Firewall delivers strong security and, with market-leading performance, creates little-to-no network performance impact. The product line enforces secure access between an internal network and Internet, extranet, or intranet links. The Cisco PIX Firewall scales to meet a range of customer requirements and network sizes and currently consists of five models:

The Cisco PIX 535 Firewall is intended for Enterprise and Service Provider use; it has a throughput of 1.0 Gbps with the ability to handle up to 500,000 concurrent connections. Supporting both site-to-site and remote access VPN applications via 56-bit DES or 168-bit 3DES, the integrated VPN functionality of the PIX 535 can be supplemented with a VPN Accelerator card to deliver 100 Mbps

#### *4A.4.0.3.3.3.2 Nokia IP740 Network Appliance*

The Nokia IP740 offers market leading security applications such as Check Point™ VPN-1™/FW-1®. A 3 RU system, the IP740 is purpose-built for ease of deployment, remote management and high performance without compromising security.

The Nokia IP740 is Nokia's highest performing firewall platform, exceeding a gigabit per second of firewall throughput. The Nokia IP740 comes with four CPCI slots for optional WAN and LAN interfaces. The wide variety of connectivity options include optical Gigabit Ethernet, 4-port 10/100 Ethernet, and wide area network interfaces such as V.35/X.21 or T1/E1, allowing the IP740 to be easily integrated into any network architecture.

## 4A.4.0.4 CSE System Hardware

Industry-leading IBM pSeries servers (formally RS/6000) are the primary server platform employed in the CSE system. These servers have set the industry standards for availability and performance. IBM is investing in research and development to continually enhance this family of servers. The technical advancements provided by these server platforms will be leveraged over the term of the CCSAS project.

The alliance applies the IBM pSeries 610, 640, and the newly announced 690 series systems in support of the CSE system environments. The IBM pSeries processors are the world's fastest symmetric multiprocessor (SMP) server for Web serving and Java processing. These systems also provide both the database engine for the CSE system and house the business rule processing performed in the EJB-based application components. pSeries systems are used for mission critical solutions because of their reliability and performance.

We recognize that there is no single architecture or server that meets the e-business needs for the CSE system. That's why the CSE system utilizes a reasoned blend of two server platforms -- each platform chosen for the strengths it provides for a solution area. That's a real advantage for our users. Included in the servers provided under the CSE system are:

- IBM eServer pSeries (for performance) -- the most powerful, technologically advanced UNIX server. The main data will be maintained and applications, business rule, and web servers run on these platforms.
- IBM eServer xSeries (for x-architecture) -- the affordable, Linux-ready, Intel-based server with mainframe-inspired reliability technologies. As this series grows, the xSeries name will replace current Netfinity offerings. These servers are used for various functions including: DNS, DHCP, Systems Management, Imaging, and the alliance Project Office file servers.

## 4A.4.0.4.1 IBM eServer pSeries

**pSeries 690**

This new class of pSeries is IBM's first UNIX data center system, utilizing mainframe-inspired self- management capabilities. The IBM pSeries data center-class servers come in symmetric multiprocessor (SMP) models that are well suited for mission-critical commercial or technical environments. These data center servers run IBM's highly rated AIX operating system to provide the highest levels of security, systems management and Web performance.

The pSeries 690 incorporates many innovations including copper-based silicon-on-insulator (SOI) POWER4 microprocessor technology, multi-chip high-density packaging, and advanced self-management capabilities.

Key features:

- Innovative, mainframe-inspired, class-class UNIX server
- 8- to 32-way 64 bit SMP server utilizing the first ever POWER4 dual processor on a chip which uses IBM advanced silicon-on-insulator (SOI) copper technology
- Up to 256GB of memory, 160 PCI slots and over 4.6TB of internal storage
- Supports up to 16 logical partitions (LPAR), helping to consolidate workloads, reduce footprints and lower cost of ownership
- A dedicated Hardware Management Console that provides a graphical user interface for configuring and operating the system including a set of functions for managing LPAR configurations
- State-of-the-art self-managing capabilities that improve reliability, availability and serviceability (RAS) and help lower costs
- Packaging in a new 24-inch rack with an integrated power subsystem which accommodates a pSeries 690 system and up to four I/O drawers
- AIX clustering

The pSeries 690 is an innovative 8- to 32-way symmetric multiprocessor (SMP) server that redefines the UNIX landscape. It represents the next generation of performance

leadership from IBM, nearly doubling the power of the pSeries 680, previously the most powerful pSeries server available.

In addition to unparalleled speed, the pSeries 690 has the ability to consolidate critical applications on a single, data center-class server. As a result, this powerful server can simplify the transformation of an e-business infrastructure even as an enterprise prepares to handle increasing growth. There are fewer servers to manage and maintain, and available capacity can be used more effectively with greater flexibility in matching resources to meet changing business demands

**pSeries 640**

An exceptional entry-level server, the IBM pSeries 640 is up to a 4-way, 64-bit high-density rack-mount server designed for reliability, availability, and serviceability with excellent performance and expandability. The system conforms to NEBS Level 3 standards ideal for telecommunications and other harsh environments.

The IBM pSeries 640 is a cost-effective, high-performance UNIX server in a compact rack-mountable drawer. This rugged system is ideal for environments where high density, rapid horizontal growth and leading edge UNIX performance are critical, such as in a departmental server.

Key features:

- Powerful UNIX server optimized for high-density rack environments
- 1- to 4-way 64-bit POWER3-II copper chip technology with 375 MHz or 450 MHz processor options
- Features include hot-swap storage, integrated service processor, redundant power and cooling
- Rugged 5U x 24" deep chassis designed for ease-of-use and maintenance
- Compliant with NEBS Level 3 (GR63 and GR1089) design standards for harsh environments
- AC and DC power options (110/220 auto sensing VAC and -48 VDC)

**pSeries 610**

The IBM pSeries 610 systems are one- or two-way general-purpose UNIX servers that deliver outstanding performance. As the State extends its e-business infrastructures, these systems have the versatility to function well in many roles, including application and small database serving.

The low cost, reliability, and remote systems management capabilities of these servers make them ideal for environments that support remote stores, branches, regional offices and kiosks. At the same time, they are powerful enough to meet the enterprise computing requirements of small- to medium-size departments.

Key features:

- Entry 1-2 way symmetric multiprocessor (SMP) server
- Exceptional internal expansion capability (up to 291.2GB)

- Rack or tower packaging

## 4A.4.0.4.2 IBM eServer xSeries

The alliance has chosen IBM's eServer xSeries servers as the Intel-based platform for the CSE system. Building on the IBM commitment to provide innovative technology, application flexibility and new tools, IBM provides the next great wave of innovation for the Intel-based server platform. Called Enterprise X-Architecture technology, it combines industry-standard features with IBM mainframe-inspired capabilities to produce revolutionary advances in the I/O, memory and performance of IBM xSeries servers.

X-Architecture technology is an evolving blueprint for IBM xSeries servers that is drawn from the vast enterprise server heritage of IBM. xSeries engineers take the technologies that have already revolutionized larger IBM systems and bring them to the Intel-based platform. The results: industry-standard servers designed to provide enterprise-inspired power, scalability, control and service at very attractive prices.

And new tools make systems management easier than ever before. With self-diagnosing and self-healing technologies such as Active PCI-X and third-generation chip kill memory, systems are designed to stay up and running continuously.

X-Architecture technology pulls together many of the best features of the other IBM systems, such as the:

- Availability characteristics achieved by the large systems/mainframe zSeries eServers
- Scalability of the pSeries (512 - 1,024 node clusters of 8-way and soon, 12-way SMP systems)
- Solution relationships (25,000 application solutions) and self-maintaining capabilities (i.e., auto tuning, auto configuration) of the iSeries platforms

The strength of these technologies—and therefore of X-Architecture technology—lies in a research and development foundation that has no equal. For the past eight years, IBM has led the industry in number of patents acquired and having continuously landed No. 1 benchmarks and a multitude of product awards. Among those awards are titles won by the xSeries servers.

## 4A.4.0.4.3 IBM NetVista Workstations

The alliance has chosen the award winning IBM NetVista workstations for the CSE system. The NetVista M Series meets and exceeds the performance requirements for the CSE system. Using flexible configurations, the alliance has configured models for LCSA end users, imaging workstations, and alliance Project Office staff. The NetVista M Series is designed for users who want significant performance features, including Intel Pentium 4 processors, high-speed hard disk drives, upgradeable graphics and longer image stability for easier deployments. Select models of the NetVista M Series offer enhanced security features with the IBM Embedded Security Subsystem.

Key features:

- Performance features that include Intel Pentium 4 Processor with stable core chipset, high speed hard disk drive, upgradeable graphics capability (select models) and integrated audio
- Stable platform across the new form factors includes a common system board and software image to help reduce IT costs
- Tool less cover removal, tool less PCI slots and internal bays flip up and allow components to slide in on rails, helping make upgrades easier and repairs faster
- "Access IBM" which opens up a universe of online and on-system information, resources and help to set up, learn about and enhance your NetVista desktop
- Two front and two rear USB ports allow you to easily add peripherals, such as printers and scanners
- IBM's award-winning service and support

### 4A.4.0.4.4 IBM ThinkPad Notebooks

Also from IBM, the ThinkPad T Series notebooks have been chosen for select LCSA and alliance Project Office staff. In the office, on the road or anywhere in between, IBM ThinkPad T Series notebooks are the perfect solution for frequent travelers who need big functionality but don't want to carry a heavy load.

Key features:

- Titanium Composite in the top and bottom covers helps provide enhanced strength while maintaining a thin and light design
- Latest Mobile Intel Pentium III Processor-M processor
- Modular Ultrabay™ Plus provides customization of ThinkPad notebooks with optional swappable, sharable storage drives, or a numeric keypad or WorkPad cradles
- Innovative UltraPort connector, located on top of the display edge, provides the ideal location for many solutions, including the IBM UltraPort Camera II, Bluetooth UltraPort Module from IBM, IBM UltraPort Digital Array Microphone or the IBM UltraPort Compact Flash Reader
- ThinkLight allows the user the flexibility to keep working in low-light conditions
- ThinkPad Button launches Access ThinkPad, which opens up a universe of online and on-system information, resources, and help to set up, learn about, and enhance the ThinkPad notebook's versatility
- Access Connections software, part of Access ThinkPad, simplifies connectivity by saving the settings for you're the user's wired and wireless connections and easily switching between them (Windows XP and Windows 2000 models)
- Optional ThinkPad Port Replicator or ThinkPad Dock provide flexible docking and easy cable management (common with X, R and A Series)
- Individual volume up, down, and mute buttons provide greater sound control
- Comfortable, ergonomic keyboard with full-size keys and palm rest includes ThinkPad pointing device with Internet Scroll Bar to help users breeze through Web pages and spreadsheets
- Easy-open cover can be unlatched and opened with one hand

## 4A.4.0.4.5 Printers

### 4A.4.0.4.5.1 IBM Infoprint

IBM Infoprint 1000 printers offer a wide variety of print speeds and features to serve everyone in the LCSA sites. This full line of printers offers exceptional value with unique functionality, advanced features, broad expansion capabilities and seamless connectivity. From 16 to 45 pages per minute, IBM's new family of workgroup printers can meet the printing requirements of the LCSA staff and the CSE application system.

**Versatile and expandable**
The Infoprint 1000 family supports a variety of media types and sizes such as envelopes, transparencies, and A3-size paper. Increased input and output options, including finishing devices that staple and hole-punch, add versatility to printing. Modular paper handling capabilities are easily expandable, providing printing flexibility to enhance productivity.

**Networking options for seamless connectivity**
Today's workgroups need fast, reliable connectivity and the ability to print images from the Web. With the Infoprint 1000 family's network-ready Ethernet and standard parallel/USB interfaces, easy host connections and high-speed communications are a given.

The Infoprint 1125 is a powerful laser printer that helps optimize productivity and provide seamless connectivity.

Key features:

- 1200 x 1200 dpi, 25 ppm, provides superb performance at an exceptional price
- Less than nine seconds to first page print and smart implementation of networking options help to facilitate high speed communications and broad compatibility
- Easily expandable with a high capacity input option, bringing maximum input up to 3,850 sheets

### 4A.4.0.4.5.2 HP2500C+

The HP 2500c professional series color printer is HP's ideal productivity printer for printing up to 11 x 17 inches with optional networking, two paper trays and four individually replaceable ink cartridges.

Key features:

- Seamless workgroup integration with robust networking features
- Brilliant color printing with HP PhotoREt II on any paper
- Print on media up to 13 x 19 in/A3+
- Brilliant photo quality on any paper with HP PhotoREt III color layering technology

## 4A.4.0.4.6 Scanners

To support the Forms Management Services of the CSE system, the alliance has selected two scanner models – one to support medium-to-large LCSA site and the other to support smaller sites. The Fujitsu M4099D image scanner (dual interface model with

RS232C+video interface and SCSI-2 interface) offers high speed, duplex scanning, and many excellent features, making it valuable for production scanning.

Key features:

- High-Speed Scanning
  - Simplex: 90 pages per minute (A4/200dpi/Portrait)
  - Duplex: 180 images per minute (A4/200dpi/Portrait)
  - Continuous Scanning - 1,000-sheet automatic document feeder improves operator productivity
- 32MB pre-installed memory
- Image Processing features (IPC 3D) pre-installed
- Various Document Sizes - A7 to A3 or 11in. x 17in.
- Manual Feeding Mode
- Double Feed Detection
- Long Page scanning (up to 34in.)
- Blank Page Detection / Skew detection
- Output resolution 400dpi

The Fujitsu M4097D image scanner (SCSI-2 interface/Third Party Slot Interface) also offers high-speed, duplex scanning, and other excellent features achieved by Fujitsu expertise.

Key features:

- High-Speed Scanning
  - Simplex: 50 pages per minutes (A4/200dpi/Portrait), 67 pages per minutes (A4/200dpi/Landscape)
  - Duplex: 90 images per minutes (A4/200dpi/Portrait)
- 100-sheet automatic document feeder improves operator productivity
- Image Processing Option (IPC-4D)
- Various Document Sizes - A8 portrait (53 x 74mm) to A3 or 11 x 17in.
- Manual Feeding Mode
- Double Feed Detection
- Long Page Scanning
- Page End Detection
- Up to 600dpi for high-quality images (Binary scanning)

## 4A.4.0.5 CSE System Software

The alliance has chosen numerous software packages that will form the foundation of the CSE system solution. The alliance's software selection for the CSE system includes IBM HTTP Server, WebSphere and AIX. These software products support open system standards and the State's architectural best practices.

The core software component of the CSE system is the IBM WebSphere Application Server. WebSphere Application Server is the premier Java technology-based Web

application server, integrating enterprise data and transactions with the e-business world. It provides a rich, e-business application deployment environment with a complete set of application services including capabilities for transaction management, security, clustering, performance, availability, connectivity, and scalability.

## 4A.4.0.5.1 Operating Systems

### 4A.4.0.5.1.1 AIX

The CCSAS system pSeries servers run the AIX operating system. AIX is the IBM strategic UNIX operating system for mission-critical, core business applications. The industrial-strength features and functions of AIX have been well proven over the years in a wide variety of server environments from relatively small, single-processor systems through the massively parallel RS/6000 Scalable POWERparallel (SP) servers and the newer pSeries line.

The AIX features include:

- State-of-the-art 32-bit and 64-bit kernels
- 32-bit and 64-bit APIs support
- Dynamic configuration and device attachments
- Robust journaled file system and Logical Volume Manager (LVM) software
- Simplified system management — System Management Interface Tool (SMIT) and Web System Management

Fortified with open technologies from some of the world's top providers, AIX 5L builds on a solid heritage of supplying integrated, enterprise-class support for IBM pSeries systems.

With AIX 5L, IBM:

- Provides an industrial-strength UNIX operating system with increased levels of integration, flexibility, and performance for meeting the high demands of today's mission-critical e-business applications
- Offers an advanced operating system with a strong affinity with Linux and built-in capabilities designed to accommodate future IBM POWER-based servers

***High Availability***
Clustering is the linking of two or more computers or nodes into a single, unified resource. High availability clusters enable the parallel access of data, redundancy and fault resilience required for business-critical applications. IBM has the industry's most compelling answer to high availability (HA) requirements: High Availability Cluster Multiprocessing (HACMP) for AIX, the highest-rated UNIX-based disaster recovery clustering solution in the industry, combined with IBM pSeries, the most technologically advanced line of UNIX servers.

HACMP for AIX is a control application that links IBM pSeries servers into highly available clusters. It provides concurrent access to IT resources and the fault resilience required for business-critical applications. HACMP automatically detects system or network failures and eliminates a single point-of-failure by managing fail over to a recovery processor with a minimal loss of end-user time.

HACMP makes use of redundant hardware configured in the cluster to keep an application running, restarting it on a backup processor if necessary. This minimizes expensive downtime for both planned and unplanned outages and provides flexibility to accommodate changing business needs. With HACMP/ES, up to 32 pSeries or RS/6000 servers can participate in an AIX cluster—ideal for an environment requiring horizontal growth with rock-solid reliability.

Key High Availability features:

- Improved fail over support, including the ability to handle combinations of multiple failures in certain circumstances
- Improved scalability, including enhanced AIX System Management Interface Tool (SMIT) interface for configuring volume groups and networks, customizing pager notifications and HAGEO site configuration data. SMIT is a simple yet powerful tool that helps perform system and network management tasks from a menu-driven interface
- Expanded device support, including multiple logical interfaces on the same ATM network adapter and OEM disk API
- Up to 32-way concurrent access to disks in a highly available cluster with the Concurrent Resource Manager of HACMP
- Replacement of hot-plug PCI network adapters
- Use of C-SPOC to replace a failed disk
- New Highly Available Network Service demonstration codes (sample scripts)

### 4A.4.0.5.1.2 Microsoft Windows 2000 Server

A number of the proposed CSE system software components are designed to run on the Intel Pentium and Windows 2000 Server platform. The Windows 2000 Server Family is the most reliable set of server operating systems Microsoft has ever produced. The improvements in Windows 2000 mean the systems needed to run the CSE system will be available when needed. Windows 2000 Server introduces new levels of reliability and availability for Child Support Enforcement business operations. Further, Windows 2000 Server, provide increasing levels of system availability, to let the operating system readily support high-traffic Web sites, high-volume transaction processing, and many other demanding applications.

Windows 2000 Server is easier to deploy, configure, and use than any previous Windows Server operating system. It provides centralized, customizable management services to reduce total cost of ownership. These Management Services work with existing management solutions and heterogeneous distributed networks, thus allowing users to get extensive value from their current infrastructure services. Systems administrators, network administrators, support personnel, and end users will benefit from the comprehensive management services built into Windows 2000 Server.

### 4A.4.0.5.1.3 Microsoft Windows XP Professional

Windows XP is Microsoft's latest and most powerful version of Windows, able to handle the demanding requirements of the CSE system. Windows XP is powered by the new Windows Engine and provides the most dependable Windows user experience ever.

Built to exceed earlier Windows reliability standards, Windows XP is a powerhouse aspects of dependability. The technology platform is based on the proven, industrial strengths of the Windows 2000 Professional business operating system. And the ever-expanding possibilities of the Web are made more intuitive and secure with the enhanced online capabilities.

For the CSE system, the alliance has chosen Windows XP Professional, designed for power users and businesses of all sizes. Windows XP Professional includes important features to meet the demanding business needs of Child Support Enforcement in areas such as mobile computing, networking, and security.

## 4A.4.0.5.2 Application Software

### 4A.4.0.5.2.1 IBM HTTP Server

The alliance has chosen the IBM HTTP Server as the Web server for the CCSAS CSE project based on its scalability, use of open standards, and integration with IBM's WebSphere Application Server, and outstanding performance. IBM HTTP Server, powered by Apache, is a Web server based on the Apache Web server that was developed by the Apache Group (www.apache.org). IBM HTTP Server includes some functions that are not available in the Apache Web server developed by the Apache Group.

IBM HTTP Server offers:

- Support for SSL secure connection
- Fast Response Cache Accelerator (Windows NT and AIX only)
- IBM has extended Apache to work with IBM Fast Response Cache Accelerator (Cache Accelerator). The Cache Accelerator is an in-kernel mini HTTP GET engine and HTTP content
- Cache that enables serving static web pages significantly faster than Apache web server without the Cache Accelerator. By default, the Cache Accelerator is enabled. The Cache Accelerator can be completely disabled through configuration file directives
- WebDAV to collaboratively edit and manage files on remote Web servers
- The ability to produce dynamic content with FastCGI
- Secure Sockets Layer (SSL)
- Fast Response Cache Accelerator

The Apache source is included with the IBM HTTP Server. Developers can write an Apache module that runs with IBM HTTP Server. The Apache Web server was originally designed and developed for UNIX systems. Apache V1.3.0 was the first major release of Apache that included support for MS Windows.

New functionality for the latest IBM HTTP Server release includes:

- Keyfile, SSLV2Timeout and SSLV3Timeout directives are now virtual host and global-based. See SSL Directives for more information

- Hardware Cryptographic Support: Rainbow Cryptoswift PCI with BSAFE support, Ncipher Nforce Accelerator (accelerator mode and key stored accelerator mode) and IBM 4758 Model 023 with PKCS11 support
- Certificate Revocation List (CRL) enablement
- Transaction Layer Security (TLS) enablement

### 4A.4.0.5.2.2 IBM WebSphere Application Server – Advanced Edition

The core software component of the CSE application system is the IBM WebSphere Application Server. The IBM WebSphere Family of products was designed by IBM to help users realize the promise of e-business. The WebSphere Family is a set of software products that helps customers develop and manage high-performance Web sites and integrate those Web sites with new or existing non-Web business systems.

The WebSphere Family consists of the WebSphere Application Server and other WebSphere Family software that is tightly integrated with the WebSphere Application Server and enhances its performance.

The IBM WebSphere Application Server Version 4.0, Advanced Edition is a comprehensive, Java technology-based Web application server providing integrated support for key Web services open standards and full Java 2 platform Enterprise Edition (J2EE) certification. As the foundation of the WebSphere software platform, WebSphere Application Server provides the core software to deploy, integrate and manage e-business applications. IBM's WebSphere application server offers superior connectivity through an implementation of the J2EE Connector Architecture and provides flexibility through broad cross-platform support and a choice of configurations.

With its focus on extensive performance, scaling, and security, IBM WebSphere Application Server, Advanced Edition provides a strong cross-platform, Java technology-based Web application platform. It includes Java servlets and JavaBeans, JavaServer Pages (JSP), and Enterprise JavaBeans (EJB) components that support deployment of e-business applications for transactions, enterprise system access, connectivity, and Web services.

WebSphere Application Server Version 4.0, Advanced Edition, supports Microsoft Windows NT, Microsoft Windows 2000, IBM AIX, IBM OS/400, Sun Solaris, HP-UX and Linux operating environments. The following features are included in WebSphere Application Server Version 4.0, Advanced Edition:

- Integrated support for key Web services open standards, such as Simple Object Access Protocol (SOAP), Universal Description, Discovery and Integration (UDDI) and Web Services Description Language (WSDL), for the deployment of enterprise Web services solutions for dynamic e-business
- Full J2EE, Version 1.2.1 certification with early support for many of the features specified in J2EE, Version 1.3, that can enable powerful interoperability between Web services and J2EE applications and that can offer key solutions for collaboration, business-to-business, portal serving, content management, commerce, and pervasive computing

- Superior connectivity provided by a preview implementation of J2EE Connector Architecture (JCA) that can allow integration with IBM CICS, IBM IMS and IBM WebSphere Host On-Demand applications, among others, through a corresponding set of IBM application adapters
- Increased integration with Tivoli Policy Director and pluggable user registries for enhanced security
- Support for web standards — UDDI, WSDL and SOAP. These Web standards collectively can enable applications to be listed in a directory, extend information to other applications about sharing information and data and about how to communicate across diverse systems environments over the Internet
- Support for Enterprise JavaBeans technology and open standards. Comprehensive support for Enterprise JavaBeans technology and open standards provides a leading-edge foundation for enabling e-business and services
- Support for XML Document Structure Services. Support for Extensible Markup Language (XML) Document Structure Services can enable e-business applications that interchange data with XML to parse, generate, manipulate and validate content based on XML and apply Extensible Style Language (XSL)
- Support for security controls and application access protection. Secure access control lists can be established with fine levels of granularity. In addition to setting up security at the user and group levels, controls and policies can be established for specific calls or methods within the applications themselves, utilizing third-party authentication techniques. This can provide much greater depth of control and protection within the server deployment environments
- Support for user registries based on Lightweight Directory Access Protocol (LDAP). LDAP is an open, vendor-neutral standard that provides an extendable architecture for centralized storage and management of information. LDAP-based directories provide the manageability and security needed to help to provide that information is accessible but still protected. Also, WebSphere Application Server Version 4.0, Advanced Edition can provide support for local operating systems security and for pluggable user registries

WebSphere Application Server, Advanced Edition provides deployment and management capabilities for Java applications and EJB components that can enable powerful interactions with enterprise databases, transaction processing systems and other applications. Benefiting from IBM technical innovation, product leadership, and extensive experience in enterprise transaction processing, WebSphere Application Server, Advanced Edition can allow robust, managed e-business transactions that can help the new CSE system application end users connect to customers.

WebSphere Application Server, Advanced Edition provides additional features to support transaction management. These features include:

- Comprehensive Java component and Enterprise JavaBeans support
- Support for bean-managed and container-managed persistence storage, with EJB and container services

This transaction management intelligently deploys and executes across multiple applications and components, thereby optimizing object management and performance. WebSphere Application Server Version 4.0, Advanced Edition can improve the

performance and scalability across the deployment environment by including workload management and load balancing, clustering, cloning, and pooling support. The EJB server provides container deployment services for servlets and EJB and JSP components. WebSphere Application Server Version 4.0, Advanced Edition provides distributed transaction support spanning IBM DB2 (including IBM DB2 for OS/390), Microsoft SQL Server (through Merant support), IBM Encina, CICS TX, Version 2.1 (through CICS session EJBs), IBM WebSphere Application Server for z/OS and OS/390 and Oracle, Sybase, and Informix relational databases.

WebSphere Application Server, Advanced Edition provides extensive performance scaling, security, and control for advanced e-business applications. New performance tuning wizards are provided along with improved resource and log analyzers to help optimize transactional Web sites. A new Java Naming and Directory Interface (JNDI) cache that sorts name server requests on behalf of Web applications deployed in WebSphere Application Server is also provided. For applications requiring many name server calls, speed can increase up to two to three times, when compared against un-cached request execution times.

WebSphere Application Server, Advanced Edition provides a high-scale and high-performance deployment environment with enhancements to the connection pooling algorithms and support for dynamic reloading of EJB Components.

### 4A.4.0.5.2.3 IBM WebSphere Edge Server

IBM WebSphere Edge Server provides software building blocks to reduce Web server congestion, increase content availability, and improve Web server performance. Most importantly, the WebSphere Edge Server reduces user response times. The WebSphere Edge Server is used across the WebSphere Application Server editions. It provides sophisticated detection of system utilization and error events across multiple networks and servers. It is extremely robust and scalable, providing caching of content across multiple servers and automating the replication and mirroring of data and applications. Included in the WebSphere Edge Server package are both a caching proxy server and a network dispatcher. The CSE system utilizes the caching proxy component:

- **IBM Web Traffic Express (Web Traffic Express)** - a caching proxy server with Platform for Internet Content Selection (PICS) filtering. Web Traffic Express provides highly scalable caching and filtering functions associated with receiving requests and serving URLs. With tunable caching capable of supporting high cache hit rates, the server can reduce bandwidth costs and provide more consistent rapid customer response times.

### 4A.4.0.5.2.4 IBM MQSeries

IBM's MQSeries middleware products are key software components of the CSE system Enterprise Application Integration (EAI) bus. The IBM MQSeries range of products provides application-programming services that enable application programs to communicate with each other using messages and queues. This form of communication is referred to as *commercial messaging*. It provides for reliable, once-only delivery of messages. Using MQSeries means that developers can separate application programs, so that the program sending a message can continue processing without having to wait for a reply from the receiver. If the receiver, or the communication channel to it, is

temporarily unavailable, the message can be forwarded at a later time. MQSeries also provides mechanisms for providing acknowledgements of messages received.

MQSeries messaging products enable application integration by helping business applications to exchange information across different platforms by sending and receiving data as messages. They take care of network interfaces, provide 'once only' delivery of messages, deal with communications protocols, dynamically distribute workload across available resources, handle recovery after system problems, and help make programs portable so that programmers can use their skills to handle key business requirements, instead of wrestling with underlying network complexities.

MQSeries provides a consistent multi-platform, application-programming interface. A key factor is time-independent processing. This means that messages are dealt with promptly, even if one of the recipients is temporarily unavailable.

The programs that comprise an MQSeries application can be running on different computers, on different operating systems, and at different locations. The applications are written using a common programming interface known as the Message Queue Interface (MQI), so that applications developed on one platform can be transferred to another. Key features of MQSeries include:

- Heterogeneous any-to-any connectivity from desktop to mainframe (over 35 platforms supported)
- A comprehensive family of application programming interfaces (APIs) designed to make coding for any messaging task straightforward
- Allows business to integrate disparate islands of automation
- Time-independent communication
- One-time message delivery
- More than 550 independent vendors offer MQSeries-based services and products
- More than 3000 people representing more than 1000 different companies worldwide have passed an MQSeries family certification test
- Over 66% of Top 100 North American and European banks use MQSeries
- More than 7000 customer sites use MQSeries
- More than 350 of IBM's top 500 customers use MQSeries
- MQSeries supports high volume throughput, demonstrated through customer experience in excess of 250 million messages a day

### 4A.4.0.5.2.5 IBM MQSeries Workflow

MQSeries Workflow executes process definitions captured during modeling and helps work towards an environment where business functions are performed reliably and accurately using the transactional integrity of MQSeries. Scalable, it takes full advantage of multi-processor hardware and clustering, and is ideal for Web server farms. Executing processes running from sub-seconds to many months, its full restart-and-recover capability make it truly fault-tolerant and able to sustain the mission-critical business processes and 24x7 operations essential to e-business applications, such as the CSE application system.

MQSeries Workflow facilitates the integration of services provided by IT and organizational infrastructures, integrating *bought* and *built* applications - even with customers, business partners, suppliers and employees. The thousands of applications already enabled for MQSeries can be used with it, thereby leveraging standard MQSeries business integration technologies.

IBM MQSeries Workflow will make it possible for the CCSAS CSE project to:

- Increase its agility and so act - and react - in a timely way
- Make its processes visible, revealing what is actually happening
- Make processes visible and usable by end users, managers, and external partners
- Make its processes auditable and measurable
- Separate what needs to be done from how it is implemented

MQSeries Workflow is used to design, document, execute, control, improve, and optimize CSE business processes. After modeling CSE application processes with the MQSeries Workflow Buildtime, the MQSeries Workflow Runtime runs them by navigating through the workflow models. Applications are invoked automatically, and work items are created and distributed to the work lists of people involved.

MQSeries Workflow:

- Works even across enterprises acting as a workflow broker
- Integrates existing and new applications to power e-business solutions, ranging from CICS and IMS transactions to Web applications
- Fast and flexible execution of business-to-business and business-to-consumer processes to address fast changing rules, regulations, and laws
- Using XML, applications can trigger MQSeries Workflow process
- Using XML, MQSeries Workflow can start any application
- Higher productivity is achieved through business process automation
- State-of-the art visual workflow modeling
- Manages fully-automated application-to-application workflow, called communication workflow
- Manages workflow processes, including applications that require human intervention
- Web browser support with rapid application integration capability
- Scales from Windows 2000 up to IBM pSeries and zSeries servers
- Relies on MQSeries message queuing facility for state-of-the-art communications and secure transaction safety
- Uses DB2 Universal Database as workflow database
- Offers GUI clients such as: Web Clients, Windows Clients, Lotus Notes Client
- Provides APIs to drive customizable workflow solutions

### 4A.4.0.5.2.6 IBM SecureWay Directory Server

IBM SecureWay Directory is a 32-bit LDAP Version 3 function that leverages the mission-critical enterprise strength of DB2 database technology with the flexibility of the

LDAP directory standard with the following properties. An essential tool, the SecureWay Directory:

- Provides search capability; searches on individual attributes of the objects
- Scales from the small to large networks by effectively distributing directory data to multiple servers
- Automatically replicates data and supports replication to make the information system more resistant to failure
- Provides extensible schema, which enables application developers and administrators to extend the native directory schema set and implements new and customized directory objects as needed
- Integrates with Domain Name Server (DNS) and uses DNS lookup capability to locate the directory service information, for example, server hostname, service port, and protocol used

***Fine-grained Access Control***

- Ability to set Access Control Information (ACI) for a specific attribute
- Ability to allow/deny access to which subjects (using entryOwner) can define the ACIs

***Security Audit Support***

Support of Directory Audit service improves the security of directory server. System administrators use this log facility to examine any suspicious pattern of activity in an attempt to detect a security violation. With time stamp and BindDN recorded in the audit log, the violator can be easily traced and detected.

Audit plug-in support allows any application to receive the audit data and filter to incorporate with other audit information. This feature allows the directory audit data to be a part of the centralized audit facility where the enterprise application is based.

***Kerberos V5 Support***

Enhanced LDAP operation adds Kerberos V5 and additional authentication mechanisms along with existing Secure Socket Layer (SSL) V3-based authentication using x509v3 public key certificates. The Kerberos authentication option is used for not only user authentication but also used for the authentication option for Server replication. Kerberos-based authentication enables LDAP applications and AIX 5.1 users to participate in a single sign-on environment within the Kerberos realm. This enhancement will enforce network security by not transporting the password on the wire.

### 4A.4.0.5.2.7 Pitney Bowes Finalist

Finalist from Pitney Bowes is a CASS certified software solution that verifies, standardizes, and corrects address elements and appends postal codes. Finalist is easy-to-use software that helps messages reach recipients on schedule and with efficiency. Finalist prepares mailing addresses for automated handling through the United States Postal Service, allowing mailers to qualify for significant postal discounts. By providing high address quality, it reduces costly mailing failures such as delayed delivery and undeliverable-as-addressed mail.

As an industry-proven solution, Finalist integrates smoothly into existing mailing processes so users can quickly take advantage of the software's rich features and benefits.

Key features include:

- Minimizes "lost" mail - and customers - resulting from incorrect or improperly formatted addresses
- Verifies, standardizes and corrects address elements
- Assigns 5-digit ZIP, ZIP+4, carrier route codes and delivery-point barcode information
- Improves communications and responsiveness to recipients customers by increasing the quality of database information at the point of entry
- Allows on-line address verification and correction

### 4A.4.0.5.2.8 SeeBeyond e-Gate Integrator

The alliance has chosen SeeBeyond e-Gate Integrator to support the basic data transformation activities inherent in the transmission and receipt of data feeds to and from external interface systems. It is a key component of the CSE system EAI bus. E-Gate is the most robust business integration platform that simplifies connectivity and enables the dynamic, thoroughly dependable delivery of information across the extended enterprise, including customers, suppliers, and interface partners, with unmatched performance, flexibility, and speed of implementation. The open, distributed e-Gate architecture is optimized to provide extensibility, scalability, and high availability, while eliminating processing bottlenecks and single points of failure, as critical business data flows across the extended enterprise. Moreover, e-Gate provides an intuitive, graphical development and central management environment that enables rapid e-Business Integration deployment and ongoing ease of system administration.

Benefits of e-Gate Integrator:

- Provides secure, rapid, and once-only delivery of time-critical information to customers, partners, and within the enterprise
- Accelerates e-Business Intelligence deployment through a graphical development environment, common business process templates, and off-the-shelf front-office and back-office connectivity adapters
- Provides for support of current and future processing demands through a distributed and optimized integration architecture designed for rapid growth, high throughput, and data integrity

Key features:

- Messaging that provides high integrity of data transport between systems and companies
- Powerful graphical data transformation environment that generates integration logic based on standard programming languages, including Java, to speed development and deployment

- Open, distributed architecture that provides an extensible framework for integrating applications, systems, partners, and customers leveraging leading and legacy standards
- Component-based, off-the-shelf packaged connectivity solutions for major business applications, legacy systems, Web, and middleware environments
- Management and monitoring of the entire distributed environment from a central console

We have selected the e-Way Adapter for MQSeries to integrate the messaging functions of IBM MQSeries and e-Gate. e-Way Adapters provide specialized application connectivity and robust data processing such as business collaborations, transformation logic, and publish/subscription relationships. e-Way Adapters are multi-threaded to foster high performance distributed processing capabilities for deployment flexibility and load balancing.

### 4A.4.0.5.2.9 SeeBeyond e-Exchange Trading (Interface) Partner Manager

SeeBeyond e-Exchange Trading Partner Manager is another component of the CSE system EAI bus. Built on the e-Gate Integrator platform, e-Xchange Partner Manager is a Web-based interface partner management solution for automating and securely managing business partner relationships for real-time interaction between the enterprise and its partners and customers.

Key features:

- Helps to provide that sensitive information is kept private and unaltered, sees to it that business transactions are conducted with known and trusted parties, and provides a mechanism to prove the validity of these transactions
- Leverages existing IT investments and provides seamless integration with business partners as well as internal applications by leveraging the SeeBeyond e-Gate Integrator platform
- Enables reporting and analysis of the B2B relationships via Web-based message tracking, allowing authorized users to reconcile transactions, search for messages, and view errors

***Product Architecture***

Built on the e-Gate Integrator platform, e-Xchange delivers a comprehensive solution for interface partner management. E-Gate solves complex connectivity issues and enables the delivery of information across applications and systems to interface partners and customers with unmatched performance, flexibility, and speed of implementation. e-Xchange consists of three primary components that together provide the most flexible, robust B2B integration solution available:

*e-Xchange Partner Manager Environment* - Allows a business analyst to set up and manage interface partner profiles. This is available via a standard, client-server application or a Web-based interface, which facilitates faster interface partner profile setup by enabling interface partner self-service.

*e-Xchange Partner Repository* - Acts as a repository for interface partner profile information – such as contact information, B2B protocols, message types, and security – as well as message information, which enables transaction auditing and non-repudiation.

*e-Xchange Engine* - Contains the logic to envelop outbound transactions, validate inbound and outbound transactions, and automatically generate acknowledgments, negative acknowledgements, responses, and control messages. In environments with high transaction volume, the rules-based protocol engine may be distributed across the system architecture to share the processing workload.

### 4A.4.0.5.2.10 Tivoli Policy Director

Tivoli SecureWay Policy Director is a robust and secure policy management tool for e-business and distributed applications. It uniquely addresses the challenges of e-business security-escalating costs, growing complexity, and the inability to implement security policies across platforms.
Tivoli SecureWay Policy Director is designed to unite core security technologies around common security policies. This helps reduce implementation time and management complexity, thereby lowering the total cost of secure computing.

Tivoli SecureWay Policy Director includes:

- Access control for web applications, based on a consistent security policy
- Access control for TCP/IP and other applications, based on the same consistent security policy
- Management and Console Server
- Public Key Management Server
- Authorization Server and API for legacy and distributed application integration

Key features include:

- Authentication and access-control services for Web and legacy TCP/IP applications and resources
- Role-based policy management
- PKI enablement for existing Web-based applications
- Support for Java 2 and JAAS security and the AZN API from The Open Group

Advantages:

- Associates each user with one or more roles, based on each user's responsibilities
- Allows certificates to control access to existing non-PKI-based Web applications
- Reduces the necessity to write complex security code for applications needed to extend across the Web
- Provides consistent enforcement of security policy across Web and non-Web applications;
- Simplifies security administration
- Eliminates the need to modify existing Web-based applications to add PKI support
- Lowers costs for building in security and facilitating consistency across applications

A key component of Tivoli SecureWay Policy Directory is WebSEAL. WebSEAL provides a flexible authentication service; is integrated with an authentication mechanism through the Tivoli SecureWay Policy Director Cross-Domain Authentication Service (CDAS). Out of the box, WebSEAL authenticates users with a username and password passed over a secure SSL connection or using X.509 Version 3-style public key-based certificates. Tivoli SecureWay Policy Director integrates with a number of popular public key infrastructure (PKI) solutions. These include the Tivoli SecureWay Public Key Infrastructure and Entrust Public Key Infrastructure. Tivoli SecureWay Policy Director supports certificate signature and revocation checking. It also supports the mapping of public key credentials to access permissions.

When users are authenticated, Tivoli SecureWay Policy Director grants authorization credentials that include identity information, e.g., to which groups the users belong and with which roles they are associated.

### 4A.4.0.5.2.11 Wiley Technology Introscope

Highly complex and mission critical applications such as the CSE system require performance monitoring and problem determination tools. Introscope is the only Web Application Monitoring System that manages run-time Java Web applications from the inside and tells developers exactly how they are performing. Wily's Introscope is the only available solution managing the performance of production Java applications, the Java application server, and the connected database and transaction systems that support them.

Introscope allows developers and testers to automatically monitor any Java Web application with near-zero overhead. Using Wily's Diagnos Agent technology, Introscope is able to monitor performance from the top-level user experience down to the individual Java component to identify the exact EJB, servlet, method, or external connections to back-end systems that are causing the problem.

Introscope automatically monitors any Java application running on the top Web application servers. Monitoring just the Java byte code in the same way a Java Web application server runs it, Introscope is able to give clear visibility into fully-loaded production Java applications, the application servers, and the back-end support systems without the high overhead of using JVMPI, server APIs, or special coding APIs which must be maintained. Introscope is also integrated into IBM’s WebSphere Application Server using Wily's unique AutoProbe interface into their Java application platforms to make enterprise Java performance monitoring even easier.

Introscope's unique Performance Blame feature allows developers to view individual Java components and see exactly which one is causing the problem. Performance Blame not only pinpoints the problematic component inside the application, but it also identifies and blames any external source of performance problems.

Wiley’s PowerPack for IBM MQSeries is a plug-in module for Introscope that monitors the performance of MQSeries connections and messaging for any Java application. PowerPack for MQSeries enables faster problem isolation and higher availability of MQSeries-connected Java applications.

Designed specifically for the IBM MQSeries Connector, this PowerPack provides management of:

- MQSeries message queuing performance
- MQ Queue manager's interactions with application servers
- Performance of MQSeries-connected Java applications

PowerPack for IBM MQSeries provides unparalleled visibility into a Java application's interaction with the MQSeries. It monitors the performance of the put and get queue operations, the connection efficiency of MQSeries, as well as transaction throughput.

SQL Agent is an Introscope module that pinpoints the exact SQL statement causing performance problems in Java applications. SQL Agent enables quick problem resolution and higher availability of Java applications and the databases that support them. SQL Agent combines Introscope's ability to monitor production Java applications at the component level with database specific measurements to monitor the performance of individual SQL statements as well as provide detailed information about JDBC connections. SQL Agent allows management of:

- Individual SQL statements
- SQL and Java application server interactions
- Standard JDBC driver-connected application availability

In the same way that Introscope monitors Web applications, SQL Agent is non-intrusive, does not interfere with the application or the database and operates with near-zero performance overhead. In addition to measuring the correlation between the application server and the database, SQL Agent offers historic reporting for trend analysis and seamless integration with Introscope, making it easy for personnel to fine-tune and optimize the performance of their entire system.

## 4A.4.0.5.3 Data Management Software

### 4A.4.0.5.3.1 IBM DB2 Universal Database (UDB) Enterprise Edition

DB2 Universal Database Server is IBM's flagship relational database product supporting enterprise applications including OLTP and Business Intelligence. UDB Version 6 combines the power of PC and UNIX application development and query tools with the industrial strength, reliability, and performance of OS/390, while Version7 further improves performance, availability, and scalability for e-business and data warehouse applications.

With DB2 UDB, Version 7, the DCSS e-business and business intelligence applications can be synergized with the powerful, highly available environment provided by S/390 and OS/390. In DB2 UDB for OS/390, Version 7, the DB2 family is expanding the capability of the DB2 server by integrating warehouse management.

With ’bullet-proof’ reliability, DB2 Universal Database is setting the standard for quality and reliability in the client/server database industry. As more mission-critical applications are implemented on UNIX and Intel platforms, IBM’s ability to bring reliability to this environment has become a major factor in choosing DB2. Better reliability and

availability is exactly what the CCSAS project is calling for through scaling to large volumes of data both within and across platforms.

One of the key new application areas for Child Support Enforcement is e-business. The DB2 Universal Database is fully integrated with Web technology so that the CSE system data can be easily accessed from the Internet or from browsers on the screens of DCSS analysts and caseworkers.

#### 4A.4.0.5.3.2 IBM DataPropagator Relational

DataPropagator Relational is the DB2/UDB companion product that facilitates migration of data from the OLTP production database to the DB2 UDB EEE Data Warehouse. This provides the most current data for research for DCSS employees.

DataPropagator Relational automatically copies data within and between the OLTP production database and the Data Warehouse. This copy provides the CSE system users with automated, high-integrity copies of the relevant query data on a local basis. This local basis preserves response time for normal daily transaction processing of cases, while giving the user an opportunity to run highly complex query transactions at the local level.

DataPropagator Relational copying will normally transfer only the changes that have occurred since the last copy (update). DataPropagator Relational automatically chooses the appropriate algorithm for best transfer efficiency and performance. DataPropagator Relational captures the changes and then propagates them to the target tables at user-defined intervals.

The alliance will initially establish the Data Warehouse base parameters and then will work with DCSS over time to refine the data needs. DataPropagator Relational supports the unrestricted use of Structured Query Language (SQL) predicates and column functions in the definition of copy requests.

DataPropagator Relational provides an intuitive, graphical user interface for user changes. DataPropagator Relational maintains data security of source data, through registration of replication sources, while granting end users the ability to define their replication requests.

### 4A.4.0.5.4 Business Intelligence/Data Warehouse Software

#### 4A.4.0.5.4.1 IBM DB2 Universal Database (UDB) Extended Enterprise Edition

DB2 Universal Database (UDB) Enterprise-Extended Edition is the alliances Data Warehouse server solution. It is a version of the tried and trusted DB2 product family that is specifically targeted at symmetric parallel processing environments, such as the pSeries servers. Several factors make DB2 UDB EEE an outstanding data store for the ICARE requirements:

First, DB2 UDB EEE can handle the large amounts of data – in excess of multiple terabytes foreseen by the CSE system solution. UDB easily addresses these

requirements with its outstanding scalability including advanced parallel query and VLDB operations.

Secondly, DB2 UDB EEE has the most advanced query optimizer in the industry providing excellent query performance with a minimum of DBA time required for tuning. This is a significant factor in the ability of the alliance to support DCSS' Data Warehouse requirements.

***DB2 UDB EEE Features and Benefits***

Superior Scalability - DB2 Universal database runs on everything from laptops supporting mobile users to massively parallel systems with terabytes of data and/or thousands of users. It is the only database in the industry capable of scaling this breadth of systems with the same function. This allows reduced costs and enhanced personnel skills through the use of a single database for CSE system needs no matter what the scale.

DB2 UDB EEE has particular strengths in supporting business intelligence applications such as data warehousing and on-line analytical processing (OLAP) – which are key to the CSE system. DB2 leads the industry in parallel database technology and query optimization resulting in the proven ability to help customers find competitive advantage, better customer service or reduced costs by mining data for the knowledge required to make better decisions. Further, this does not require the additional expense of a specialized database, DB2 UDB EEE provides a single database that can be used across an enterprise for data management requirements from Data Warehouses, Data Marts to OLAP.

Advanced Parallel Processing - DB2 UDB EEE uses parallel processing to speed up both transaction processing and query processing- or mixed workloads involving both. It supports both parallel transactions and parallel query. It automatically executes multiple transactions (SQL statements) in parallel by dispatching them to the multiple nodes. UDB can also automatically execute a single query (SQL statement) in parallel by breaking the query into subtasks and dispatching each subtask to a different node. The key to efficient parallel processing across nodes is intelligent partitioning and parallel optimization. UDB will automatically spread (partition) the data across the nodes such that the optimizer will "know" where each row is located and will be able to dispatch the processing to the node where the data is located - minimizing the movement of data between nodes. This is known as a shared-nothing architecture and it is the best approach for enabling scalability across multiple nodes, particularly when very large databases of 100's of gigabytes or multiple terabytes are involved.

Efficient Large Database Operations – Scalability requires much more than performing transactions and queries faster using parallel processing or other high-performance features. It also requires that maintenance operations like data loading, backup and recovery, and indexing are scaleable such that large data volumes can be efficiently managed. To accomplish this DB2/UDB includes a high-speed LOAD utility that significantly increases the speed of doing data loads while enabling recoverability of the data being loaded. DB2/UDB performs loads, index creation, and backup and restore in parallel.

User-Defined Types (UDTs) - UDTs allow users to define new data types, which are represented in the database using built-in types. For example, a user can define two currency types CDOLLAR for Canadian Dollars and USDOLLAR for U.S. Dollars. These types are distinct in the sense that they should not be directly compared to one another or to the decimal type, although the decimal type might be chosen for the internal representation of both UDTs in the database. UDTs, like built-in types, can be used for columns of tables as well as parameters of functions, including User-Defined Functions (UDFs). For example, a user can define a data type such as ANGLE (which varies between 1 and 360) and a set of UDFs to act on it, such as SINE, COSINE, and TANGENT.

### 4A.4.0.5.4.2 IBM DB2 Warehouse Manager

The DB2 Warehouse Manager from IBM provides a full set of tools for building and using a data warehouse based on DB2. The Data Warehouse contains timely copies of the production databases which will be used for preparing statistical data, running “what if analysis” and various other types of ad hoc reports. The data is stored separately so that the “resource consuming” queries performed across the massive database will not impact the sensitive need to rapidly provide responses to daily end users in the performance of their mission.

Features of the DB2 Warehouse Manager include:

- Data Warehouse Center, with a graphical interface for defining and managing the warehouse
- Information Catalog, a common repository for metadata about the objects, for user understanding and access
- QMF (TM), QMF HPO, and QMF for Windows (TM), for ease of access and user administration
- Utility improvements for increased data availability
- The ability to change system parameters, without stopping DB2
- Star Join optimization for better performance of complex queries
- Index access for small tables
- Unicode support to store international data without character conversion
- Scrollable cursors for more flexible access to a result table
- Commit and Rollback from within stored procedure logic with the use of Commit and Rollback
- Sub select within an UPDATE statement
- UNION and UNION ALL within views and nested table definitions
- Row value expression comparison

### 4A.4.0.5.4.3 IBM DB2 OLAP Server

The IBM DB2 OLAP Server integrates the powerful online analytical processing (OLAP) engine and application programming interfaces of Hyperion Essbase, with IBM's DB2 family of relational databases.

DB2 OLAP Server features the same functional capabilities and interfaces as Hyperion Essbase, including multi-user read and write access, large-scale data capacity,

analytical calculations, flexible data navigation, and consistent and rapid response times in network-computing environments. DB2 OLAP Server is built on Hyperion Essbase Version 5.0.1, and shares with it powerful new functions to support enterprise OLAP implementations, including dynamic calculation, OLAP partitioning and replication, select and report-by attributes, time series, and linked reporting objects.

DB2 OLAP Server integrates powerful DB2 relational technology and offers a number of functional characteristics that augment and complement those it inherits from Hyperion Essbase. These include handling data in large volumes, managing data using standard tools and techniques familiar to any IT professional, and accessing data using both the widely adopted Essbase interface as well as industry standard SQL. These additional capabilities greatly enhance the ability of a business to manage its information and access it using whatever tools are standard and/or popular among its business professionals.

### 4A.4.0.5.4.4 IBM DB2 OLAP Server Analyzer

DB2 OLAP Server Analyzer delivers an intuitive, easy-to-use Web- and Windows-based interactive query and reporting analytical tool. It gives end users a highly colorful and graphic front end to deliver OLAP data to cover the Web access.

Key features:

- Accesses DB2 OLAP Server data and transforms it into business insights
- Supports drill through into relational data
- Provides graphical interface to end users and developers
- Supports a three-tiered architecture for scalability and sharing
- Facilitates the exchange of analysis and insights with others

The Analyzer leverages DB2 OLAP Server, while also providing drill-through reporting to relational data. A scalable mid-tier Analyzer Analysis Server and repository enable analyses to be centrally shared and managed.

Creating new analyses is as simple as dragging and dropping graphical controls such as a chart object onto graphical templates. Formatting options include point-and-click, color-coded, exception alerts, and calculated metrics. It uses an array of filtering options to further restrict analyses, transforming data into insightful information and making it easy to make better-informed decisions.

In addition, developers can extend DB2 OLAP Server Analyzer using the Analyzer API toolkit, which enables rapid assembly of custom Web-based business analysis applications using open, mainstream development tools, such as WebSphere Studio.

### 4A.4.0.5.4.5 Brio Intelligence

Brio Intelligence offers centralized, enterprise-class servers that deliver secure, reliable access to business critical information. In addition, Brio provides industry-leading ease-of-use analytic tools offered to address the varying needs of developers and end-users. The entire set of tools and servers is fully integrated with a common user interface, data standard and security model to facilitate fast deployment and adoption across the enterprise.

***Benefits:***

- **Ease of use**. Ease-of-use encourages fast user-adoption, improving interactive understanding of business-critical information across the entire company.
- **Business performance focused**. Provides an interactive, dynamic intelligence solution for different classes of users, from simple to complex, including content viewers, analysts and developers.
- **Enterprise-class scalability**. Integrates with and leverages almost any existing information source to establish a scalable, standards-based environment for developing business intelligence solutions.
- **Secure**. Provides safe exchange of business information through the ability to secure content to different users across the enterprise.
- **Rapid deployment**. Administers easily for fast deployment and lower cost of support.

**Features:**

- Use existing metadata. Requires no additional semantic layer; Open Metadata Interpreter directly reads existing metadata.
- Push and pull servers. Combines "push" and "pull" server technology for automatic query processing and report distribution, zero administration and dynamic query over the Web.
- Scalable, reliable architecture. Provides scalable architecture with load balancing and fail-over support across server clusters.
- Integrated. Business Intelligence application development, query, and Online Analytical Processing (OLAP) functionality, integrated into a single product.
- Custom data models. Enables administrators to create master data models.
- Flexible, graphical development environment. Enables developers to build dynamic, customized analytic applications and EIS pages.
- Consistent content. Provides automatic database synchronization to distribute repository changes to users without requiring IT intervention.
- Monitor application performance. Includes built-in usage auditing that enables evaluation of user activity and queries to optimize analysis performance.
- User and database security. Enables users to have reliable and secure access to Server with database repository and user-level security.
- Comparative analysis. Incorporates information from multiple data sources into one document for side-by-side, relational analysis.
- Flexible analysis. Supports both pre-defined and "drill anywhere" paths.

***Brio Insight***

- Brio Insight empowers users with a web-enabled interface that delivers real-time, interactive information
- Delivers query, analysis and reporting functionality within a Web browser for intranet, Internet, or extranet access to information delivered by OnDemand Server
- Adapts content in six stages from full query, analysis, and reporting to static report viewing based on user profiles and report-level security

***Brio Designer***

- Delivers query, analysis, reporting, EIS capabilities and centralized solution administration for developers, DBAs and system administrators
- Enables advanced drill-anywhere ad-hoc and analytic capabilities
- Allows users to build queries, data models, custom charts, reports and EIS pages
- Provides administrative tool to Brio servers

***Brio Quickview***

- Brio Quickview delivers simplified views of the information for end users
- Designed for users to view published, Brio Intelligence formatted reports within their browsers
- Allows users to view and refresh analyses created by the Brio tools
- Offers the fastest, easiest way to access real-time reports, charts and EIS pages for the entire enterprise

## 4A.4.0.5.5 Systems Management Software

The alliance will leverage IBM's existing Tivoli tool suite in order to provide a commercially reasonable Enterprise Systems Management (ESM) solution (including Help Desk) for the State during the time that the alliance is managing the environment. Included in this current tool suite are Commercial-Off-The-Shelf (COTS) tools and system management tools that are proprietary to IBM. Using these tools helps the alliance control the cost of providing ESM. By the time that the application and support environment are prepared for handover to the State, the current tool suite will have been sunset, replaced by the ever-evolving capabilities of new ESM products. At that time, the alliance will provide the State with a Commercial-Off-The-Shelf (COTS) solution, including training of State support personnel in operating this tool suite. This COTS solution will be tailored to support the State's application and support environment. The systems management software components below describe some of the COTS software currently in use.

### 4A.4.0.5.5.1 Symantec’s Intruder Alert

The Host Intrusion Detection Service (HIDS) continuously monitors the actions of users and applications, detecting unauthorized activity using Symantec's Intruder Alert. Events from the HIDS are monitored 24x7x365 using REDI - Realtime Event Distribution Infrastructure (allows monitoring of events from multiple IDSs):

- The definition of an event is that the Intrusion Detection system has detected unauthorized activity on the host being monitored.
- Daily event reports for the pervious Greenwich Mean Time (GMT) day will be delivered by noon Eastern Time each business day. This report will contain analysis and suggested IDS configuration changes. (For example: A host on the network creates false positives -- that event can be ignored by the IDS for that particular host.)
- Graphical report (Monthly summary) with analysis provided directly to the State within 10 business days following the end of the month.

- Following a high level event or numerous medium level events we will begin the State notification, if these events are an immediate threat to the system.

The Host Intrusion Detection Service consists of intrusion monitoring and reporting 24 hours a day, seven days a week, 52 weeks a year. An "Event" is logged when the Intrusion Detection Sensor has detected some unauthorized activity on a host that it is monitoring. The State will be notified following events that pose an immediate threat, according to the agreed upon notification process.

In the event an actual intrusion occurs, is critical in nature, and requires immediate action for resolution and recovery to normal operations, the State can initiate a Customer Declared Incident. See the Incident Management Service for additional information.

### 4A.4.0.5.5.2 Tivoli Distributed Monitoring

Tivoli Distributed Monitoring provides an efficient, reliable, automated way to facilitate user access to mission-critical distributed applications and computing resources. Designed specifically for distributed computing, Tivoli Distributed Monitoring offers a consistent, easy and centralized way to group and monitor key computing resources. It allows centralized information technology staff to set or change monitoring parameters for hundreds of related, remote systems with a single operation. Tivoli's distributed availability solution provides:

- Automatic configuration and deployment of policy-based resource monitors and actions
- Automatic problem detection through distributed monitoring
- Automatic preventive and corrective actions
- Thousands of predefined monitors and responses available out of the box to monitor and control key computing resources
- Real-time reporting

#### *4A.4.0.5.5.2.1 Tivoli Enterprise Console*

The Tivoli Enterprise Console (TEC) provides a centralized point of control that keeps IT staff in close and efficient control of events happening across systems—a "mission control" center for your entire distributed environment. The TEC processes and responds to the thousands of events and alarms that occur daily from network devices, hardware systems, relational database management systems and Tivoli partner and customer applications. The Tivoli Enterprise Console has four primary features that distinguish it from other products:

- Comprehensive event integration
- Powerful event processing and correlation
- Secure, automated event response and notification
- Configurable event console and event repository

#### *4A.4.0.5.5.2.2 Tivoli Inventory*

Tivoli Inventory offers enterprise class inventory management. Tivoli Inventory automatically scans for and collects hardware and software configuration information from computer systems in the customer's enterprise. Tivoli Inventory is tightly integrated

with Tivoli Software Distribution. At the same time Tivoli Inventory is a powerful tool for empowering help desk support technicians, and can dramatically reduce the costs of customer asset management efforts.

Only Tivoli Inventory has the following capabilities that combine to make it the only true enterprise class inventory management application:

- Cross-Platform scanning for assessing the heterogeneous enterprise
- TIVScan distributed scanning technology to capture complete configuration information
- Relational Database Interface Module (RIM) and Framework Query
- WAN-Smart data collection to conserve precious network bandwidth, and enhance scalability

### *4A.4.0.5.5.2.3 Tivoli Management Framework*

Today's network computing enterprise requires an open, scalable, cross-platform approach that is also truly integrated. The Tivoli Management Framework is the foundation for a suite of management applications that are making systems and network management easy.

The Tivoli Management Framework makes it possible to:

- Shield administrators from platform-specific details of day-to-day operations. Common operations such as deploying applications, and routine network maintenance can be performed with a single action; administrators are no longer required to repeat the same operation for each platform on your enterprise.
- Deploy applications to literally thousands of machines with one operation, all the while helping to provide that the applications remain available.
- Integrate with third-party applications, because the Tivoli Management Framework is an open solution. Tivoli provides many of these third-party solutions to your enterprise management challenges; challenges such as job scheduling, intrusion detection, and backup and restore, all of which snap-in to the Tivoli Management Framework.
- By providing a truly open and comprehensive foundation for network computing management, the Tivoli Management Framework simplifies today's most complex network computing challenges.

### *4A.4.0.5.5.2.4 Tivoli Storage Manager*

Tivoli Storage Manager is the automated software that will backup up the data on the eBHC servers and the LCSA Document Image servers. The enterprise management capabilities of Tivoli are now extended to include comprehensive central management of multiple TSM servers in the LCSA locations, as well as lights-out server automation, and remote help desk support.

Tivoli Storage Manager utilizes high performance patented technologies to protect and manage mission-critical business information in an enterprise-wide Storage Area Network (SAN) and traditional network environment.

Key features:

- Centralized Storage Management
- Automated network incremental and sub-file backup, archive, and retrieval
- Space management file migration
- High-speed, policy-based disaster recovery
- Rapid recovery
- Tape pooling
- Backs up only new and changed files after the initial full backup. Enables the one-step recovery of files
- Restores a file system to a previous point in time
- Performs centralized backups and high-speed LAN-free restores
- Enables movement of data across SAN(backup/restore, archive/retrieve, and migrate/recall)
- Enables LAN-free data movement (backup/restore, archive/retrieve, and migrate/recall) for advanced SAN functionality

## 4A.4.0.5.6 Call Center Software

The alliance proposed the Call Center solution described in this section. The alliance and State have agreed during contract negotiations that the requirements and scope for the Customer Service solution are not sufficiently well-defined to permit a full, pre-defined solution. Accordingly, the Customer Service Support Center Assessment (CDL TM 072) shall be used as the basis for the eventual Customer Service solution. That solution shall then be developed by the alliance using a level-of-effort approach that shall utilize the portion of the contract budget originally allocated to the Customer Service solution.

**The remainder of this section is left in place as representative of the originally proposed alliance solution.**

The alliance CSE system supports the call center functions of the Customer Service Support Center (CSSC) by leveraging a suite of leading-edge products designed to answer CSE program requirements. Those products are described in the following subsections.

### 4A.4.0.5.6.1 Siebel Call Center v7

Siebel Call Center v7 provides a robust environment that supports customer interaction from multiple access channels and integration of data from the CSE system application.

The Siebel Call Center 7 solution provides agents with a unified, multi-channel desktop view that consolidates customer interactions, allowing them to easily access the critical information needed to manage customer requests. Siebel Call Center 7 also provides real-time analytic and reporting capabilities to support informed strategic and operational decisions. In addition, Siebel Call Center 7 provides full support for best practices and offers tools to help agents improve customer satisfaction.

Siebel Call Center 7 utilizes a zero-install Web client to deliver interactive functionality while minimizing total cost of ownership. The application leverages the Siebel Smart Web Architecture, which extends the capabilities of Web browsers to deliver high levels of interactivity, while eliminating IT costs to install and administer client software.

Siebel Call Center 7 supports real-time needs such as intelligent screen pops, broadcast messaging, and instant access to complex customer information. By delivering the application through commonly used Web browsers, training costs are reduced, enabling new agents to become productive team members more quickly.

### 4A.4.0.5.6.2 Siebel SmartScript

Siebel SmartScript is a robust, workflow-based, dynamically generated user interface that will assist the CSSC agent in asking the right question to the right customer at the right time. Based on the active question within the script, SmartScript guides the agent through a decision tree and selectively displays questions to be asked. Multiple script questions can be simultaneously displayed on a single screen to improve usability. By providing agents with a complete script tailored to the customer's needs, businesses realize a higher quality of calls, prevent data-entry errors, and reduce training times.

Siebel SmartScript Designer provides for the management of CSSC scripts using an intuitive graphical user interface. This is achieved by providing a visual tool for creating and viewing the call script flow.

### 4A.4.0.5.6.3 CTI Channel Manager from Genesys

The Computer-to-Telephony Integration (CTI) bridge that supports coordinated voice and data interaction between the CSE call center application and the PBX telephone switch.

### 4A.4.0.5.6.4 Nice

A Quality Assurance facility, Nice allows for call center management staff to oversee actual interactions between CSE customers and call center agents. It provides real-time monitoring capabilities to management staff who will be able to hear the conversation between the call taker and the caller.

### 4A.4.0.5.6.5 Blue Pumpkin

Blue Pumpkin Software is a suite of applications that provides the ability to manage agent resources in the CSSC. It is designed to optimize the forecasting and scheduling of agents in customer call centers, to help provide that the right number of agents are scheduled to be available to serve customers at the right time for the right cost.

### 4A.4.0.5.6.6 WebSphere Voice Server for AIX with DirectTalk Technology

This product set will be used to support the Interactive Voice Response (IVR) aspects of the CSSC. These products allow for the development of scripted IVR actions within the native Java development environment that is used for the rest of the CSE system solution. Using Direct Talk Java Beans, the developer can programmatically define the voice-based interactions with users of the IVR facility.

IBM DirectTalk is a versatile, powerful voice processing system. It allows callers to have direct access to the services and information they need, 24 hours a day, 7 days a week. DirectTalk allows customer support centers to answer and screen a large number of IVR calls simultaneously and promptly, reducing caller wait time and improving customer satisfaction.

DirectTalk provides two-way speech capability once the desired information has been located, DirectTalk can audibly speak it to the caller using DirectTalk's advanced text-to-speech capability. This eliminates the need for pre-recorded, "canned" messages, and offers the flexibility of providing an endless variety of dynamic, real-time information on demand.

## 4A.4.0.5.7 Document Management Software

### 4A.4.0.5.7.1 IBM Content Manager

IBM Content Manager is a content and object management system. Content can be pieces of business information such as scanned images, word processing documents, rich media, spreadsheets or Web content. These business objects are cataloged in the Content Manager library server, providing a common repository of indexes for easy search and retrieval. The objects themselves are stored in Content Manager object servers. With appropriate user security, any object located anywhere on the network can be retrieved and presented to the user.
OnDemand enables the automatic capture, indexing, archival, retrieval, presentation and output of large volumes of computer-generated documents and other related business information. The IBM Content Manager products are intended to reduce substantial amounts of paper typically kept in a social services environment. It provides for continually available online reports to users, and eliminates the need to keep voluminous reports in cabinets just in case.

IBM Content Manager solutions combine high performance online capture, storage and retrieval systems for computer-generated output with leading document management and Internet technologies. This makes the documents available to the LCSAs anywhere, and provides a WYSIWYG look and feel at the terminal. Therefore, both a real printed document and online document will look identical, making information assimilation much easier.

***Presentation***
The client displays many different content types, including image documents and more than 150 common office document formats (WordPerfect, Word, Lotus 123 and others). Authorized users can annotate images with a wide range of markups, such as highlighting, "type on" text, post-it notes, circles, squares, lines, arrows or easily customized stamps. Free-form text comments can also be added to a note log, which is associated with each document and folder.

***Viewing***
The user has two approaches for viewing objects:

- Retrieving and displaying objects in the Content Manager client
- Launching native applications for access to the additional functionality of the native application. For example, with a word processing document, the word processor can

be launched automatically, display the document and allow the user to edit and then re-store the document.

***Searching***
The basic search capability allows users to query the system and retrieve documents and folders (Example: enter an account number and retrieve the customer folder.) Many search attributes can be identified at the document level and at the folder level. An advanced search capability allows simple creation of complex queries, which can be saved as templates for future re-use. (Example: find the photographs for John Smith in a certain date range). Advanced searches help provide that users can use the power of electronic searches to find the most relevant information to their queries. An automatic capability to convert dynamic SQL to static SQL queries provides for faster response with less system overhead.

***Folder Management***
Documents can be placed into folders and folders can be placed into other folders. Documents and folders can reside in one or more folders. Each folder can have its own indexing, and users can search for documents or folders or both in a single search. The value of this multi-level (data) model is that it provides users with capabilities similar to paper documents and folders they may have.

### 4A.4.0.5.7.2 IBM Infoprint Manager

IBM Infoprint Manager for AIX is a comprehensive software solution for managing digital printing. Infoprint Manager accepts the outputs from IBM's Print Support Facility (PSF) and facilitates the printing to any of the printers in the CSE system network. In addition, Infoprint Manager manages print queues for local print so that it can share printers on the LAN. It can also capture and store printed output back at the host site.

Combining superior print technology with built-in Advanced Function Presentation (AFP) and Adobe PostScript support, Infoprint Manager delivers production-volume, single-copy integrity with PostScript quality. Infoprint Manager simplifies the print process and reduces operating expenses--whether printing books on a high speed printer or managing the printing for a distributed enterprise, it offers a complete system that meets the CCSAS CSE project's diverse printing needs, now and in the future.

Key features include:

- Secure, scalable enterprise printing support
- Reliability for mission critical applications such as the CSE system
- Manage, print, store and reprint to printer, fax machines and more
- Multiple printer support (up to 1000+ pages per minute)
- Provides secure scalable enterprise printing support
- Interoperates fully with Infoprint Manager for Windows 2000
- Includes improved job notification and accounting for non-AFP printers
- Supports grayscale scanning to enhance image quality
- Provides improved support for color production printers, including multiple off-line RIP
- Includes simplified administrator's Java interface

- Supports PDF 1.3 documents

### 4A.4.0.5.7.3 Kofax Ascent Capture

Ascent Capture is a production-level document capture application for Windows that integrates high performance scanning, image processing, optical character recognition (OCR), document indexing and release of images to storage. Ascent Capture provides an out-of the box solution fully integrated for the IBM Content Manager family.

The key to Ascent Capture is its powerful batch manager and administration module. This module determines that the document is scanned and indexed the same way. Administrators set up the System by clicking on options and filling in blanks in Ascent Capture's graphical user interface.
Ascent Capture's scan module supports a wide range of production scanners, including high-end video and SCSI interface models supported by Kofax accelerators and ISIS drivers.

Key features:

- Ascent Capture supports both single- and dual-sided scanning at the full rated speed of the scanner
- Ascent Capture includes image processing, bar-code reading, and optical character recognition (OCR)
- Ascent Capture provides the administrator with a set of point-and-click image processing tools which provide the best possible OCR results
- Ascent Capture also includes the industry's first edge enhancement engine, which can reduce OCR errors by 25-50%
- Ascent Capture has a manual key entry process designed for fast heads-down index data entry
- The index module displays the scanned image, and presents the data entry operator with an elegant, simple data entry window. The operator never has to touch a mouse—a proven time-waster during data entry. Validation of field length and data types are set up through simple point-and-click choices.
- The System's integrated Quality Assurance (QA)/Rescan process simplifies repairs. Ascent Capture is even smart enough to know that corrected documents need to be image processed and run through OCR again, while ignoring documents that were not repaired.

A document capture component system is only as good as its connection to the business applications. Ascent Capture includes a sophisticated release module that takes image files and index data and writes them to the IBM Content Manager family. There is a custom release module making the most of the flexibility and power of the IBM software.

### 4A.4.0.5.7.4 Accelio Present Central Pro

The key to the CSE system forms management services component is Accelio Present Central Pro. Accelio Present allows organizations to create personalized, customer-facing documents from any data source. The XML-based solution dynamically generates

electronic documents such as purchase orders, invoices, statements and checks for delivery to customers via the Web, e-mail, fax, print or a mobile device.

Data from the OLTP system or legacy applications is merged with an electronic document template using a powerful processing engine. Central Pro supports many aspects of document output from high volume distributed printing to Web presentment and offers multiple language and platform support.

Key features:

- Creates professional output with an easy-to-use WYSIWYG tool
- Provides extensive document processing capabilities including graphics, bar codes, logos, rotated text
- Enables designers to create intelligent documents, personalized for end users
- Generates dynamic output that grows or shrinks as necessary to accommodate the amount of data
- Supports multiple platforms, including Windows NT, HP-UX, Sun Solaris, OS/400, Linux and others
- Supports a wide variety of input formats, including XML, plain text, legacy and DAT
- Supports printer features such as duplexing, tray selection, flash RAM, hard disks
- Reduces network traffic because Accelio data stream contains data elements only
- Provides faster print drivers than operating system print drivers
- Supports multiple languages and currencies
- Supports fax and e-mail delivery of documents
- Performs data stream calculations

### 4A.4.0.5.7.5 Accelio Capture ReachForm

Accelio Capture ReachForm is an intelligent data capture solution that enables governments and corporations to post their forms on the Web. It is unique in its ability to create and publish Web-based forms for delivery to any browser running on any device - from PCs to handhelds and wireless devices - without downloads or plug-ins.

By using ReachForm to collect and validate information online, organizations can replace their paper forms with thin-client, Web-based electronic forms. ReachForm can verify the data's accuracy, validate and calculate it, send a confirmation and submit the data to be saved to any database.

ReachForm incorporates three main components: the form designer, the form previewer, and the form server. Accelio Capture Designer, a point-and-click graphical (WYSIWYG) design application for creating intelligent XML templates, provides users with a simple way to create and maintain electronic forms without involving third-party tools. The form previewer enables designers to see in real time how their forms will appear in different browsers. Designers simply select the desired preview format and the form appears immediately as it would in the selected browser. The form server takes a single template created with the form designer and delivers it in any browser. Templates are designed once and then deployed to any number of users.

Key features:

- Create electronic forms quickly and easily from scratch with Designer, or by taking advantage of the many included sample forms and Web applications
- Convert a single form template to various versions of HTML and Java for easy public access regardless of browser type
- Convert form template plus data into PDF to create documents of record
- Simplify forms management through use of templates
- Eliminate the need for downloads or plug-ins
- Extend existing systems with seamless application integration
- Increase productivity through centralized Web deployment
- Execute calculations and validations on the server to support older browsers

Accelio Capture Designer is a point-and-click graphical (WYSIWYG) application for creating intelligent XML templates, providing designers with a simple way to develop and maintain sophisticated intelligent data capture solutions without involving third-party tools.

Designer Highlights:

- The rich static-text object provides form designers with the ability to add a wide range of formatting features such as font style, size, position and color, as well as borders, margins and text rotation
- The rich text field object provides a variety of formatting features for text entry fields. End users can also modify text and paragraph formatting options when filling forms
- The masked text field object allows designers to define the expected input format and valid characters for a field. For example, a masked text field can standardize the appearance of a telephone number, requiring that the user can only enter numeric data
- The date/time object displays a date and/or time on a form
- Password protection for form templates allows form designers to be sure that their templates cannot be opened or modified by an unauthorized person
- Active scripting extends the capabilities of the form and allows for the creation of richer forms
- Technology-Assisted Learning helps designers get up and running with the application in the shortest time possible

## 4A.4.0.5.8 Development Software

### 4A.4.0.5.8.2 Rational Rose Professional J Edition

Rational Rose Professional J is the industry leading model-driven development tool based on the Unified Modeling Language (UML), the standard notation for software architecture. Java architects can use Rose to capture requirements, create detailed designs, and seed the developers with initial Java code directly from their model. Developers can continue to work from the UML model, making additions and changes that they can immediately generate out to their code. Or they can work directly with the

code and reverse-engineer their changes back to the model, seamlessly and automatically.

Individuals operate in private workspaces that contain a personal view of the entire model, with the ability to modify your own piece of the model until it is ready to be shared. Rational Rose Professional J Edition will enable users to develop individually, communicate collaboratively and deliver better software.

Rational Rose Professional J was specifically designed for Java development and supports forward/reverse (round-trip) engineering capabilities in the both J2SE and J2EE platforms. This controlled, iterative style of development lets projects begin with a set of known requirements, then evolve as project parameters change or new requirements are added. Rational Rose supports this dynamic change management process with forward engineering, reverse engineering, and model updating features, allowing users to alter their implementation, assess changes, and automatically incorporate them into their design. Users can quickly design and generate UML models and Java source code for Enterprise JavaBeans and Servlets, including their necessary XML deployment descriptors. Users can also reverse engineer existing J2EE components to visualize their design - with or without the original Java source code - allowing developers more time to build features and less time rewriting code.

Rational Rose Professional J Edition has automatic synchronization capabilities, allowing any changes to be made to the code or model to be posted in real time, keeping team members up-to-date. Synchronization must also be a flexible, controllable process; without the ability to turn synchronization on and off, mistakes or unscheduled changes made to the model or code are permanent. Rational Rose is also the only Java solution that offers a controllable round-trip development capability - change the code, the model or both, and easily re-synchronize them at any time.

### 4A.4.0.5.8.3 Rational Rose Modeler Edition

Rational Rose Modeler allows software development team members to build better software faster from the beginning. Rational Rose Modeler allows team members to keep a handle on changing requirements, keep track of each development iteration, keep up with the different technologies being used in the project, and keep everyone on the same level of communication.

By unifying the entire team through visual modeling based on the Unified Modeling Language (UML), the standard language for Analysis and Design of software systems, Rose Modeler enables the team to have better communication, shorter development time, more easily understood systems, and a better overview of the complex software structures within the CSE system. Rational is acknowledged as the technology leader for its role in the development of the UML and is the industry leader for UML model-driven development.

Rose Modeler and UML brings together analysts, architects and developers using only one tool and one language, even if they are using different Professional versions of Rose. Models created with Rose Modeler are the perfect starting points for developers and engineers to understand the complete project scope, reverse-engineer existing code into models, and analyze/recommend system enhancements and interactions.

### 4A.4.0.5.8.4 Computer Associates ERwin

Computer Associates ERwin is an industry-leading data modeling solution that creates and maintains databases, data warehouses, and enterprise data resource models. ERwin models visualize data structures in a manner that assists designers in organizing, managing, and even mitigating the complexities of data, database technologies, and the deployment environment.

From a logical model of the information requirements and business rules that define the database, to a physical model optimized for the specific characteristics of the target database, ERwin lets designers visualize the proper structure, key elements, and optimized design of the database. Erwin automatically generates tables and thousands of lines of stored procedure and trigger code for the database. Its “complete-compare” technology allows iterative development so the model is always synchronized with the database.

Key features:

- Transactional and data warehouse database design, generation and maintenance
- logical and physical database design
- enterprise modeling
- dimensional modeling
- IDEF1x modeling
- information engineering modeling

### 4A.4.0.5.8.5 Computer Associates ERwin Examiner

ERwin Examiner is a database validation tool that raises the level of data quality in transactional and data warehouse systems by systematically scanning ERwin models or thousands of lines of SQL/DDL code to identify design inconsistencies. ERwin Examiner helps database designers address a number of critical IT management issues, including the need to rapidly design and deploy database systems with limited skilled personnel, integrate and maintain database systems with ease over their lifetime, and maintain the highest levels of data integrity across database systems.

ERwin Examiner examines data models to identify inconsistencies that adversely affect database integrity and efficiency. By providing a comprehensive set of diagnostics, ERwin Examiner validates the database design, recommends improvements and automatically generates alter scripts to quickly execute design changes. Detailed diagnostic reports illustrate structural inconsistencies in a conveniently organized format. ERwin Examiner fine-tunes the database design to provide a solid foundation for applications and data warehouse implementations.

### 4A.4.0.5.8.6 eHelp RoboHELP Office Standard Edition

RoboHELP from eHelp Software will allow the alliance to create industry-standard Help formats for the CSE system. RoboHELP comes with RoboOffice that will guide the developers through the entire process of creating professional online help and information systems for the Windows platforms, printed documentation, WebHelp, web sites, Windows CE, as well as the Microsoft HTML Help for Windows XP and intranets. Key features:

- RoboHelp Office lets anyone create full-featured Help in no time with point-and-click ease.
  Use FrameMaker files, Word documents, HTML documents or existing Help project information. RoboHelp automatically splits information into Help topics and preserves the TOC, Index and Glossary.
- Create Help in various Help formats - WebHelp, Microsoft HTML Help, WinHelp and JavaHelp format from a single set of source code
- Develop Help formats with unique editing flexibility (any HTML editor, our integrated WYSIWYG HTML editor or Microsoft Word)
- Provide complete, easy-to-access information that improves the usability of applications
- Author in 11 different languages including; English, Danish, Dutch, French, German, Italian, Norwegian, Portuguese, Spanish, Swedish or Brazilian Portuguese. RoboHelp Asian Editions also available.

### 4A.4.0.5.8.7 Merant PVCS Version Manager

PVCS Version Manager is the industry standard for version control. Intelligent, easy-to-use conflict resolution and version management features help teams implement changes faster and with fewer errors, from any platform, across the enterprise.

PVCS Version Manager organizes, manages and protects software assets, supporting effective software configuration management (SCM). The intuitive, graphical user interface, based on Windows Explorer concepts, is easy to use, and encourages team members to apply SCM practices consistently and effectively. Application quality is improved as Version Manager automates common tasks, enables safe code reuse and protects against lost changes, overwrites and content errors.

- PVCS Version Manager provides a structured and efficient approach to team development that lets them organize, control and document software changes through multiple revisions
- PVCS Version Manager helps teams automate common team tasks, trace changes and support parallel development. Promotion groups enable teams to control software as it becomes ready for the next stage of development.
- With PVCS Version Manager, teams can inventory and securely archive project code, objects, Web content and documentation. User access is controlled and tracked through the stages of development with a complete audit trail.
- PVCS Version Manager automates project organization and workflow to make team development faster, easier and more accurate. It scales across any size team, and supports a wide variety of platforms and development environments. Software assets are reliably protected through multiple revisions, including complex parallel and concurrent development projects.
- Eliminates errors by documenting changes and managing access to code
- Prevents code overwrites and lost changes
- Encourages increased code reuse with a structured, efficient, protected development infrastructure
- Nested security model allows multiple access control databases

- Organizes and references components graphically with a flexible, project-oriented approach
- Visual differencing lets users graphically view file differences in side-by-side comparisons including n-way comparison and merge
- Branch and merge as needed, with automatic alerts of any conflicts
- Nested, hierarchical project structure supports multiple databases and unlimited subprojects
- Filter facility provides customized views of project and file content windows
- Customizable help system based in HTML aids developers during SCM deployment

### 4A.4.0.5.8.8 IBM WebSphere Studio Application Developer

The alliance has chosen the IBM WebSphere Studio Application Developer as the primary development tool suite for the CCSAS CSE project. WebSphere Studio Application Developer for Windows, V4.0 (Application Developer) provides an advanced development environment for J2EE application development.

Application Developer offers the following key functions:

- An advanced development environment for J2EE application development that meets J2SE and J2EE specifications and EJB development and deployment and supports visual layout of dynamic pages, full HTML, JavaScript, and DHTML
- A powerful Java development environment that includes support for JDK 1.3, a configurable runtime, incremental compilation, scrapbook, dynamic debugging, and Java text editor
- Tools to create, build, deploy, test, discover, and publish Web service-enabled applications, including support for UDDI, SOAP, and WSDL
- A Relational Schema Center (RSC) focused on relational database design and database administration tasks, such as import and mapping schemas and other advanced functions
- Application Performance Profiling and trace code to identify, isolate, and fix code
- An integrated roles-based team environment that allows for flexible source control management, pluggable repositories, as well as adapters for Concurrent Versioning System (CVS)
- A comprehensive visual XML development environment, including components for building DTDs, XML Schemas, XML files, and XSL style sheets
- Built-in WebSphere testing environment

***Comprehensive Java Development Environment***

Application Developer provides an advanced Java development environment with the following capabilities:

- JDK 1.3 support
- Pluggable run-time support for JDK switching and targeting multiple run-time environments from IBM and other vendors
- Incremental compilation (with some restrictions until JDK 1.4)
- Dynamic debugging and hot-linking (will be supported with JDK 1.4)

- Common debugger for both local and remote debugging
- Dynamic UI creation and deployment
- Ability to run code with errors in methods
- Crash protection and auto-recovery
- Error reporting and correction
- Java text editor with full syntax highlighting and complete content assist
- Refactoring tools for reorganizing Java applications
- Intelligent search, compare, and merge tools for Java source files
- Scrapbook for evaluating code snippets

***EJB Support***

Application Developer features full EJB 1.1 support, WAR/EAR deployment support, an updated EJB test client, and an enhanced unit testing environment for J2EE. Developers can create multiple projects with different unit test configurations and share the instances with other developers. Entity beans can be mapped to databases, and EJBs can be generated that tie into transaction processing systems. XML provides an extended format for deployment descriptors within EJB.

Application Developer provides the following leading-edge EJB development tools:

- Tools for import/export, creation and code generation, editing, and support for standard deployment descriptors and extensions and bindings specific to WebSphere Application Server
- EJB-to-RDB mapping that provides the model, run-time environment and interface for editing the mapping between EJBs and relational database tables with top-down and bottom-up capability
- The mappers support associations, inheritance, and converters and composers as helpers on column maps
- A Query Engine that supports deployed code by generating SQL strings to be generated into persister classes
- Tools that provide the ability to create, edit, and validate Enterprise Application Archives (EAR files)
- Editors for deployment descriptors (ejb-jar.xml and application.xml)

***Accessibility by People with Disabilities***

- Provides keyboard equivalents for most actions
- Does not interfere with keyboard accessibility features built into the operating system
- Provides semantic information about user interface objects
- Associates labels with controls, objects, icons and images
- Provides text through standard system function calls or through an API (application programming interface) which supports interaction with assistive technology
- Uses color as an enhancement, not as the only way to convey information or indicate an action

- Supports system settings for high contrast for user interface controls and client area content
- Inherits system settings for size and color for user interface controls

### 4A.4.0.5.8.9 Sitrika Jprobe Suite

The premier performance tuning suite for Java, JProbe Suite provides advanced and highly flexible Java application tuning whether running in a local or remote environment. JProbe Suite provides powerful performance profiling, memory debugging, code coverage and thread analysis capabilities in one conveniently integrated suite, designed specifically for Java developers.

JProbe shows developers precisely what's causing problems and where, right down to the offending line of source code. JProbe products paint an intuitive, graphical picture of everything from memory usage to calling relationships, helping developers navigate their way to the root of the problem quickly and easily.

JProbe Suite includes:
**JProbe Profiler** - JProbe Profiler combines a visual call graph interface and unique data collection technology to provide highly accurate performance diagnostics, with line-by-line precision, at lightning speed.

**JProbe Memory Debugger** - Integrated with JProbe Profiler, JProbe's powerful Memory Debugger helps eliminate loitering objects and reduce the memory used by Java applications. Visualize memory usage in real time with the intuitive Instance Detail View.

**JProbe Threadalyzer** - JProbe Threadalyzer detects deadlocks, stalls and race conditions. Threads allow an application to perform multiple tasks simultaneously. They are essential to building high-performance, scalable applications, and are especially critical in server-side Java development. Multi-threaded applications have pitfalls that can stop business applications without warning. JProbe Threadalyzer detects thread problems that can threaten application performance.

**JProbe Coverage** - Locate and measure untested Java code. To execute accurate test runs on Java applications, developers need to know how much of the code has been tested, and where to find any untested code. JProbe Coverage helps developers locate untested code, and measure precisely how much code has been exercised. The result is a higher quality application in a shorter period of time.

### 4A.4.0.5.8.10 Parasoft Jtest

Jtest is an integrated, easy-to-use, automatic unit testing tool for Java. It increases code stability, prevents software errors, and automates unit-testing techniques including fully automating black box (functionality) testing. Jtest automates this process by reading the specification information built into the class with the DbC language, then automatically creating and executing test cases that verify the functionality described in the specification. Jtest also fully automates white-box (construction) testing by reading the source code and creating test cases automatically. In addition to this it helps enforce over 240 industry-respected coding standards as well as Design by Contract coding standards.

Key features:

- Automatically designs and executes black-box (functionality), white-box, and regression test cases
- Automatically enforces over 240 industry-respected coding standards
- Automatically builds scaffolding and stubs
- Tests classes as developers write them
- Provides framework for adding user-defined test cases and stubs
- Provides framework for creating and enforcing custom coding standards
- Tracks how a project's metrics change over time
- Supports short development cycles
- Prevents simple errors from becoming complex problems
- Increases developer productivity
- Improves application reliability
- Increases code reusability
- Optimizes code reviews

### 4A.4.0.5.8.11 Hummingbird Exceed

Exceed provides a feature rich and real world X client compatible implementation of the X Window System for Microsoft Windows based computers. In addition, it offers an extensive network application suite, which includes FTP and HostExplorer, Hummingbird 's advanced emulation suite. Exceed is a complete X11R6.6 implementation that delivers seamless access from Windows desktops to the many types of computing platforms in an enterprise, including UNIX, Linux, VMS X Window Systems, IBM mainframes, and the Internet.

Exceed 's comprehensive features offer the advanced ability to allow users to launch and display X clients from within a Web browser with XWeb, either across a corporate intranet or the Internet. Exceed also includes remote configuration, instant launching tools and unmatched X Server functionality.

### 4A.4.0.5.8.12 CAST Bobby WorldWide

The Center for Applied Special Technology, CAST is a not-for-profit organization whose mission is to expand opportunities for people with disabilities through innovative uses of computer technology. Bobby was created by CAST to help Web page authors identify and repair significant barriers to access by individuals with disabilities.

*Bobby WorldWide* is a tool for Web page authors. It helps them identify changes to their pages so users with disabilities can more easily use their Web pages. For example, a blind user will be aided by adding a sound track to a movie, and a written transcript of a sound file on a Web page will aid a hard-of-hearing user. Bobby will recommend that these be added if they do not already exist.

Many people with disabilities use special Web browsers, such as one that reads text out loud using a speech synthesizer for blind users. The suggestions made by Bobby help authors to add information to a Web page, which will help the special browsers work more effectively.

*Bobby WorldWide* is a new version of Bobby software that:

- Analyzes sites using the U.S. Federal Government's Section 508 guidelines
- Analyzes sites using the WAI Conformance A, AA, and AAA guidelines
- Tests pages that use Secure Socket Layers (SSL)
- Provides better detection of HTML files types in Frame Source

### 4A.4.0.5.8.13 IBM Home Page Reader

IBM Home Page Reader is a talking Web browser. It will speak to users in different voices to denote different Web page structures. For example, it reads regular text in a male voice, and links in a female voice. HPR can even use sounds to indicate a Web page structure, such as headings.

Home Page Reader also enables users to easily use the tables and forms that appear on Web pages and helps them communicate through e-mail. HPR provides the functions needed to search the Web, move back and forth between pages, keep favorite pages handy, and note Web sites visited.

Home Page Reader uses an IBM software speech synthesizer, called ViaVoice Outloud, to speak what appears on Web pages. To tell HPR what and how to read, users use the keyboard. For example, press the Spacebar to start reading a Web page. To stop reading, press the Control key. When finished using HPR press Control + Q to close the program.

Key features:

- HPR is a complete, self-contained Web browser
- HPR also has a completely new interface - a window that uses menus, access and shortcut keys, and keyboard commands
- A new concept, reading mode, is introduced in this version. In each of the 10 reading modes, the HPR keys work similarly. For example, in Items reading mode, the Down Arrow will read the current item. In Links reading mode, the Down Arrow will read the current link.
- This version of HPR introduces two new ways of reading and navigating Web pages. Controls reading mode helps users to move to and read the controls that appear on forms.
- JavaScript is now supported. This language is often used in forms. HPR 3.0 also supports the following Web formats: Winamp, RealAudio, WAV, TXT, and PDF.
- Contains many low vision and Braille features
- ViaVoice Outloud now contains support for Brazilian Portuguese and Finnish, as well as Spanish, French, Italian, German, and English
- HPR is now completely self-voicing for its menus, dialog boxes and browser functions like downloading and handling plug-ins
- An Interactive tutorial

### 4A.4.0.5.8.14 Telelogic DOORS

Telelogic DOORS is a requirements management tool. A multi-platform, enterprise-wide requirements management tool designed to capture, link, trace, analyze and manage a wide range of information to facilitate a project's compliance to specified requirements and standards.

Key features:

- Inter-project linking allows projects to share requirements, design and tests
- Reports of "missing links" to facilitate full coverage
- Drag-and-drop linking that create relationships quickly and easily
- View pending changes from other users to anticipate impact
- Share requirements and information through Inter-project linking
- Built-in graphics for display of statistics and metrics
- Document level base lining provides immediate understanding of volatility
- Filters on data including requirements text for faster access to specific information
- Imports from popular formats including Microsoft Word, RTF, Interleaf, Framemaker(R), text and spreadsheets
- Exports to Microsoft(R) Office tools including Microsoft Word, Microsoft Outlook(R), Microsoft PowerPoint and Microsoft Excel
- Document templates to encourage standardization of information presentation within documents
- User-defined views for faster data access and promotion of consistent perspectives
- User definable triggers for sophisticated customization and process support
- Document outline explorer for easier understanding and navigation of document structures
- Color-coded change bars to indicate the change status of individual sentences and provide rapid access to history information
- Multi-user editing in the same document supports rapid progress amongst large teams

## 4A.4.0.5.9 Testing Software

### 4A.4.0.5.9.1 Mercury TestDirector Enterprise Server

TestDirector is the first global test management solution. Its four modules--Requirements, Test Plan, Test Lab and Defects Manager--are seamlessly integrated to enable information to flow smoothly between different stages of the testing process. By being completely Web-enabled, TestDirector supports communication and collaboration among distributed testing teams.

TestDirector's Requirements Manager enables testers to automatically generate test cases based on application requirements. It facilitate thorough test coverage by offering an intuitive mechanism for linking requirements to test cases, test results and reported defects. Linking requirements to testing typically occurs two ways. First, TestDirector captures and tracks the initial application requirements. Testers can then generate a test plan based on these requirements and associate tests to the requirements.

Test planning is an essential part of the testing process. It provides a structure for testing efforts. TestDirector's Test Plan Manager offers one focal point for the testing team and provides a Web interface to stream the team's communication during the test-planning phase. Test Plan Manager guides testers as they translate application requirements into concrete test plans. Its visual structure helps define how applications are tested so users can organize specific tasks and responsibilities. Test Plan Manager offers various methods for building comprehensive test plans. Testers can build their plan from scratch, or use the Test Plan Wizard to quickly generate a test plan skeleton based on the application requirements that were defined with the Requirements Manager. It

organizes various types of tests in a collapsible subject tree so users have one place to look for test cases.

Test Plan Manager will also help drill-down further to complete the test design and document individual test steps, including the sequence of user actions, checkpoints and expected results for each test case. TestDirector also links tests to attachment files, such as Word, Excel, HTML, etc. that further describe each test case.

TestDirector's TestLab Manager schedules test runs on grouped machines to optimize testing resources. It runs tests based on pre-defined rules based on time or on pass, fail and completion of other tests. Test runs are based on the dependencies that were created within the test plan. Tests can be queued up to run overnight, while machines are inactive, on any networked machine. Smart Scheduler automatically identifies system or application failures and then reroutes the tests to other machines in the network. When automated functional or load tests succeed or fail using WinRunner, QuickTest, LoadRunner this information is automatically reported back to TestDirector's repository. Likewise, manual tests are also run with the same level of detail as automated tests.

After tests are completed, project managers must interpret the test data and put this knowledge to work. When defects are discovered, they must be assigned to the appropriate individual for correction. TestDirector's defect management is integrated directly into the testing process to provide management for end-to-end defect tracking. TestDirector features browser-based, defect management to enable multiple users anytime, anywhere to access defect tracking over the Web.

Using the Defect Manager, testers can report and update defects, filter on the defect table and analyze defect trends by simply going to a URL. Before entering a defect, a tester can also automatically perform a search of the defect database to see if a similar defect has already been reported.

The final stage of the testing process is to analyze test results and determine if the application is ready to be deployed or needs to be retested. TestDirector's customizable graphs and reports assist with analysis at any stage of the testing process. In addition, TestDirector provides a simple way to produce and distribute formal testing reports using a standard HTML or Word template. Test analysis data can also be easily exported to an industry-standard reporting tool.

### 4A.4.0.5.9.2 Mercury Interactive LoadRunner

Mercury Interactive's LoadRunner is a load-testing tool that predicts system behavior and performance. It exercises an entire enterprise infrastructure by emulating thousands of users and employs performance monitors to identify and isolate problems. By using LoadRunner, the alliance can minimize testing cycles, optimize performance and accelerate deployment.

LoadRunner stresses the entire enterprise system by emulating the behavior of real users and employs real-time performance monitors to help testers identify and isolate problems for faster resolution.

LoadRunner enables testers to easily create system load with its Virtual User Generator. This engine generates agents, or virtual users, that imitate the business processes and behavior of real users. It accomplishes this by capturing business processes and then translating them into test scripts.

By using virtual users, LoadRunner enables teams to significantly minimize the hardware and personnel resources needed for load testing, since they can run thousands of them on just a few Windows, or UNIX machines. In addition, LoadRunner TurboLoad has the ability to create loads equivalent to several hundred thousand concurrent users and millions of hits per day.

Key features:

- Web Transaction Breakdown Monitor for Isolating Performance Problems. LoadRunner's Web Transaction Breakdown Monitor splits end-to-end transaction response times for the client, network and server and provides powerful drill-down capabilities.
- Data Wizard for Data-Driven Testing. LoadRunner's Data Wizard enables testers to quickly create data-driven tests and eliminate manual data manipulation. It connects directly to back-end database servers and imports desired data into test scripts.
- Goal-Oriented Testing with Autoload. The new AutoLoad technology allows testers to pre-define testing objectives beyond the number of concurrent users to streamline the testing process.
- Enterprise Java Bean Testing. By testing EJB components with LoadRunner, testers can identify and solve problems during the early stages of application development. As a result, users can optimize performance before clients have been developed and thereby save time and resources.
- XML Support. With LoadRunner's XML support, testers can quickly and easily view and manipulate XML data within the test scripts.

### 4A.4.0.5.9.3 Mercury Quick Test Professional

QuickTest Professional is an icon-based tool that automates the functional and regression testing of dynamically changing Web applications. Its ActiveScreen technology offers the shortest learning curve in the industry while allowing users to create reusable, easy-to-maintain, comprehensive tests for browser-based and Java-based applications and ERP/CRM solutions. By using QuickTest Professional the CCSAS CSE project can:

- Minimize the time and effort required to develop a powerful test suite
- Reduce training time and increase QA productivity in a record timeframe
- Practice collaborative testing to leverage existing QA resources

### 4A.4.0.5.9.4 Mercury WinRunner

WinRunner is an integrated, functional testing tool. It captures, verifies and replays user interactions automatically, so that testers can identify defects and helps to provide that business processes, which span across multiple applications and databases, work flawlessly the first time and remain reliable.

Key features:

- Test functionality using multiple data combinations in a single test. WinRunner's DataDriver Wizard eliminates programming to automate testing for large volumes of data. This saves testers significant amounts of time preparing scripts and allows for more thorough testing.
- Significantly increase power and flexibility of tests without any programming. The Function Generator presents a quick and error-free way to design tests and enhance scripts without any programming knowledge. Testers can simply point at a GUI object, and WinRunner will examine it, determine its class and suggest an appropriate function to be used.
- Use multiple verification types to facilitate sound functionality. WinRunner provides checkpoints for text, GUI, bitmaps, URL links and the database, allowing testers to compare expected and actual outcomes and identify potential problems with numerous GUI objects and their functionality.
- Verify data integrity in the back-end database. Built-in Database Verification confirms values stored in the database and enables transaction accuracy and the data integrity of records that have been updated, deleted and added.
- View, store, and verify at a glance attributes of tested objects. WinRunner's GUI Spy automatically identifies, records and displays the properties of standard GUI objects, ActiveX controls, as well as Java objects and methods. This provides that objects in the user interface is recognized by the script and can be tested.
- Maintain tests and build reusable scripts. The GUI map provides a centralized object repository, allowing testers to verify and modify any tested object. These changes are then automatically propagated to the appropriate scripts, eliminating the need to build new scripts each time the application is modified.
- Astra QuickTest. An icon-based tool that allows novice and expert testers to validate dynamically changing Web applications. It quickly creates interactive maintainable tests by mirroring end-user behavior. Astra QuickTest simplifies and shortens the testing cycle for even the most complex Web environments.

## 4A.4.0.5.10 Administrative Software (alliance Project Office)

### 4A.4.0.5.10.1 Adobe Acrobat Reader

Adobe Acrobat Reader is free software that lets users view and print Adobe Portable Document Format (PDF) files on major computer platforms, as well as fill in and submit Adobe PDF forms online.

Key features:

- Ability to save copies of files downloaded in Web browsers
- Improved usability with drag-and-drop toolbar icons, dynamic thumbnails generation
- When windows are resized, text in Tagged Adobe PDF files reflows to fit the window for better on-screen reading
- Improved access to Web-hosted applications/online services
- Compatibility with previous versions of Acrobat Reader
- Support for screen readers, offering accessibility to the visually impaired (Windows only)

### 4A.4.0.5.10.2 Adobe Acrobat

Adobe Acrobat software lets users convert any document to an Adobe Portable Document Format (PDF) file. Anyone can open the PDF document across a broad range of hardware and software, and it will look exactly as the original, with layout, fonts, links, and images intact.

- Convert any document to Adobe Portable Document Format (PDF). Adobe PDF files can be opened reliably across a broad range of hardware and software, and look just like the original files.
- Easily convert Microsoft Office documents to Adobe PDF. Simply click the Convert to Adobe PDF button on the Microsoft Office application toolbar in Windows.
- Gather research information from the Web by downloading and converting Web pages to an Adobe PDF file. Saved as an Adobe PDF file with active links, the Web content is easy to archive, print, and distribute reliably.
- Convert unlimited paper documents to Adobe PDF files. Use the Paper Capture feature within the Create Adobe PDF Online service to create searchable Adobe PDF files.

### 4A.4.0.5.10.3 IBM WebSphere Host On-Demand

IBM's WebSphere Host On-Demand will be used as the terminal emulation software for access to existing host-based systems. IBM WebSphere Host On-Demand uses the power of Java to open the doors to host data whenever needed, wherever needed, straight from a browser. Just click on the hyperlink to launch the distinct Java applet that gives broad access to host data with TN3270, TN5250, and VT 50/100/220 emulation in a single package. A graphical user interface offers an alternative to host *green screens.* Plus, WebSphere Host On-Demand requires no client installation or middle tier server.

### 4A.4.0.5.10.4 MS Project

Microsoft Project will be the project-planning tool for the CCSAS CSE project. Microsoft Project helps users share information easily with team members so everyone stays involved. And with its compatibility with Microsoft Word and Excel, Microsoft Project integrates into the office automation tool suite seamlessly. The alliance will import the Microsoft Project plans into the Primavera project-planning tool for project wide status reporting and tracking. Some of the recent highlights of Microsoft Project include:

- Indicators - Automatically flag changes to project plans
- Task Usage and Resource UsageViews - Show project plans organized by resources and by tasks
- Custom Time-Period Tracking - Helps identify how long team members spend on each task, each day
- Cross-Project Linking - Enables users to create links and dependencies between projects
- Resource Contouring - Allows users to change each team member's workload for each task
- Multiple Critical Paths - Helps users view groups of tasks that could affect the project completion date
- Task Splitting - Makes it easy for users to show project interruptions in the plans
- Status Date - Lets users update a project's status based on a date users define
- Increased Consolidation Limits - Enables users to consolidate more than 1,000 projects

### 4A.4.0.5.10.5 Microsoft Office XP Professional

Microsoft Office XP Professional is the proposed office automation tool suite for the CCSAS CSE project. Office XP Professional contains:

- Microsoft Word 2002
- Microsoft Excel 2002
- Microsoft Outlook 2002
- Microsoft PowerPoint 2002
- Microsoft Access 2002

Microsoft Word is currently one of the most commonly used applications for creating critical documents such as reports, letters, business plans, and more for the World Wide Web and for print. The newest version of Word extends this tradition by giving users the tools they need to streamline the process of creating, sharing, reviewing, and publishing their important documents. Word version 2002 makes it easier for users to discover and use existing functionality and provides intelligent new ways for users to work with their documents. Word now also makes it easier for users to share and review documents with others without changing the way they currently work.

For many people, Microsoft Excel continues to be the technology on which they rely on a daily basis to access, process, analyze, share, and display the information with which they run their business. Excel use is no longer relegated just to the accounting and finance departments. Everyday users need to access, analyze, create, and navigate through important data. With this in mind, Excel version 2002 was designed be an application that makes it even easier than before to access, connect, and analyze critical business data. At the same time, it gives everyday users the tools they need to get the most out of their data.

Excel can be used for creating simple summary, charting trends, or performing advanced analysis. Over the years, Microsoft Excel has been made more intuitive, more discoverable, and more streamlined. Microsoft Excel includes many new features including:

- Answer Wizards
- AutoCorrection
- Easier Number Formatting
- Template Wizard with Data Tracking
- Spreadsheet Solution Templates
- Cell Tips
- AutoComplete
- Enhanced Drag and Drop
- AutoSort
- Subtotals AutoOutline

With its easy-to-use tools for creating professional presentations, Microsoft PowerPoint long ago transformed the way people communicate ideas. New features make PowerPoint version 2002 more powerful and easier to use. Smart Tags, Task Panes,

and improved technologies for working with diagrams, images, animations, and text streamline the process of creating presentations. New collaboration features make it easier than ever to get the team's input and share final work, while improved data recovery allows users to spend their time creating, not re-creating.

### 4A.4.0.5.10.6 Microsoft Visio 2000

Microsoft Visio is a stand-alone diagramming solution that helps people visualize and communicate ideas, information, and systems. Visio helps users both define and document the complexities of their daily work life, and effectively share ideas and information with others. When users incorporate Visio diagrams into Office documents, their message becomes more concise, people are more likely to remember main points, and cultural and technical barriers are more easily overcome.

Visio facilitates technical design, deployment, and maintenance. Technical professionals can diagram and document ideas, information, and systems to facilitate IT deployments, extend the use of developer tools, and even document facilities layouts and engineering plans. Visio provides the ability to create custom shapes and stencils to support organizational standards and can be used to build wide-scale custom visual solutions.

Visio provides three key benefits. These benefits include the ability to 1) *easily make an impact* by quickly creating and sharing professional-looking diagrams, 2) *understand ideas, information, and systems* through a broad range of task-specific solutions that integrate with other Microsoft products, and 3) *benefit from the diagramming standard* using a single, customizable diagramming program that can be deployed across the organization.

### 4A.4.0.5.10.7 Norton Antivirus

Norton AntiVirus from Symantec is one of the finest anti-virus software products in the world. New features let the user quarantine infected files, easily get help directly from Symantec researchers, and it automatically protects against viruses as well as malicious ActiveX and Java applets. As always, Norton AntiVirus can run constantly in the background to keep computers safe from viruses that might come in from e-mail attachments, Internet downloads, floppy diskettes, software CDs, or a network. And it can be scheduled to automatically retrieve new anti-virus definitions from Symantec as often as once a week.

### 4A.4.0.5.10.8 Software Program Managers Network Risk Radar

Risk Radar is a risk management database to help project managers identify, prioritize, and communicate project risks in a flexible and easy-to-use form. Risk Radar provides standard database functions to add and delete risks, as well as specialized functions for prioritizing and retiring project risks. Each risk can have a user-defined risk management plan and a log of historical events.

A set of standard short- and long-form reports can be easily generated to share project risk information with the members of the development team. The number of risks in each probability/impact category by time frame can be displayed, which allows the user to drill down through the data to uncover increasing levels of detail. Risk Radar also allows the

user the flexibility of using automatic sorting in addition to manually moving risks up and down in setting priority rank.

## 4A.4.1 Production Environment

***The Production Environment has been designed by the alliance solution team to meet the CSE program's performance and availability Service Level Objectives using industry-standard hardware, software, tools and protocols. We understand the mission-critical nature of the CSE application and designed a solution to provide highly available and high performance data access while maintaining a high level of security.***

The CSE Production environment leverages our world-class skills and technologies to create a highly available, high performance environment that is scalable to support future growth.

The CSE Production Environment is designed to support the system infrastructure necessary to accommodate production operations of the CSE application. The Production environment is hosted at IBM's e-Business Hosting Facility in San Jose, California. The e-Business Hosting Center is a secure facility that provides IBM's world-class hosting support and management capabilities. The e-Business Hosting Facility is described in more detail in section 3.C.14.1 of this response.

Figure 4A.4-12 presents a high-level view of the CSE Production Environment and the major components that make it up.

The CSE Production Environment decomposes the production support machines into a set of layers or 'tiers', each of which provide specific types of services in order to support the solution. These tiers are separated base upon various factors including:

- Type of end-user support provided
- Type of logic supported
- Path-length to deliver function

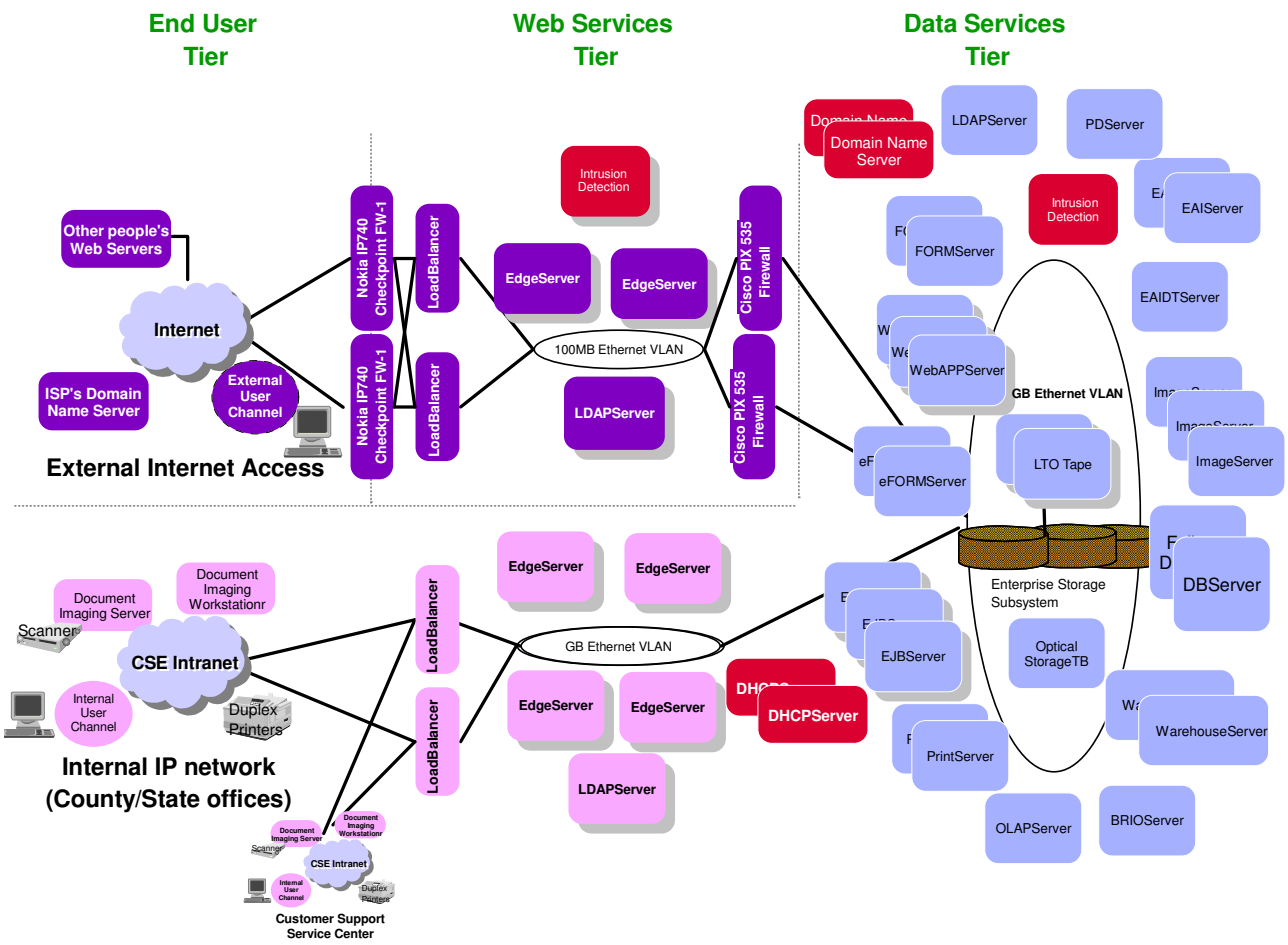



**Figure 4A.4-12 Production Environment –** *This diagram presents the technical architecture of the Production Environment.*

These tiers are further subdivided into various components, each of which provides further support to the application. Each of the components depicted represent particular types of services, and, therefore, can be sized depending upon the type of application services provided and the associated 'speeds-and-feeds' for that service.

The following section describes the various products and services that the components support. For each, the various factors that have a bearing on component hardware sizing and placement is presented.

## 4A.4.1.1 Logical Servers

In order to successfully deploy and size the CSE Production environment, the various product sets have been partitioned in the following way. Each of these partitions represents application software components that exhibit similar usage patterns and can be replicated as appropriate in order to help support the performance and availability requirements of the State. In order to simplify the presentation of the partitioning and sizing efforts the alliance solution team has aggregated these facilities in a common way. We first present these components below in order to facilitate the discussion of the various environments. In this section, we do not attempt to describe the various products utilized. Rather, this section will highlight the benefits and reasons for the use

of this software in the solution, as well as the interactions that the software has with other portions of the system solution. In this way, we describe the rationale for the inclusion of the software and the various rationale and inputs used in sizing these components.

Each of the servers described below is hosted on separate physical machines, or separate Logical Partitions (LPARs) on shared machines, or both. Hosting choices of the various services is explained in the following descriptions, with the rationale for availability and performance provided as well.

### 4A.4.1.1.1 EdgeServer

This logical server represents a service that provides important performance, security and availability features in the solution. These services are directly related to the actual delivery of content to the end-user workstations. Because they are directly related to the presentation layer of the application service, the sizing factors for these servers is driven primarily by end-user traffic patterns. These servers host two major software packages:

- WebSphere Edge Server
- Tivoli SecureWay Policy Director WebSeal Lite

The first of the products hosted on these platforms is the WebSphere Edge Server package. As described in the section above, this product provides a very efficient caching reverse-proxy service to the application environment. Because of the great amount of 'static content' inherent in any web-based presentation, the effect of a caching proxy-server can allow for a pronounced reduction in the loading of the application services placed behind them. By utilizing these services, the web servers placed 'behind' them are required to provide new content only when portions of the cache are periodically 'refreshed'. Normally, caching of web content is provided for static data, as defined by the URL name of the content and its associated MIME type. For a great majority of the content provided to the client web browser, independently addressable items such as HTML fragments, GIF and JPEG files are accessed independently by references within the HTML page. Therefore, these items can be cached in the EdgeServer. Because the CSE application utilizes Java Server Page (JSP) technology, a portion of the content is referenced in this way. However, the major page content carries the MIME type of JSP, and would not normally be cached; a JSP is a dynamic data type. The WebSphere Edge Server package also contains inherent links to the WebSphere Application Server to extend and enhance this caching capability. This normally 'un-cache-able' dynamic content normally contains a high percentage of otherwise static content. The WebSphere extensions allow for the JSP developers to provide caching for these components of HTML pages as well. Another important aspect of the Edge Server package is the ability the package offers the team in configuring a content-based redirection capability. This capability allows the EdgeServers to 'load-balance' across the web servers and to avoid accessing failing nodes in the event of a web server outage.

The second major component hosted on EdgeServer platforms is the WebSeal Lite 'plug-in' from IBM/Tivoli. The Policy Director product suite and WebSeal as a part of this suite are described in the software section above. The WebSeal package allows the alliance development team to utilize a standards-based authentication and authorization scheme that is independent from the application itself. Additionally, the WebSeal

package supports creation of session-based 'tokens' that can be inherently used by the WebSphere Application servers in the application in enforcing roles-based security without requiring custom development of ACL-based security processes.

### 4A.4.1.1.2 LDAPServer

This logical server represents a general service providing a standards-based externally accessible registry function. A common need in any application, the registration of and access to user information is needed whenever identification and authorization tasks are implemented. The IBM SecureWay Directory server provides this functionality by hosting the large registry contents on a high-performance database while providing access and replication facilities to this information using Lightweight Directory Access Protocol (LDAP) standards.

The LDAPServers in the CSE solution are deployed in two varieties. The first set provides replicas of the primary store. These LDAPServers are used to support the numerous calls to the LDAP Directory information during authentication. The second set of LDAP servers represent the primary repository for directory information. These servers host the 'owning' store of the directory, and are replicated to the servers that support the vast majority of authentication and identification calls.

### 4A.4.1.1.3 WebAPPServer

This logical server represents a service that provides a standards-based vehicle for preparing and presenting web-based content. The WebAPPServers perform user interface processing tasks using the HTTP Servlet, service-based protocol. These servers are responsible for processing the majority of requests from end-user workstations. They accept requests and prepare Java Server Pages for response to the workstation's needs. Two major products are placed upon these servers:

- The IBM HTTP Server
- IBM's WebSphere Advanced Application Server

As described in the software section above, the IBM HTTP Server is a high performance version of the industry-leading Apache Web Server platform that includes support for Secure Sockets Layer (SSL) and high speed caching of web components. The WebSphere Application Server is IBM's leading Web Application Server platform that provides scalable, high performance J2EE Java application server support.

The WebSphere Application Server software that is hosted on the WebAPPServers requires the storage of meta-data about the web applications running within the WebSphere environment. Also, meta-data about the multiple concurrent HTTP Sessions being served by these web applications must also be managed. In support of these goals, the WebSphere Application Server environment utilizes a relational database. Therefore, an instance of IBM's DB2 Universal Database Enterprise Edition is also housed on the WebAPPServer. It is important to note, however, that no persistent data (e.g. CSE case data) is stored on these small instances of the UDB database. Only the relatively static data defining the application environment is stored within this node along with session identifiers used to support concurrent user access management.

In addition, performance monitoring and tuning support is provided on these WebAPPServers using products from Wily Technologies. These products include Wily

Introscope, the Wily Powerpack for WebSphere, the Wily Powerpack for IBM MQSeries, and the Wily SQL Agent. Each of these products, described in the preceding software section, provide java-based operational reporting for monitoring and tuning java-based applications. As a Java-based suite of components, these products are run within the WebSphere Application Server, alongside the CSE Web Application servlets.

These components are hosted within a separate logical server due to the inherent differences in the processing requirements of the web-based delivery of an application presentation. The factors that drive the configuration of these servers is directly related to the number of 'page views' that are performed. They are normally required to perform large numbers of transactions with very short durations. With servlet only processing, they will not natively host persistent data, other than web content that is hosted directly via the HTTP Server or presented as a portion of a JSP. This type of 'service-delivery' behavior is very different from that which would be evidenced by an application service supporting traditional, database-calling On-Line Transaction Processing (OLTP).

### 4A.4.1.1.4 EJBServer

These logical servers provide a standards-based vehicle for the enforcement of business rules in a Java-based, object oriented environment. These servers also provide for access to the persistent data stored in the OLTP Database. In order to support these services, the EJBServers host IBM's WebSphere Advanced Application Server product. The business rules are implemented using the Enterprise Java Bean (EJB) specification. Data access is provided using data-access Beans that utilize the SQLJ standard for static SQL-based access to a relational data store. The SQLJ standard is used due to its provision for static SQL processing, a higher performance SQL alternative to the JDBC standard.

In order to process these data requests, IBM's DB2 Universal Client is utilized to access the CSE databases running in the DBServer nodes. The WebSphere meta-data, similar to that explained in the preceding WebAPPServer description, is also stored within the DBServer nodes.

Because these servers only indirectly support web-based delivery of content -- web delivery will be performed though the WebAPPServers described above with content cached via the EdgeServers -- no HTTP Server service is hosted on these systems. Within each of the WebSphere Application Server instances, multiple EJB Containers are hosted. Each container supports the execution of one or more types of EJBs. Because EJB processing is primarily based upon objects that are aggregated from lower-level relational tables, the behavior of these containers must support less frequent, but longer duration activities than the type of servlet activity that the WebAppServers will need to support.

The provision for multiple containers, accessed via the WebSphere-based Object Request Broker, allows for enhanced 'tune-ability' of the application. The EJBServers are accessed from the WebAPPServers using an inherent Workload Management (WLM) function provided by the WebSphere Advanced Application Server. The WLM functionality in WebSphere supports the dynamic load balancing of workflows across multiple EJB environments, and supports the segregation of various EJB's onto differing containers, where transactional characteristics suggest that different placement would enhance performance or utilization.

As is the case for the WebAPPServers, performance monitoring and tuning support is provided on these EJBServers using products from Wily Technologies. These products include Wily Introscope, the Wily PowerPack for WebSphere, the Wily PowerPack for IBM MQSeries, and the Wily SQL Agent. Each of these products, described in the preceding software section, provide java-based operational reporting for monitoring and tuning java-based applications. As a Java-based suite of components, these products run within the WebSphere Application Server, alongside the CSE application EJBs.

These EJB containers are also used to send and receive messages from the "Enterprise Application Integration bus" that is hosted on the EAIServers. In order to support this messaging, the EJBServer also hosts the MQSeries client, and access the underlying MQSeries queues using the Java Messaging Service (JMS) support in the WebSphere environment.

Additionally, a portion of the business rules that are enforced within the business object layer on this server include the need to formalize and verify address data. To support this need, the Finalist product from Pitney Bowes is housed on this platform as well.

### 4A.4.1.1.5 DBServer

These logical servers provide a platform for the OLTP Database to operate on. For the CSE application, the alliance has chosen to utilize IBM's DB2 Universal Database Enterprise Edition (UDB EE). UDB EE is a relational database product that is primarily targeted at the support for OLTP data storage and retrieval. The database designed for the CSE application is modeled in support of the EJB-based Java Application, but it is tuned to support the high-performance OLTP activities demanded by the CSE workloads.

In order to avoid impacting the performance of the OLTP system by asking this platform to support reporting requirements, a data warehouse is also proposed. This warehouse is served by another subsystem. However, the data that is stored in the warehouse originates in the DBServer. In order to support the replication of data from the DBServer, a log-based replication facility is also housed on the DBServer. The 'capture' portion of this product, IBM's Data Propagator – Relational, extracts data from the DB2 logs, and prepares files that can be 'applied' on another database. Data Propagator – Relational supports the creation of these 'change logs' while maintaining referential integrity and logical unit of work consistency for the prepared files.

IBM's High Availability Cluster Manager Processing (HACMP) software is also configured on the production DBServer platforms. Using HACMP, a cluster is defined that allows another server to 'takeover' operation of the DBServer if a failure occurs. In order to support this process, the HACMP software performs a variety of functions. First, a virtual IP addressing scheme is supported by HACMP that allows external access to the system to be automatically re-addressed to another system in the event of a failure. Second, the HACMP system constantly monitors and trades system ''heartbeat" information to the other systems in the cluster using a variety of communication paths. Finally, a monitoring function recognizes failure conditions and executes a predefined script to allow the remote system to perform a takeover of the IP address and associated functionality in the event that a failure is detected.

Another product that is hosted on the DBServer, as well as on the other systems deployed, is the Tivoli Storage Manager client. The Tivoli Storage Manager client is important on this platform because of the inherent support that UDB EE provides for this software. UDB EE provides a full set of facilities for the scheduled backup and recovery of the database subsystem. Tivoli Storage Manager extends the backup and recovery mechanisms of the database to allow for UDB EE to natively access the TSM managed backup environment.

### 4A.4.1.1.6 EAIServer

These logical servers provide a set of software that the alliance uses to implement an Enterprise Application Integration bus. The suite of products hosted on this platform are used to interface with the various systems needed for input into the CSE system. Rather than build independent, single purpose applications to allow the CSE system to perform each interface, these products will be used to externalize this support.

The software products hosted on the EAIServer include:

- IBM's MQSeries (Queue management software)
- IBM's MQSeries Workflow Manager
- SeeBeyond's e-Gate Integrator
- SeeBeyond's e-Exchange Trading Partner Manager

For the operation of the EAIServer, these products perform the following functions. IBM's MQSeries (Queue Manager) product supports interface activity between the various systems. Indeed, MQSeries is used to support messaging between various workflow activities within the base application suite. Using the Java Messaging Service (JMS) interface to the MQSeries managed queues, the application posts and receives messaging or tasks interactions and for the pending and processing of what might be normally termed 'batch processing' workflows.

The application uses MQSeries queue management in to allow for the messaging to be performed in a 'failure-proof' mode. Using disk-backed, persistent queues, a message is always processed before it is relieved from the queue. Additionally, the CSE solution enables MQSeries queue clustering in order to allow load balancing and fail-over activities to be performed between the duplicate queue managers that are available to the production environment.

Coupled with the MQSeries queue management, IBM's MQSeries Workflow Manager is used to define and manage the workflow interactions defined above. Using the Workflow management component, externally defined meta-data about these interactions can be defined and these interactions are then externally visible and manipulated.

Also using the underlying MQSeries queue foundation, the e-Gate Integrator product from SeeBeyond is be used to support the basic data transformation activities inherent in the transmission and receipt of data feeds to and from external interface systems. The e-Gate integrator supports these data transformation processes using an externalized workflow definition environment. As a part of the e-Gate Integrator product, the EAIServer is enabled with a set of 'adapters' for MQSeries. These adapters -- which are primarily listening threads that act upon specific input and output mechanisms -- read data from the MQSeries managed queues, perform various externally defined

transformation steps using internally managed SeeBeyond queuing mechanisms and then place these items on an outgoing mechanism. These mechanisms include both MQSeries adapters and FTP adapters, depending upon the external interface requirements.

In support of the common interface requirements that are being supported using the EAI bus, adapter modules may be written to provide connectivity to the MQSeries queues. These adapter modules act as 'proxy' services to allow for the common handling of external interfaces within the CSE application.

Inherent in the use of the EAI is the capability of defining and managing 'partner relationship' information. The SeeBeyond e-Exchange Trading Partner Manager is the external tool that is used to support this capability. This software is also resident on the EAIServer. SeeBeyond's e-Exchange Trading Partner Manager was selected because of its interoperability with the e-Gate Integrator.

### 4A.4.1.1.7 PrintServer

The PrintServer servers provide a set of software tools that the alliance uses to support the Enterprise printing requirements of the CSE application. The CSE PrintServers host IBM's Info Print Manager software. Infoprint, like the other software products, is described in more detail in the preceding software section in the introduction to the Environments section.

The PrintServer servers will use Infoprint Manager to create and manage large volume print streams. The PrintServers is attached to the Storage Area Network via dual Fibre Channel connections where the output is initially housed. After the print streams are produced, they are forwarded to a State-designated printing facility for eventual print and distribution services.

Infoprint Manager is also used to manage and administer the print queues and underlying local printers that are deployed in LCSA offices. The IBM Infoprint Manager provides capabilities for end-users to preview print jobs and to manage the end-user local printing devices.

For more information about the Document Management functionality provided in the CSE solution, please review the Document Management description in 4A.5 Appendix C.

### 4A.4.1.1.8 FormServer

The FormServer servers provide a set of software tools that the alliance uses to support the creation and management of forms-based output. The FormServer hosts the Present Central Pro software from Accelio corporation. Accelio Present Central Pro is a print output solution that enables the CSE solution to produce customer facing documents from the CSE applications for delivery via print, fax, e-mail, the Web or mobile device. As described in the software section, Present Central Pro uses data from the CSE applications and merges it with electronic document templates to create many of the external documents required by the CSE application. These documents can then be routed to the PrintServer for high volume distributed printing, or to the EformsServers for Web presentment.

Because the data accessed and used in the creation of these forms is resident within the DBServer, these nodes also host the DB2 UDB Client software. Using the DB2 Client, the FormServer is able to utilize SQL to access the DBServer resident OLTP data stores.

For more information about the Document Management functionality provided in the CSE solution, please review the Document Management description in 4A.5 Appendix C.

### 4A.4.1.1.9 PDServer

The PDServer platforms provide a set of the master storage mechanism for the externalized security infrastructure that is used by the application. The PDServer houses Tivoli Policy Director software package. As described in the software section, the Policy Director package allows for the external definition of Access Control List (ACL) information. This ACL database is managed using the PDServer, but is then replicated across any systems that are enabled with Policy Director 'blades'. The WebSeal Lite package that is housed on the EdgeServer platforms is an example of such a blade. Using this facility, the CSE solution can then enforce security policy from a single management node. Inherent support in the WebSphere Application Server platform is provided for the applications based within to access and utilize the ACL regimen that is defined in the Policy Director.

Importantly, because the ACL list is maintained in the PDServer node but is replicated across any nodes that utilize it, no availability outages need be taken in the event that the PDMaster should fail. Additionally, the Policy Director works innately with the LDAP standard for the storage and maintenance of user and group information. Therefore, the PDServer also houses the client software for the IBM SecureWay Directory (LDAP).

### 4A.4.1.1.10 BRIOServer

The BRIOServer platforms are configured to provide for a web-based reporting facility for the various reports that are provided in the CSE solution. On this platform, two components of the Brio Intelligence suite are housed:

- The Brio Intelligence Broadcast Server
- The Brio Intelligence On-Demand Server

These components utilize the IBM DB2 UDB Client to access data managed within the WAREHOUSEServer platforms. The Brio Intelligence suite provides for standardized and on-demand reports to be delivered via a web-based mechanism to the CCSAS CSE project end-user community. The CSE application end user workstations are configured with the Brio Intelligence Quickview component. The Quickview component provides access to pre-defined reports that will be developed and deployed by the alliance Business Intelligence team. The Business Intelligence Team utilizes the Brio Intelligence Designer tool to create and administer the various reports that are provided under the CSE application and to effectively administer the BRIOServer platform. Finally, the BRIOServer platform is accessed by the Brio Intelligence Insight tool and is made available to about 200 of the CCSAS CSE staff so that they may create ad-hoc reports and perform ad-hoc data query activities in support of the CSE system.

### 4A.4.1.1.11 IMAGEServer, IMAGEIXServer and IMAGEOBJServer

The IMAGEServer, IMAGEIXServer and IMAGEOBJServer platforms are configured to support the collection, retention and retrieval of document images for the CSE application. The Imaging services in the CSE application are described in some detail in the Document Management description in 4A.5 Appendix C. The IMAGEServer platforms house IBM's Content Manager software. The Content Manager service provides for the indexing, storage and on-line retrieval of the various documents that are scanned and indexed in the LCSA offices. In support of the Content Manager, the IMAGEServer platforms maintain a relational database, using IBM's DB2 Universal Database. Housed within the database are various meta-data items about the documents, including the logical folders that contain these items as well as indexing information that can be used to describe and access the document images. The actual database storage resides upon a shared Storage Area Network (also described above) and accessed from these nodes via Fibre Channel connections.

Storage of the actual images is placed upon an Optical Disk subsystem that is also accessed via the Fibre Channel connections on these server platforms. The Tivoli Storage Manager product from IBM provides management and storage tasks for the images stored on the Optical Disks.

The UDB Database and Tivoli Storage Manager subsystems are integral components of the IBM Content Manager Solution, and are natively utilized by the package.

The reason for the differing names of the various imaging servers lies in the utilization rates for the service. In the Production Environment, due to the relatively high volume of document images expected, the IMAGEIXServer is used to support storage and administration of the indexing meta-data for each of the document images. The IMAGEOBJServers are used to administer and store the image files themselves. The IMAGEServer designation is used for smaller environments -- such as the Development and Testing environments -- that do not require this separation in order to effectively support the volumes required. In this case, the IMAGEServer houses the data, including the Index entries and the Image objects together in a single relational database.

When separated, as in the case of the IMAGEIXServer and IMAGObjServers, the Content Manager software is designed to balance the loads across the IMAGEObjServers by utilizing a partitioning scheme in the capture application.

### 4A.4.1.1.12 WAREHOUSEServer

The WAREHOUSEServer platforms are provided to house a large Business Intelligence data store. This data store is used to support the various reporting requirements in the CSE application. IBM's DB2 Universal Database Extended Enterprise Edition (UDB EEE) is used to house the relational data stored in the warehouse. As described in the software descriptions above, the UDB EEE environment differs from the more traditional UDB EE environment in that it offers greater support for data warehouse environments. While UDB EE offers world class On Line Transaction Processing (OLTP) support, the types of access that are normally evident in a data warehouse are somewhat different. While OLTP accesses are normally performed on limited sets of data (one or a few rows), warehouse types of operations normally require the management and retrieval of very large return sets. UDB EEE is targeted to enhance the system's ability to effectively

perform this type of operation. By extending the support for features such as partitioning of data and indexes, and by providing 'data sharing' clusters, UDB EEE supports the needs of the warehouse in a more effective manner.

In the CSE application, the WAREHOUSEServers support a large store of operational data replicated from the CSE DBServers. This model includes large amounts of historical data and is modeled to better support the reporting and Business Intelligence reporting needs of the CCSAS CSE community. In addition, query-based extensions such as aggregation columns are added to the model to effectively deliver 'point-in-time' and aggregate operational counts. Additionally, the WAREOUSEServer will also house Relational On-Line Analytical Processing (ROLAP) hypercubes and star-schema-based data marts. These models are developed and managed by the OLAPServer. The WAREHOUSEServers manage and house this data as well.

The various reporting tools provided (e.g. Brio Intelligence, DB2 OLAP Analyzer) access the data stored in the WAREHOUSEServer. This is done instead of forcing the OLTP DBServers to support the vastly differing performance and operational requirements presented by reporting, while still providing effective performance to the OLTP CSE application.

### 4A.4.1.1.13 EAIDTServer

The EAIDTServer platforms provide an aggregate of software products that are primarily focused on data transformation tasks associated with the Data Warehouse. The EAIDTServer supports the following software products:

- IBM DB2 Warehouse Manager
- IBM Data Propagator – Relational

Each of these products is described in the preceding software section.

The EAIDTServer is used to accept log-based replication data from the DBServers that support the OLTP transaction flows in the CSE system. The IBM Data Propagator product is used to apply these data feeds to the data warehouse on a periodic basis. In order to perform this task, a small instance of IBM's DB2 UDB EE database is housed on this platform and is used as a landing zone for the initial processing of the data.

The DB2 Warehouse Manageris used to transform this data so that it can be applied to the data warehouse residing on the WAREHOUSEServers. The DB2 Warehouse Manager provides facilities for the automated definition and application of transformation of these data feeds to the data warehouse.

### 4A.4.1.1.14 OLAPServer

The OLAPServer platforms provide an aggregate of software products that are primarily focused on data transformation tasks associated with the Data Warehouse. The OLAPServer supports the following software products:

- IBM DB2 OLAP Server
- IBM DB2 OLAP Server Analyzer

In support of the Business Intelligence reporting tasks to be provided under the CSE application environment, the DB2 OLAP Server operates upon the WAREHOUSEServer-based data warehouse. As described in the software section, the DB2 OLAP Server product creates data marts that are used by the reporting tools deployed throughout the CSSAS CSE application community.

The DB2 OLAP Server Analyzer (Server) process operates upon the DB2 OLAP Server prepared data marts, and supports a web-based client access tool for reporting on these OLAP cubes. The CCSAS CSE data-reporting staff is then able to utilize the DB2 Analyzer tool from a web browser to report on these cubes.

### 4A.4.1.1.15 eFormsServer

The eFormsServer platforms house Accelio Capture Web. This product is designed to allow for the creation and presentation of XML-based forms that can be delivered over a web-based browser client to collect forms-based data. Data that is collected in these eForms utilize the EJBServers to access and store any data required or collected.

### 4A.4.1.1.16 Load Balancers

The LoadBalancers shown in the diagram represent Alteon Ace-Directors, high-speed network load balancing servers from Nortel Networks Corporation, coupled with Alteon iSD SSL Accelerators. These components provide high-speed load balancing with fail-over capabilities between the end-user tier systems and the EdgeServer platforms.

Alteon Ace-Directors deliver simultaneous support for Layer 2, 3 and 4 through 7 switching. Unlike traditional packet switches, the Alteon AD series combines a unique collection of traffic management services and applications support within a high-performance Ethernet switch - optimized for switching hundreds of thousands of Web sessions every second. Local and global server load balancing, application redirection, Secure Sockets Layer (SSL) load balancing, URL-based redirection and load balancing, Streaming Media load balancing, Wireless Internet load balancing and Intrusion Detection load balancing and advanced TCP/IP filtering functions are performed in one Web switch.

Alteon iSD SSL Accelerators; the Nortel Networks Alteon iSD-SSL intelligently accelerates secure eCommerce transactions by offloading Secure Sockets Layer (SSL) processing from local servers without imposing delays on other traffic in the same data path. Much greater throughput can be achieved on the web serving layers of the system by implementing SSL encryption and decryption processing on these network appliance systems.

A set of Load Balancing equipment is hosted for traffic from the external (Internet) based user community, and another (more robust) set is provided to support traffic from the CSSAS user community.

### 4A.4.1.1.17 DHCP Server

The DHCP servers represent Windows-based servers that support Dynamic Host Configuration Protocol (DHCP) services for the various end-user workstations in the CSE solution. The DHCP service provides a means to dynamically allocate IP addresses to computers on a local area network. The system administrator assigns a range of IP

addresses to DHCP and each client computer on the LAN has its TCP/IP software configured to request an IP address from the DHCP server.

The request and grant process uses a lease concept with a controllable time period, normally set to one week or longer. Due to the relatively infrequent interval of the refresh, the actual loading on these servers will generally be relatively light.

### 4A.4.1.1.18 Internal and External User Channel (Workstations)

End-user access to the CSE application is performed by user workstations, deployed in the LCSA offices and configured with web-browser software. Because the CSE application is being delivered as a thin-client interface, as well as the supporting reporting and query functionalities, the requirements of the end-user tier are relatively stable and minimal.

### 4A.4.1.1.19 Document Imaging Server

Document imaging servers and associated scanners are being deployed in the LCSA offices. These servers will host Kofax Ascent Capture Scan, a software component that supports the operation of and collection of data from scanners. A centralized scanning facility is provided in each county sized according to the number of documents that will be generated in that county. Associated scanners are also SCSI attached to these Document Imaging Servers.

Also hosted on these servers is a copy of Adobe Corporation's Capture software. This software allows for the capture and transformation of documents from print streams into Adobe's Portable Document Format (PDF).

These document images are then made available to the document image storage and retrieval process hosted in the Data Services Tier on the IMAGEServer platforms.

For more information about the Document Management functionality provided in the CSE solution, please review the Document Management description in 4A.5 Appendix C.

### 4A.4.1.1.20 Document Imaging Workstation

Closely coupled with the Document Imaging Servers and associated scanners that are being deployed in the LCSA sites, specialized workstations are also deployed. These workstations support Kofax Ascent Capture Workstation, a different Kofax software component than the server. The workstation software works in concert with the Document Imaging servers in imaging and indexing the scanned documents.

For more information about the Document Management functionality provided in the CSE solution, please review the Document Management description in 4A.5 Appendix C.

## 4A.4.1.2 Sizing

System hardware sizing involves both art and science. Accurate sizing is a function of many things, but one point is fundamental: the more you know about the workload a system will need to handle the more accurate the sizing is likely to be.

The underlying requirements of the CSE system are still to be completed So, too, is the detailed definition of the final system solution that will emerge to support those requirements – and what the operational characteristics of that system will be.

To size the hardware for the Production Environment the challenge began with determining the expected workload the system needs to support. And to do that requires the definition of a base level of expectations of systems characteristics and activities – provided and assumed.

The alliance e-business sizing specialists derived the workload expectation models for the CSE Production Environment using:

- The sizing-related information provided by the State
- Our systems experiences with other CSE systems and systems of similar solution styles
- Techniques that take into account peak transaction rates, transaction complexity and sizes, and the target hardware environment

Used in conjunction with capacity and performance tools and resource estimation techniques, these models became the vehicle for determining final proposal hardware sizing.

### 4A.4.1.2.1 Online Transaction Processing (OLTP) Sizing Methodology

Beginning with the base caseload provided by the State, we developed a projected average mix of 50% active and 50% inactive cases. Then, using our CSE experience and information provided by the Statewide identified the basic business transaction types we expect to be exercised in the CSE solution. They are:

- Initiation
- Data capture and update
- Document generation
- Payment processing
- Record court order
- Charge case
- Customer service inquiry
- Locate request/response
- Enforcement
- Disbursements
- Adjustments
- Interface Communications

For each of these transaction types, we produced estimates of the key characteristics of the workload associated with that transaction. These characteristics included items such as the:

- Percentage of on-line and batch cases affected monthly
- Number of ‘database accessing transactions’

- Type of database activity involved (e.g. read, update or insert)
- Number of times the transaction would be performed based upon the type of case affected

And when an on-line transaction was to be performed, we estimated the number of 'page views' that would be required to implement the business activity described by the transaction.

Using that workload characterization model and our estimates of the characteristics of the application that would handle that we've estimated that the on-line transactions that will be performed by the CSE internal user community would represent a base of approximately 1,500,000 transactions a day. To allow for peak processing periods, and using an estimated three page views per on-line transaction, we derived an expectation that the systems infrastructure must be capable of supporting approximately 140 page views per second.

Using a similar calculation we estimated that the Internet-based transaction load could represent approximately 670,000 peak transactions per day and as much as 50 page views per second.

The combined rate of delivery required to support the OLTP application would then be about 190 page views per second at peak.

The table below summarizes the assumed transaction volumes for the CSE application. These volumes were used to size the production, production simulation, performance, testing, conversion testing, development, system administration, and training environments.

| | Actions (per month) | | | | Work Breakdown | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Business Workload** | **High Activity Case** | **Medium Activity Case** | **Low Activity Case** | **By Total Activity** | **High Activity** | **Med Activity** | **Low Activity** | **Caseload Basis** | **Total Trans. Per Month** |
| | | | | | | | | | |
| Initiation | | | | 21,000 | | | | | 21,000 |
| Data capture and update | 10.00 | 5.00 | 1.00 | | 10.00% | 30.00% | 60.00% | 1,014,000 | 3,143,000 |
| Document Generation | 7.00 | 3.00 | 1.00 | | 10.00% | 30.00% | 60.00% | 1,014,000 | 2,231,000 |
| Payment Processing | 4.00 | 0.00 | 0.00 | | 67.00% | 0.00% | 33.00% | 2,028,000 | 5,435,000 |
| Record Court Order | 0.08 | 0.04 | 0.00 | | 10.00% | 30.00% | 60.00% | 1,014,000 | 21,000 |
| Charge Case | 0.00 | 0.00 | 1.00 | | 10.00% | 30.00% | 60.00% | 2,028,000 | 1,217,000 |
| Customer Service Inquiry | 10.00 | 4.00 | 1.00 | | 10.00% | 30.00% | 60.00% | 1,014,000 | 2,839,000 |
| Locate Request/Response | | | | 17,500,000 | | | | | 17,500,000 |
| Enforcement | 10.00 | 5.00 | 2.00 | | 10.00% | 30.00% | 60.00% | 1,014,000 | 3,752,000 |
| Disbursements | 5.00 | 0.00 | 0.00 | | 67.00% | 0.00% | 33.00% | 1,014,000 | 3,397,000 |
| Adjustments | 0.80 | 0.00 | 0.00 | | 67.00% | 0.00% | 33.00% | 1,014,000 | 544,000 |
| Interface Communications | | | | 4,400,000 | | | | | 4,400,000 |
| | | | | | | | | | |
| **Total** | **46.88** | **17.04** | **6.00** | | | | | | **44,500,000** |

**Figure 4A.4-13 Business Workload Characterization** – *The alliance system requirements and configuration has been based on the assumed transaction volumes and business workload characterizations listed above.*

Given the business workload characterizations previously mentioned, we furthered our assumption model by predicting the system activities that would be associated with various transaction types. The system workload characterizations were then used in our platform choice and sizing, processor configuration, and database sizing and structure as depicted in Figure 4A.4-14.

| | Execution Type | | Presentation Activity | | Database Activity | | |
|---|---|---|---|---|---|---|---|
| **Business Workload** | **Percent Online** | **Percent Batch** | **Static Pages** | **Dynamic Pages** | **Database Read** | **Database Update** | **Database Insert** |
| | | | | | | | |
| Initiation | 75.00% | 25.00% | 1.00 | 8.00 | 2.00 | | 1.00 |
| Data capture and update | 100.00% | | 1.00 | 2.00 | 1.00 | 0.75 | 0.50 |
| Document Generation | 50.00% | 50.00% | 1.00 | 2.00 | 1.00 | | |
| Payment Processing | 100.00% | | 1.00 | 1.00 | 1.00 | 1.00 | |
| Record Court Order | 100.00% | | 2.00 | 6.00 | 5.00 | 3.00 | 3.00 |
| Charge Case | | 100.00% | 1.00 | 1.00 | 1.00 | 0.50 | |
| Customer Service Inquiry | 100.00% | | 2.00 | 3.00 | 3.00 | | 1.00 |
| Locate Request/Response | 25.00% | 75.00% | 1.00 | | 1.00 | 0.10 | 1.00 |
| Enforcement | 25.00% | 75.00% | 1.00 | 3.00 | 3.00 | 2.00 | 1.00 |
| Disbursements | | 100.00% | 1.00 | 1.00 | 3.00 | 2.00 | 1.00 |
| Adjustments | 100.00% | | 1.00 | 2.00 | 2.00 | 1.00 | |
| Interface Communications | 10.00% | 90.00% | 1.00 | | 1.00 | | 1.00 |
| | | | | | | | |
| **Total** | 18,866,250 | 25,633,750 | | | | | |

**Figure 4A.4-14 Projected Solution Execution Profile** – *Our system estimating process also defined the type of system activity we expected to be associated with the business workload transactions.*

## 4A.4.1.2.2 Batch Sizing Methodology

In assessing the batch workload – offline, background work -- expectation of the CSE application we used the same model to estimate a maximum rate of approximately 76,000,000 batch transactions to be performed monthly. However, the actual period of time when this processing will be performed is somewhat variable. In the current plans for the CSE application, much of the processing that might have been performed during a 'batch window' in another system will instead be performed in smaller units throughout the day. Therefore, the actual number of batch transactions that will need to be run during any prospective batch window is much harder to estimate. Because we could not reasonably estimate the actual number of transactions to be performed in a prospective batch window or an accurate number of transactions to be performed throughout the day, we built into our loading factors additional capacity. For instance, during the online day we assumed that additional CPU capacity might be consumed at any time to process batch database activities. Based upon estimations as to reduced batch window times of about 10 hours a day, a batch rate of about 72 transactions per second (TPS) was estimated.

## 4A.4.1.2.3 Database and Other Storage Sizing Methodology

### 4A.4.1.2.3.1 Database

To estimate the OLTP database size we began with a representation of the objects represented in Section 4A.3.2 of this proposal. Using that model, we calculated an estimated physical database transformation size of approximately190 tables (approximately 110 base tables with approximately 80 associative entities.) For each table, we estimated the relationships between the various row counts (e.g. case, related to NCP, CP, etc.) We also estimated other row counts -- those not directly related to caseload – using our knowledge of the object model and Child Support Enforcement. We also estimated the row size that each table instance should present to the database.

From that model base, we then extrapolated the beginning year caseload value. Using that we derived a raw database requirement of approximately 80 gigabytes. Applying various factors to account for workspace, indexes and physical transformation, we derived an estimated actual first year database size of approximately 500 gigabytes.

### 4A.4.1.2.3.2 Other Data

In addition to the basic OLTP database sizing, the model had to include utilization for other components of the solution.

For the Data Warehouse, the alliance assumed that the size would be approximately two times that of production, yielding a total of about one terabyte initially.

For Document Imaging, there are two different types of storage requirements to be considered: disk and optical. In addition, within the imaging subset, the disk requirements must be derived for the images and for the index entries that allow for access to these images. For the base image storage, the alliance assumes that only the first 45 days worth of document images will be required to be stored on disk; those documents will be moved to optical storage after that. (It should be noted that the

retrieval of optical-based documents on in the CSE application is still performed on-line. Retrieval from optical devices is somewhat slower than from disk and we therefore assume that most of the documents initially retrieved are relatively recent ones.) Using an average of 3 pages per document, we calculated that the 45-day total disk storage requirement is approximately 1 terabyte.

Using experientially acquired metrics from other IBM Content Manager projects and the document extensions used in the earlier calculations, we estimated that the image index and meta-data repository for the documents stored in the first year would not exceed 600 gigabytes of disk.

Finally, for management and short-term storage requirements related to printing -- both for batch printing and on-line queue management -- we estimated that 35,000,000 print jobs of 4 pages each would be locally printed annually. We also estimated for 2,500,000 monthly billings, 2,500,000 monthly statements, and 1,100,000 monthly billings for NCPs to be batch printed; each are estimated to consist of an average of 4 pages each. Using these estimations with adjustments for print stream management we estimate that as much as 500 gigabytes will be required to support print queue activities.

A 20% overhead factor has been added to the raw storage figures to account for the cost of storing the data using high-availability Raid 5 technology.

Additional storage is configured for document images and form images. This storage will be managed on optical disk for quick response with relatively high longevity. These estimates are based upon the printing behaviors defined above, coupled with the estimated image scan rates we have defined. Using a straight growth factor, the alliance has estimated that the overall optical storage requirement for the term of the contract will not exceed 10TB.

The assumption and metrics listed below were used when sizing and configuring the DASD necessary to support the CSE application.

Figure 4A.4-15 shows DASD Requirements by environment at full rollout are (in terabytes).

| *DASD by Environment* | *Terabytes* |
|---|---|
| Production | 4.3 |
| Production Simulation | 1.6 |
| Performance | 0.9 |
| Development | 0.8 |
| Test | 0.7 |
| Data Conversion | 1.2 |
| Training | 1.3 |
| System Admin | 0.2 |

***Figure 4A.4-15 CSE System DASD – Storage space was estimated for each environment in the alliance solution.***

Figure 4A.4-16 shows DASD Rollout by year (in terabytes).

| DASD Percentages | | | | | | | |
|---|---|---|---|---|---|---|---|
| *DASD Rollout* | *2003* | *2004* | *2005* | *2006* | *2007* | *2008* | *2009* |
| Production | 0% | 25% | 25% | 50% | 60% | 100% | 100% |
| Production Simulation | 50% | 100% | 100% | 100% | 100% | 75% | 75% |
| Performance | 50% | 100% | 100% | 100% | 100% | 75% | 75% |
| Development | 50% | 100% | 100% | 100% | 100% | 50% | 25% |
| Test | 50% | 100% | 100% | 100% | 100% | 50% | 25% |
| Data Conversion | 100% | 100% | 100% | 100% | 100% | 0% | 0% |
| Training | 0% | 50% | 100% | 100% | 100% | 50% | 50% |
| System Admin | 50% | 100% | 100% | 100% | 100% | 100% | 100% |
| | | | | | | | |
| **Actual DASD** | **2.88** | **6.05** | **6.48** | **7.56** | **7.99** | **10.15** | **9.76** |

***Figure 4A.4-16 CSE System DASD Rollout – To provide the most cost effective solution, the CSE system storage elements will be rolled out over the life of the project.***

### 4A.4.1.2.3.3 Summary

To calculate the growth of the storage requirements over time, we utilized the State provided caseload growth factor of 1% annually. Adding to this total, we utilized an estimation of 40% transactional data growth of existing case data based upon activities performed during the year.

Using the calculations noted above, we estimate that the size of the physical storage required at the end of the contract period for the Production Environment will be approximately 4.3 terabytes.

## 4A.4.1.3 Production Hardware and Software Summary

In support and placement of the various components of the CSE Production Environment, a number of locations are involved. Among these are:

- LCSA Offices – the actual end-user tier for the CCSAS CSE end-user community
- eBHC – the central processing site where back-end processing occurs
- Customer Service Support Center – the call center location used to support external customer support calls (e.g. NCP, CP, etc.)
- Help Desk – The center used to support internal problem and policy support calls from the CSE application users

Help Desk support for the CSE solution is provided under an IBM service offering. That service will leverage IBM's existing Tivoli tool suite to provide a commercially reasonable Enterprise Systems Management (ESM) solution for the State during the time that the alliance is managing the environment. Included in this current tool suite are Commercial-Off-The-Shelf (COTS) tools and tools that are proprietary to IBM. Using these tools will help the alliance provide a commercially reasonable ESM service. By the time the application and support environment are prepared for handover to the State

it is possible that the current tool suite will have been sunset, replaced by the ever-evolving capabilities of new ESM products.

The eBHC environment is also being delivered to CCSAS as an IBM service offering. Though the associated hardware and software are not individually priced to CCSAS under this arrangement, hardware and software configuration is provided herein in order to provide a basis of discussion for the various sizing and availability factors that were considered in proposing the solution.

For each of these environments, the following sections provides the proposed hardware and software. For those elements where additional sizing or partitioning is required, some additional information is provided.

### 4A.4.1.3.1 Production Environment Equipment – LCSA Offices

The End User Tier supports a 'thin client' application model.

The End User Tier represents:

- Desktops in the LCSA Offices connected to the back-end systems using the CSE system intranet
- End-users operating from workstations connected to the Internet through an ISP

Each of the client machines execute the application components of the CSE solution by using a Web Browser. External users also include externally managed Web Server platforms.

Because of the browser-based design of the CSE system, minimal desktop resources are required at the desktop. This design helps to minimize the Total Cost of Ownership (TCO) associated with the system by minimizing desktop hardware, software and administration costs.

Scanning and printing equipment will be included at the County Offices. Specific workstations used to support document scanning and processing tasks are required to support initial document intake and management tasks. IBM will provide desktops, print systems, scanning, LAN and the components of the CSE end-to-end solution.

The following table displays the equipment and associated software that will be deployed in LCSA offices to support the CSE Production Environment.

| Component | Quantity | Hardware | Software |
|---|---|---|---|
| Desktops | 9,028 | IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 256 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 17-inch monitor, .27-dot pitch | Operating System (MS Windows XP)<br>Browser (MS Internet Explorer V5.x)<br>MS Office Suite<br>Norton Anti-virus Software<br>Adobe Acrobat Reader<br>Tivoli Framework Manager Agent<br>Option 2 & 3 Counties will also be configured with a terminal emulator |
| Printers | 477 | IBM Infoprint 1125 Duplex Printers, 32MB of Memory, 500 Sheet Drawer | |
| High-Volume Scanners | 40 | Fujitsu 4099D Scanner with Adaptec SCSI Adapter and Cable | Kofax Ascent Capture Scan v5.0 AC-2500-1700 |
| Low-Volume Scanners | 34 | Fujitsu 4097D Scanner with Adaptec SCSI Adapter and Cable | Kofax Ascent Capture Scan v5.0 AC-2500-1700 |
| Image Servers | 58 | IBM xSeries 342, 1GB, 1 CPU, 3 18GB disks, w/ RAID adapter | Adobe Acrobat Capture Personal Edition v3.0 |
| Image Workstations | 115 | IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 256 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 19-inch monitor, .27-dot pitch | Kofax Ascent Capture Wks v5.0 AC-1500-2000 |

**Figure 4A.4-13 Production Environment LCSA Equipment –** *This table lists the equipment and associated software that will be deployed in LCSA offices as a part of the Production Environment.*

## 4A.4.1.3.2 Production Environment Equipment - eBHC

### 4A.4.1.3.2.1 Layered Architecture Approach

A primary objective of the Production environment is to provide a highly scalable, highly available and high performance Web site. Using the results of many large, high volume Web site engagements, the IBM solution balances two primary goals:

- Web Services should reside as close as possible to the end-user
- Business logic should be performed as close to the data as possible

Let us now describe the various tiers represented in the eBHC portion of the CSE Production Environment.

#### *4A.4.1.3.2.1.1 Web Services Tier*

The Web Services Tier is the primary “presentation area” of the CSE system. This is the tier where user interface presentation and ‘front-door’ security is performed. This tier includes a variety of physical platforms, including:

- IBM xSeries – IBM's highly-scalable Intel-based processing platform
- IBM pSeries – high performance 64 bit UNIX-based platforms

The Web Services Tier provides high security with high performance. This tier is arranged to optimize performance in a web environment!

We have included a series of products in the Web Services tier that helps to provide state-of-the-art availability and performance. This suite of products is entitled the WebSphere Edge Server, and includes IBM's Web Traffic Express and a 'plug-in' that allows the Web Traffic Express component to utilize the industry leading traffic management algorithms of the Network Dispatcher. (IBM Network Dispatcher algorithms are used to spread HTTP workload over a set of Web Servers, measuring response time, latency and other performance issues to make intelligent decisions on the best selection to forward the workload to. This algorithm will also avoid sending transactions to servers that are experiencing performance problems and will automatically resume when server performance improves.)

The Web Traffic Express component acts as a reverse-proxy, forwarding requests to appropriate back-end HTTP servers. More importantly, Web Traffic Express includes a high-performance caching function. This high-speed cache stores frequently accessed page items, allowing the CSE user to access pages without resort to web servers that are performing complex business activities. It accepts transactions and inserts content that has been cached and reaches into the Data Services Tier for dynamic data that must be retrieved. Due to this caching function, instantaneous loads are reduced in the Data Services tier and more predictable performance levels can be reached with easier scalability. Just as important is the mechanism that manages the cache of page information. It can recognize 'portions' of pages in a Java Server Page (e.g., components of the page like pictures and static text) and only refresh those portions when needed.

The Web Services Tier also includes the IBM SecureWay Directory Server. The IBM SecureWay Directory Server is a high performance directory structure that is positioned atop IBM's Universal Database Server for ultra-high performance and availability. it supports the Lightweight Directory Access Protocol (LDAP) industry standard.

The Tivoli Policy Director product contributes the WebSEAL component to this layer. Tivoli Policy Director is IBM's premiere enterprise security policy management system, and WebSEAL is the component of this suite that supports secure access management for web-based applications. The WebSEAL Lite component is a plug-in that applies fine-grained security policy to the protected Web object space. WebSEAL Lite will provide single sign-on solutions for identification and authorization, enforcing back-end Web application server resources into its security policy. By enforcing access security using the Policy Director suite, the CSE solution provides a single management console for the definition and management of policy-based security rules. Modifying the access rights to a web resource can be performed from a single, ACL-based Management Console and these changes are immediately available to any Policy Director 'blades' (such as the WebSEAL access servers.)

Finally, the Web Services tier provides Intrusion Detection services using the Cisco Intrusion Detection Systems to monitor access to the Web Services Layer in real time. Intrusion Detection is a process that monitors access on a LAN segment in order to scan for access patterns that are known to be indicative of cyber attacks. Active monitoring, coupled with real-time collection and management of collected data, allows the CSE system to alert in real time for suspected mischief.

#### *4A.4.1.3.2.1.2 Data Services Tier*

The Data Services Tier supports the majority of the business processing in a high performance, centralized facility. This is where the heavy lifting gets done!

The Data Services Tier is the area of the CSE system where primary business transactions are performed. This tier includes a variety of physical platforms, including:

- IBM pSeries – high performance 64 bit UNIX-based platforms,
- IBM xSeries – Intel-based server platforms

In the Data Services tier, the CSE solution provides three separate processing bases for primary management of CSE business logic. These servers include:

- Process Servers – providing workflow support through user interaction
- Business Servers – providing underlying business rule enforcement and access to data
- Database Engine – provides a high-speed facility for the management of the CSE database

The Data Services Tier supports segregated operations for presentation, business logic and data access.

The Process Servers perform user interface processing tasks using the HTTP Servlet, service-based protocol. This set of servers includes five pSeries systems running the IBM HTTP Server WebSphere Application Servers products. These servers are responsible for processing the majority of requests from end-user workstations. They accept requests and prepare Java Server Pages for response to the workstation's needs. The IBM HTTP Server is a high performance version of the industry-leading Apache Web Server platform that includes support for Secure Sockets Layer (SSL) and high speed caching of web components. The WebSphere Application Server is IBM's leading Web Application Server platform that provides scalable, high performance J2EE Java application server support.

The WebSphere Application Server provides the CSE application the common, manageable infrastructure under which application logic can be performed using the Java Virtual Machine.

The Business Servers perform Business Logic and process requests for data from the Database Engine. Business logic is hosted under the WebSphere Advanced Application Server. The WebSphere Advanced Application Servers support J2EE-based Enterprise Java Beans (EJB) as the containers of the business logic that represents the bulk of the

CSE logic. These EJBs will gain from native, high-value support for enterprise-level access to the underlying OLTP database.

The Database Engine operates on a Logical Partition (LPAR) on an IBM pSeries 690 “Regatta”. The “Regatta” is IBM’s newest pSeries system and provides the horsepower required to drive the performance required by the CSE application while providing unmatched availability and manageability features. Using the sizing-related metrics we have gathered, the alliance determined that the highest-level performance and availability features were required in order to adequately support the CSE system. DB2 EE, the OLTP version of IBM’s Universal Database Server offering, provides the basis under which the data for the CSE application will be managed. DB2 is by far the foremost database in use by customers of large, industry critical database applications due to its unsurpassed reliability, scalability and performance.

Other products in the Data Services Tier include supporting structures critical to the performance and security of the CSE system.

The MQSeries-based Enterprise Application Integration (EAI) bus delivers separation between external systems requirements and the CSE system.

IBM’s MQ-Series products are hosted on two pSeries systems, configured for high availability. The MQ-Series systems provide for delivery of messages between different systems. When IBM introduced the MQ-Series offerings, they began a whole new product definition termed: Middleware. The MQ-Series systems provide highly scalable, general purpose message switching and delivery mechanisms that are available on a vast array of platforms from numerous different vendors. These MQ-Series servers support the delivery of messages between various components of the CSE system and to and from external interface systems to be supported by the new system.

These EAI Servers also host a set of products meant to support integration services for external interface support. The Enterprise Application Integration (EAI) bus supports the transformation of incoming and outgoing data streams. Using this suite of products, the CSE system insulates the business process layer from changes made in the formats required to interface to various external systems. Included in the suite of products is MQSeries the Workflow engine and the SeeBeyond e-Gate Integrator and e-Exchange Partner Management software products.

The Data Services Tier includes major supporting services for secure manageability.

The Data Services Tier provides support for the Security of the application using Tivoli Policy Director Master Policy Server.

The Tivoli Policy Director Master Policy Server enables the use of a common security policy on systems throughout the Production Environment. The Policy Director allows a single management console to enter and manage Access Control List (ACL) based rules that define access and execution roles to be used by any users of the system. Working with the LDAP-based user directory structure, the Tivoli Policy Director Master Policy Server allows easier, policy-based decisions to be made regarding web

access without resorting to custom programming of the web applications in order to achieve the appropriate levels of security.

Also included in the Data Services tier is another component used to perform Intrusion Detection services. Cisco Intrusion Detection System components are also housed in this layer in order to monitor access to the LAN segment housing the Data Services tier in real time. Intrusion Detection is a process that monitors access on a LAN segment in order to scan for access patterns that are known to be indicative of cyber attacks. Active monitoring, coupled with real-time collection and management of collected data, allows the CSE system to alert in real time for suspected mischief.

A master copy of the Lightweight Directory Access Protocol enabled directory is stored on a server running the IBM SecureWay Directory Server. The IBM SecureWay Directory Server is a high performance directory structure that is positioned atop IBM's Universal Database Server for ultra-high performance and availability. This copy is replicated to the two LDAP servers that support access from the Web Services Tier.

The Image Server, two document servers and the optical subsystem will meet the imaging, forms and printing requirements. More detail is provided in the preceding sections for these components.

### *4A.4.1.3.2.1.3 Storage Area Network (SAN)*

The Data Services Tier Utilizes ESS for high-availability, high-speed data storage and access.

The entire CSE Production Environment at the eBHC is configured to utilize IBM's Enterprise Storage Subsystem, a highly available, high-speed shared Storage Area Network (SAN) product. Hosted on this SAN is space for up to 10 terabytes of disk-based storage. The IBM Enterprise Storage Server is a second-generation Seascape disk storage system that provides industry-leading availability, performance, manageability, and scalability. Virtually all types of servers can concurrently attach to the Enterprise Storage Server-including S/390, Windows NT, Windows 2000, Novell NetWare, AS/400, and many types of UNIX servers. As a result, the Enterprise Storage Server is ideal for organizations with growing e-business operations that are being handled by multiple heterogeneous servers.

With more business-critical information processing being performed on distributed systems (running several different operating systems), the IBM Enterprise Storage Server addresses the need to protect and manage distributed data with the same level of performance previously reserved for the mainframe environment. The IBM Enterprise Storage Server does more than simply enable shared storage across enterprise platforms-it can improve the performance, availability, scalability, and manageability of enterprise-wide storage resources through a variety of powerful functions:

- FlashCopy provides fast data duplication capability. This option helps eliminate the need to stop applications for extended periods of time in order to perform backups and restores.

- Peer-to-Peer Remote Copy maintains a synchronous copy (always up-to-date with the primary copy) of data in a remote location. This backup copy of data can be used to quickly recover from a failure in the primary system without losing any transactions-an optional capability that can literally keep your e-business applications running.
- Storage partitioning uses storage devices more efficiently by providing each server access to its own pool of storage capacity. Storage pools can be shared among multiple servers.

Using the ESS, the CSE system provides high availability to safeguard data access. Support for 24x7 operations is built into the IBM Enterprise Storage Server. RAID 5 disk arrays help provide data protection while remote copy technologies allow fast data backup and disaster recovery. The IBM Enterprise Storage Server is a high-performance RAID 5 storage server featuring dual active processing clusters with fail-over switching, hot spares, hot-swappable disk drives, and nonvolatile fast write cache, and redundant power and cooling.

The IBM Enterprise Storage Server also contains integrated functions to help prevent storage server downtime by constantly monitoring system functions. If a potential problem is detected, the IBM Enterprise Storage Server automatically "calls home" to report the problem. A technician can be dispatched to make repairs, often before data center staff notices the problem. Maintenance -- including licensed internal code revisions -- can typically be performed without interrupting operations.

#### *4A.4.1.3.2.1.4 Tape and Optical Storage*

The Data Services tier utilizes LTO tape to provide an industry leading tape storage.

Tape support for the environment (for backup, recovery, logging, etc.) utilizes IBM I32 and D32 Linear Tape – Open (LTO) Tape Frames. These Tape systems (with 13 physical drive units) also utilize Fibre-Channel attached SAN Gateway between the shared disk SAN and the Tape systems to allow for high-speed copy operations between the SAN disk and SAN-attached tape. Using LTO, these tapes provide leading edge compression and density, while also supporting unparalleled performance characteristics.

Within the Fibre Channel attached Storage Area Network, the alliance deploys the IBM 3995-068 Optical Subsystem. This Optical “Jukebox” system is configured to manage up to 10 TB of storage for the long-term retention of document and form images.

### 4A.4.1.3.2.2 Basic System Configurations

For the most part, the CSE Production Environment is designed to leverage the use of shared environments whenever possible. By using fewer, large capacity machines, the administration and maintenance costs of the system are reduced, as are the related costs for physically flooring the equipment. However, in order to reach the required availability requirements for the OLTP application, as well as to enhance the performance characteristics of the system, the partitioning of various application types and services had to be employed. The approach that the alliance found to be most

effective in answering these differing requirements was the Logical Partitioning capabilities of the IBM pSeries 690 ('Regatta').

The solution that the alliance is proposing will utilize 10 large-scale pSeries 690 "Regatta" systems, each of which is partitioned into smaller logical servers known as Logical Partitions or LPARs that support the services described in the preceding section. In order to meet the availability targets for the On Line Transaction Processing portions of the CSE application, multiple copies of various components are deployed on differing physical machines as well. Due to load-balancing techniques that are used in the application components, the failure of any single system, or partition in the OLTP supporting portions of the application suite will not force an application outage.

### 4A.4.1.3.2.3 Shared System Configurations

Each of the systems and logical partitions described will be provided with independent local storage that hosts the operating systems and the local applications that are operating on them. For each system, four drives are configured, each running RAID 1+0 support to another disk. This configuration effectively provides two highly available logical drives on each machine or LPAR. One of the logical drives is configured to support the operating system and associated support files and operating swap areas, etc. The other drive-pair hosts the application components that are being performed by that system. Backup and recovery is provided for these drives using a LAN-based backup mechanism. As described, therefore, each LPAR or system hosts its own local copy of the operating system and of the application software in a highly available manner.

A Storage Area Network is used for large and shared file systems. This is discussed above in the Storage Area Network (SAN) section. Each of the systems that utilize storage like this (e.g., database servers, etc.) is configured with at least one Fibre Channel card. For production systems, dual Fibre Channel adapters will be configured to increase the performance and availability characteristics of these servers.

Each logical partition in the Data Services Tier and in the intranet portion of the Web Services Tier of the CSE Production Environment solution is configured with independent Gigabit Ethernet connectivity to the Virtual Local Area Network in a switched environment. Those Logical Partitions and physical systems in the Internet-facing Web Services Tier are configured with 100 MB Ethernet connectivity, due to the reduced requirements presented by this environment.

Similarly, the eBHC environment contains a 100MB Ethernet LAN segment that is used for Internet access and houses the DMZ created between the Nokia (Checkpoint) Protocol Firewalls and the higher performance Cisco PIX 535 Firewalls that protect the Data Services Tier. The Data Services Tier (e.g. the non-Internet/DMZ based systems and LPARS) are housed on a full Gigabit Ethernet network. Both of the described networks (100MB and Gig-E) are fully switched, allowing full-duplex, full bandwidth use of the network for each connection.

### 4A.4.1.3.2.4 Logical Partition Configurations

The following table represents the Logical Partitions that have been configured to support the CSE Production Environment. For each logical partition, basic memory and

processor configuration information is given, with the Service provided defined in the LPAR Name.

The LPAR Name will correspond with the Service description defined above. Physical machine separation (for availability and performance reasons) can be determined by reviewing the 'Machine Name' column.

| Machine Name | LPAR Name | Processors | Memory (GB) |
|---|---|---|---|
| P690 PTService1 | Web APPServer1 | 4 | 4 |
| P690 PTService1 | EAIServer1 | 4 | 4 |
| P690 PTService1 | PRINTServer1 | 2 | 2 |
| P690 PTService1 | FORMServer1 (WLM Load Balancing) | 2 | 2 |
| P690 PTService1 | FORMServer2 (WLM Load Balancing) | 2 | 2 |
| P690 PTService1 | LDAPServer (master) | 2 | 2 |
| P690 PTService1 | PDServer (master) | 2 | 2 |
| P690 PTService1 | BrioServer1 | 4 | 4 |
| P690 PTService2 | WebAPPServer2 | 4 | 4 |
| P690 PTService2 | EAIServer2 | 4 | 4 |
| P690 PTService2 | PRINTServer2 | 2 | 2 |
| P690 PTService2 | IMAGEIXServer | 4 | 4 |
| P690 PTService2 | IMAGEOBJServer1 | 2 | 4 |
| P690 PTService2 | IMAGEOBJServer2 | 2 | 4 |
| P690 PTService2 | BrioServer 2 | 4 | 4 |
| P690 PTService3 | WebAPPServer3 | 4 | 4 |
| P690 PTService3 | EAIDTServer | 4 | 4 |
| P690 PTService3 | WAREHOUSEServer1 | 6 | 12 |
| P690 PTService3 | WAREHOUSEServer2 | 6 | 12 |
| P690 PTService3 | OLAPServer | 4 | 4 |
| P690 PTService3 | LDAPServer (backup copy) | 2 | 2 |
| P690 DBServer1 | DBServer1 (*HACMP Cluster 1) | 16 | 24 |
| P690 DBServer1 | EJBServer1 | 4 | 8 |
| P690 DBServer2 | DBServer HotBackup1 (*HACMP Cluster 1) | 16 | 24 |
| P690 DBServer2 | EJBServer2 | 4 | 8 |
| P690 DBServer3 | EJBServer3 | 4 | 8 |

**Figure 4A.4-14 Production Environment LPAR Configuration --** *This table shows the configuration of the IBM pSeries 690 LPARs supporting the Production Environment on the eBHC floor.*

### 4A.4.1.3.2.5 Production Environment –eBHC Hardware and Software

The following table presents the equipment that is positioned in the e-Business Hosting Center for the CSE application.

| Component | Hardware | Software |
|---|---|---|
| Load Balancer | (4) Alteon/Ace Director | Embedded OS and software |
| Load Balancer Inside (SSL) | (4) Alteon/ISD 310 | Embedded OS and software |
| Load Balancer Outside (SSL) | (4) Alteon/ISD100 | Embedded OS and software |
| eFormsServer | (2) xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-1Gigabit Ethernet adapters, 3 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Server, Microsoft Internet Information Server (IIS), Accelio Capture Web, IBM Tivoli Storage Manager Client, BMC Patrol |
| DHCPServer | (2) xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-100 MB Ethernet adapters, 2 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Advanced Server, IBM Tivoli Storage Manager Client, BMC Patrol |
| EdgeServer (Internet) | (2) pSeries 610 – 6C1 Rack mount server, 1-Way Power3 –II 450 Mhz processor, 1 GB memory, 2-100 Mb Ethernet, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM WebSphere Edge Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Policy Director WebSeal Lite, IBM Tivoli Storage Manager Client, IBM SecureWay Directory Server Client, BMC Patrol |
| EdgeServer (intranet) | (4) pSeries 610 – 6C1 Rack mount server, 1-Way Power3 –II 450 Mhz processor, 1 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM WebSphere Edge Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Policy Director WebSeal Lite, IBM Tivoli Storage Manager Client, IBM SecureWay Directory Server Client, BMC Patrol |
| LDAPServer | (2) pSeries 610 – 6C1 Rack mount server, 2-Way Power3 –II 450 Mhz processor, 4 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM SecureWay Directory Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Storage Manager Client, BMC Patrol |
| Regatta Servers* | (10) pSeries 690 Turbo, 32-way Power 4 1.3 Ghz processors, 52 GB memory* , 4 18.2GB hot swappable disk drives per LPAR*, Fibre Channel adapters*, Gigabit Ethernet and 100MB Ethernet adapters* | AIX5L, various other software products loaded on an LPAR basis as described in preceding sections. See previous LPAR descriptions and component definitions for details. |
| Tivoli Storage Managers | (1) pSeries 660, 2GB Memory, 2 way | AIX 5L, Tivoli Storage Manager, Tivoli Disaster |

| Component | Hardware | Software |
|---|---|---|
| | processor | Recovery Manager<br>*Configured as a part of Storage Area Network and eBHC hosting service. |
| LTO Tape Subsystem | 12 Tape Drive System | Embedded OS and software |
| Optical Storage | IBM 3995-068 Optical Subsystem with 10 terabytes of capacity, Fibre Channel connection | *Configured as a part of Storage Area Network |
| Enterprise Storage System | Enterprise Storage Subsystem ("Shark") with 10 terabytes of capacity, Fibre Channel connection | Embedded OS and software |
| *Please see the LPAR section above for physical and logical partitioning information. | | |

**Figure 4A.4-15 Production Environment eBHC Equipment –** *This table lists the equipment that is positioned in the e-Business Hosting Center in support of the Production Environment.*

### 4A.4.1.3.3 Production Environment Equipment – Customer Service Support Center

The alliance proposed the Customer Service Support Center solution described in this section. The alliance and State have agreed during contract negotiations that the requirements and scope for the Customer Service solution are not sufficiently well-defined to permit a full, pre-defined solution. Accordingly, the Customer Service Support Center Assessment (CDL TM 072) shall be used as the basis for the eventual Customer Service solution. That solution shall then be developed by the alliance using a level-of-effort approach that shall utilize the portion of the contract budget originally allocated to the Customer Service solution.

**The remainder of this section is left in place as representative of the originally proposed alliance solution.**

A detailed description of the Customer Support Service Center operations, with definitions of the interactions and use of the various components is presented in Section 3C.14.0. The following diagram depicts the Customer Service Support Center technical environment:

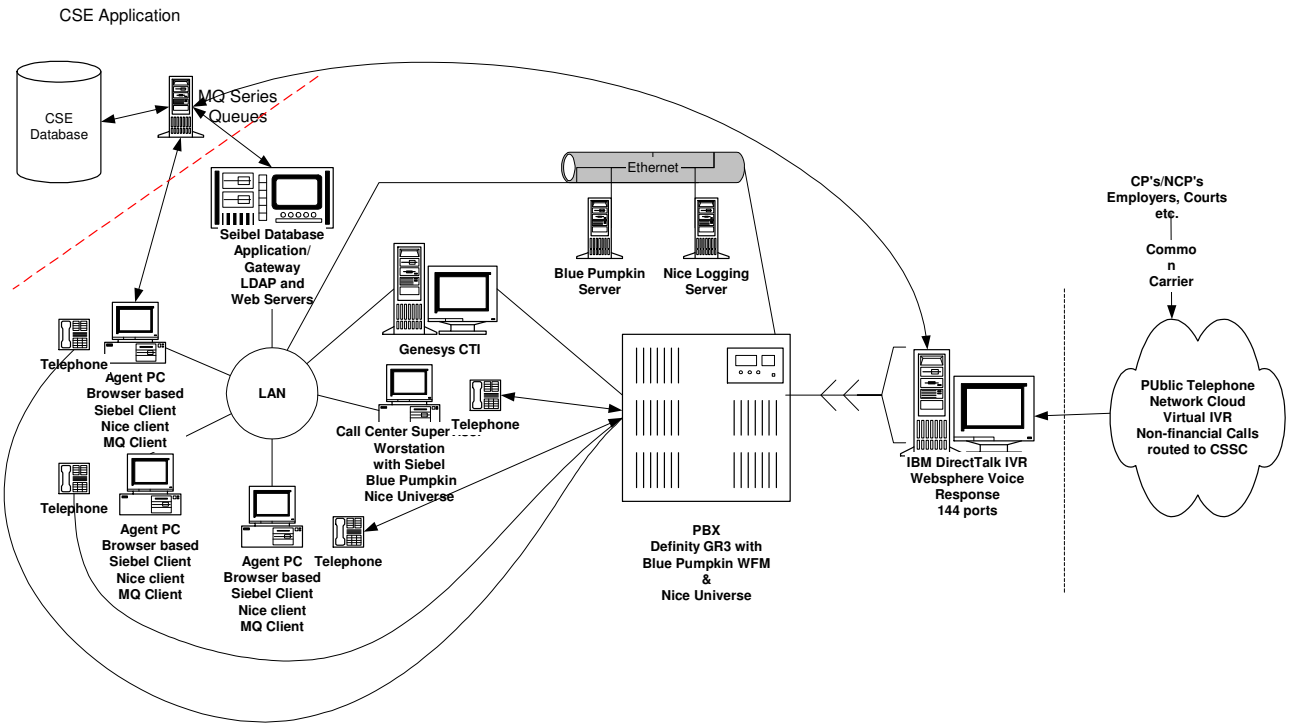



**Figure 4A.4-16 Customer Service Support Center Technology -** *This diagram shows the key technology components of the Customer Service Support Center call center.*

The components that are required to support the activities described in Section 3C.14.0 are managed as a part of the CSE Production Environment. The Customer Support Service Center hardware -- supporting servers and client desktops -- will be locally installed and managed at the CSSC site.

The Client components installed to support the Customer Service Support Center include the following:

| Component | Quantity | Hardware | Software |
|---|---|---|---|
| Desktops | 100 | IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 256 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 17-inch monitor, .27-dot pitch | Windows XP, Internet Explorer V5, Java Virtual Machine, Tivoli Framework Manager, Brio Quickview, Blue Pumpkin Client, Siebel Tools (2), Nice Universe Workstation Client (4) |
| Printers | 5 | IBM Infoprint 1125 Duplex Printers, 32MB of Memory, 500 Sheet Drawer | |

| Component | Quantity | Hardware | Software |
|---|---|---|---|
| Image Workstations | 1 | IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 256 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 19-inch monitor, .27-dot pitch | Kofax Ascent Capture Wks v5.0 AC-1500-2000 |

**Figure 4A.4-17 Customer Service Support Center Client Components -** *The Client components installed to support the Customer Service Support Center.*

The Servers supporting the CSSC are:

| Component | Hardware | Software |
|---|---|---|
| Production Siebel Database Server | pSeries 640 B80, 375 Mhz, 2-way, 2 GB Memory, (4)18.2GB disk drive, DVD RAM, Redundant Power | AIX 5L, IBM DB2 UDB Extended Edition |
| Production Siebel Application/Gateway Server | xSeries 250, 900 MHz, 2-way, 2 GB Memory, 2-4 Disks | Windows 2000 Server, Siebel Call Center, Siebel SmartScript |
| Production Siebel LDAP Server | xSeries 240, 1 Ghz / 256 KB L2, 1-way, 1 GB Memory, 2 Disks | Windows 2000 Server, IBM SecureWay Directory Server |
| Production Siebel Web Server | xSeries 240, 1 Ghz / 256 KB L2, 1-way, 1 GB Memory, 2 Disks | Windows 2000 Server, Microsoft Internet Information Server (IIS) |
| Production IVR Server w/ Rack System | pSeries 640, 18.2 GB 10K RPM Ultra2 SCSI Disk Assembly, 512 MB (2x512MB) SDRAM DIMMs, 2-way 450MHz POWER3-II with Rack System | AIX 5L, IBM WebSphere Voice Server for AIX with DirectTalk Technology |
| Production Genesys Server | pSeries 610 6C1, 450 MHz, 2-way, 2 GB Memory, (2) 18.2GB disk drive, DVD RAM, Redundant Power | AIX 5L, Genesys CTI |
| Production Nice Advantage Server | xSeries 250, 900 MHz Intel Xeon, 2-way, 4 GB Memory, 4 18.2 GB 15,000 RPM Disks (Raid 1+0) | Microsoft NT 4.0 Workstation, Microsoft SQL Server 7.0 Desktop Edition, Nice Universe NiceCLS 8.5, Nice Universe NiceLog 8.5 |
| Nice Log Recorder | Nice Log Recorder (specific Telecom equipment) | Embedded OS and software including NiceLog |
| Production Blue Pumpkin Server | xSeries 240, 1 Ghz / 256 KB L2, 1-way, 1 GB Memory, 2 Disks | Windows 2000 Server, Microsoft SQL Server 2000 with Service Pack 1, Blue Pumpkin Director – Enterprise 3.1 |
| Telephone Switch | Definity G3R Call Processor with Call Center Elite, Call management system and Intuity Voice Mail | Embedded OS and software including Avaya CentreVu Recorder solution (Nice Universe rebranded by Avaya) |

| Component | Hardware | Software |
|---|---|---|
| Development Siebel Database Server | pSeries 610 6C1, 450 MHz, 2-way, 2 GB Memory, (4) 18.2GB disk drive, DVD RAM, Redundant Power | AIX 5L, IBM DB2 UDB Extended Edition |
| Development Siebel Application/Gateway Server | xSeries 250, 900 MHz, 2-way, 1 GB Memory, 2-4 Disks | Windows 2000 Server, Siebel Call Center, Siebel SmartScript, IBM SecureWay Directory Server, Microsoft Internet Information Server (IIS) |
| Test Siebel Database Server | pSeries 610 6C1, 450 MHz, 2-way, 2 GB Memory, (4) 18.2GB disk drive, DVD RAM, Redundant Power | AIX 5L, IBM DB2 UDB Extended Edition |
| Test Siebel Application/Gateway Server | xSeries 250, 900 MHz, 2-way, 1 GB Memory, 2-4 Disks | Windows 2000 Server, Siebel Call Center, Siebel SmartScript, IBM SecureWay Directory Server, Microsoft Internet Information Server (IIS) |
| Test / Development IVR Server w/ Rack System | pSeries 640, 18.2 GB 10K RPM Ultra2 SCSI Disk Assembly, 512 MB (2x512MB) SDRAM DIMMs, 2-way 450MHz POWER3-II with Rack System | AIX 5L, IBM WebSphere Voice Server for AIX with DirectTalk Technology |
| Test / Development Genesys Server | pSeries 610 6C1, 450 MHz, 2-way, 2 GB Memory, (2) 18.2GB disk drive, DVD RAM, Redundant Power | AIX 5L, Genesys CTI |
| Test / Development Nice Advantage Server | xSeries 250, 900 MHz Intel Xeon, 2-way, 4 GB Memory, 4 18.2 GB 15,000 RPM Disks (Raid 1+0) | Microsoft NT 4.0 Workstation, Microsoft SQL Server 7.0 Desktop Edition, Nice Universe NiceCLS 8.5, Nice Universe NiceLog 8.5 |
| Test / Development Blue Pumpkin Server | xSeries 240, 1 Ghz / 256 KB L2, 1-way, 1 GB Memory, 2 Disks | Windows 2000 Server, Microsoft SQL Server 2000 with Service Pack 1, Blue Pumpkin Director – Enterprise 3.1 |

**Figure 4A.4-18 The Customer Service Support Center Server Components -** *The Servers supporting the CSSC.*

## 4A.4.1.4 Summary

The alliance solution is an integrated set of hardware, software, and tool set for the system infrastructure, security and performance monitoring of the CSE Production Environment. Many of the products that form the foundation of our solution are from IBM, one of the alliance partners. We understand their operation and have unique access to the IBM Research and Development organizations and product support resources. Our standards-based tools and software provide high-availability and performance.

Utilizing performance management, IBM will monitor, measure, analyze, tune, and report on the performance of the CSE system services. The alliance will identify trends in performance to strive to meet Service Level Objectives. If a performance problem is found, a problem management record will be created and an appropriate change will be implemented.

# 4A.4.2 Production Simulation Environment

***The Production Simulation Environment enables IBM and CSE end users to test the CSE system in a production-like environment. This facilitates system testing and acceptance testing to validate that the CSE system performs properly within the CCSAS CSE enterprise and properly interfaces with external entities.***

The CSE Production Simulation Environment is designed to support the system infrastructure necessary to accommodate system testing in a simulated production environment. The Production Simulation Environment duplicates many of the same components that are used in the Production Environment.

The Production Simulation Environment supports operations that are similar by replicating the Production Environment on a smaller scale.

The following diagram represents a high-level view of the system and the major components that make up the Production Simulation Environment.

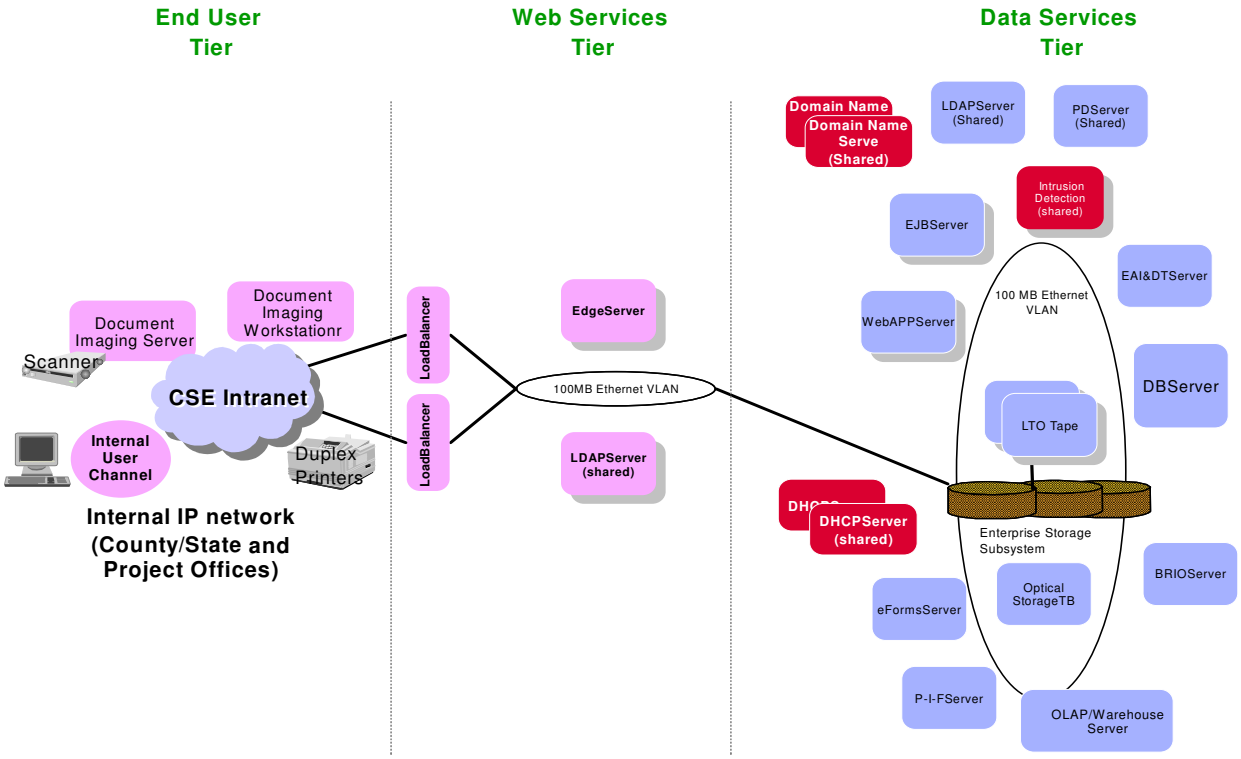



**Figure 4A.4-19** ***Production Simulation Environment –*** *This diagram presents the technical architecture of the Production Simulation Environment.*

Like the Production Environment, the Production Simulation Environment is located in IBM's e-Business Hosting Services Facility (eBHC). The same industry-leading management protocols will support the operations and maintenance of the environment. The Production Simulation Environment is the place where alliance and State personnel perform end-to-end testing of the CSE system interfaces with external entities, perform system acceptance testing during development, and provide a location for 'hot fix' testing while the system is in production.

Like the Production Environment, the Production Simulation Environment provides different 'tiers' in order to support the CSE application. The tiers are described below. For a more thorough definition, please refer to Section 4A.1.4.1 Production Environment.

Like the CSE Production Environment, the Production Simulation Environment can be looked at as an interrelated set of tiered services. Reviewing the diagram above, you will see that these tiers are further subdivided into various components, each of which provides further support to the application. Each of the components depicted represent particular types of services, and therefore can be sized depending upon the type of application services provided and the associated 'speeds-and-feeds' for that service.

The following section describes the various products and services that the components that are presented support. For each component, the various factors that have a bearing on necessary sizing and placement will be presented.

## 4A.4.2.1 Logical Servers

In order to successfully deploy and size the CSE Production Simulation Environment, the various product sets have been partitioned in the following ways. Each of these partitions represents application software components that exhibit similar usage patterns. In order to simplify the presentation of these CSE Environments sections, this environment description will not replicate components that are either re-used or are configured in a similar fashion to those defined in the CSE Production Environment.

The following components have been previously described in the CSE Production Environment, and the description will not be repeated here:

- EdgeServer
- WebAPPServer
- EJBServer
- DBServer
- LDAPServer
- PDServer
- EformsServer

Additionally, certain Production Simulation components are also shared amongst other environments when that sharing would not impact our ability to support the Production Simulation testing environment. These components include:

- LDAPServer
- PDServer

- DHCPServer
- LoadBalancers
- End-User Workstations
- Document Imaging Server
- Document Imaging Workstation

It is important to note, however, that none of these *shared* components is shared with the Production Environment. Sharing these components with other environments will have no impact upon Production Environment performance.

We will first present the new configuration of the components below in order to facilitate the discussion of the various environments. In this section, we will not attempt to describe the various products utilized. For this discussion, the reader should review the preceding Introduction. Because the Production Simulation Environment must replicate the behaviors of the Production Environment the same set of software products are utilized. Given the reduced number of concurrent users to be support by this environment some of the software components can be effectively combined into a smaller number of LPARs.

As in the Production Environment, each of the servers described below is hosted on either separate physical machines, in separate Logical Partitions (LPARs) on shared machines, or both. Hosting choices of the various services will be described in following descriptions.

### 4A.4.2.1.1 P-I-FServer

The P-I-FServer represents an aggregation of Document Management products that are housed in separate Logical Partitions in the Production Environment. The components that are recombined within this server that were previously described in Section 4A.4.1 include:

- PrintServer
- ImageServer
- FormServer

As configured, the software products that were apportioned among the three listed server types have been configured to run on the same Logical Partition.

This re-composition can be performed due to the relatively smaller requirements in the Production Simulation Environment when compared with the Production Environment. (In fact, the Production ImageServer, was actually further decomposed into two logical, and three physical types. The Production Environment required two physical ImageObjServers and a single ImageIXServer due to the large number of images that will be maintained in the CSE Production System.)

### 4A.4.2.1.2 OLAP/WarehouseServer

The OLAP/WarehouseServer represents an aggregation of a series of products that, in the CSE Production Environment, are housed in:

- the WarehouseServer

- OLAPServer

Once again, the software products that were apportioned on these two listed server types have been configured to run on the same Logical Partition. These productions include IBM DB2 Universal Database Extended Enterprise Edition, DB2 OLAP Server and DB2 OLAP Analyzer Server.

#### 4A.4.2.1.3 EAI&DTServer

The EAI&DTServer represents an aggregation of a series of products that, in the CSE Production Environment, are housed in:

- the EAIServer
- EAIDTServer

The software products that were apportioned on these two listed server types have been configured to run on the same Logical Partition.

### 4A.4.2.2 Sizing

The CSE Production Simulation environment was designed to represent a small portion of the production environment. For the Database and Image storage requirements the alliance utilized the following factors:

- 50% of production Database for OLTP test cases
- 25% of production image indexes and disk-based document storage
- 25% of production data warehouse storage allocations

Using these factors, the CSE Production Simulation Environment provides about 1 terabyte of storage on the Storage Area Network to support this portion of the solution.

The hardware supporting the Production Simulation Environment has been sized and configured with the purpose and use of this environment in mind. This includes accommodations for the limited number of system test users.

### 4A.4.2.3 Production Simulation Hardware and Software Summary

Within the CSE Production Simulation Environment, two subsidiary locations are represented. These are:

- LCSA and alliance Project Office – the actual end-user tier for the CCSAS CSE end-user community and the CSE application within the alliance Project Office
- eBHC – the central processing site where back-end processing occurs

For each of these environments, the following sections will provide the proposed equipment and software. For those elements where additional sizing or partitioning was required, some additional definitions are provided.

### 4A.4.2.3.1 Production Simulation Environment Equipment – LCSA Offices

The Production Simulation Environment is accessed from the alliance Project Office and any DCSS location attached to the CSE Network. The End User Tier in the Production Simulation Environment utilizes the same Web browser configuration, software, and the equivalent desktop systems to effectively simulate the end user's production experience.

Please refer to the CSE Production Environment section for details of the Hardware and Software in the LCSA Offices.

### 4A.4.2.3.2 Production Simulation Equipment – eBHC Equipment

#### 4A.4.2.3.2.1 Basic System Configurations

Like the CSE Production Environment, the CSE Production Simulation Environment has been designed to leverage the use of shared environments whenever possible. By using fewer, large capacity machines, the administration and maintenance costs of the system are reduced, as are the related costs for physically flooring the equipment. However, in order to reach the required availability requirements for the OLTP application, as well as to enhance the performance characteristics of the system, the partitioning of various application types and services had to be employed. The approach that the alliance found to be most effective in answering these differing requirements was the Logical Partitioning capabilities of the IBM pSeries-690 (‘Regatta’) platform.

The solution that the alliance is proposing utilizes 10 large-scale pSeries 690 systems, each of which will be partitioned into smaller logical servers that support the services described in the preceding section. In order to meet the availability targets for the On Line Transaction Processing portions of the CSE application, multiple copies of various components are deployed on differing physical machines as well. Due to load-balancing techniques to be used in the application components, the failure of any single system, or partition in the OLTP supporting portions of the application suite will not force an application outage.

#### 4A.4.2.3.2.2 Shared System Configurations

Each of the systems and logical partitions described is provided with independent local storage that hosts the operating systems and the local applications that are operating upon them. For each system, four drives are configured, each running RAID 1+0 support to another disk. This configuration effectively provides two highly available logical drives on each machine or LPAR. One of the logical drives is configured to support the Operating system and associated support files and operating swap areas, etc. The other drive-pair is used to host the application components that are being performed by that system. Backup and recovery is provided for these drives using a LAN-based backup mechanism. As described, therefore, each LPAR or system hosts its own local copy of the operating system and of the application software in a highly available manner.

For large and shared file systems a Storage Area Network is used. This is discussed in the Storage Area Network (SAN) subsection of the Production Environment. Each of the systems that utilize storage like this (e.g. database servers, etc.) is configured with at least one Fibre Channel card in the CSE Production Simulation Environment.

Each logical partition in the Data Services Tier of the CSE Production Simulation Environment solution is configured with independent 100 MB Ethernet connectivity to the Virtual Local Area Network in a switched environment. This Virtual LAN is shared among the other non-Production environments including the:

- Development Environment
- Testing Environment
- System Administration Environment

The 100 Mb Virtual LAN network is fully switched, allowing full duplex, full bandwidth use of the network for each connection.

### 4A.4.2.3.2.3 Logical Partition Configurations

The following table represents the Logical Partitions (LPARs) that have been configured to support the CSE Production Simulation Environment. For each logical partition, basic memory and processor configuration information is given, with the Service provided defined in the LPAR Name.

The LPAR Name will correspond with the Service description defined above. Physical machine separation (for availability and performance reasons) can be determined by reviewing the 'Machine Name' column.

| Machine Name | LPAR Name | Processors | Memory (GB) |
|---|---|---|---|
| P690 PTService1 | OLAP / Warehouse Server | 6 | 6 |
| P690 DService1 | WebAPPServer | 2 | 2 |
| P690 DService1 | BrioServer | 2 | 2 |
| P690 DService2 | LDAP server (dev/test/psim) | 2 | 2 |
| P690 DService2 | EAI&DTServer | 4 | 4 |
| P690 DService3 | P-I-Fserver | 6 | 6 |
| P690 DBServer4 | DBServer | 4 | 4 |
| P690 DBServer4 | EJBSevrer1 | 4 | 4 |
| P690 DBServer4 | EJBServer2 | 4 | 4 |

**Figure 4A.4-20 Production Simulation LPAR Configuration --** *This table shows the configuration of the IBM pSeries 690 LPARs supporting the Production Simulation Environment on the eBHC floor.*

### 4A.4.2.3.2.4 Production Simulation Environment –eBHC Hardware and Software

The table listed below presents the equipment that will be located in the e-Business Hosting Center for the CSE Production Simulation Environment. The components listed in the previous sections and noted in the table below that are defined as shared, utilize hardware and software components defined in other environments.

| Component | Hardware | Software |
|---|---|---|
| Load Balancer*** | (4) Alteon/Ace Director | Embedded OS and software |
| Load Balancer Inside (SSL)*** | (4) Alteon/ISD 310 | Embedded OS and software |
| EFormsServer | xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-1Gigabit Ethernet adapters, 3 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Server, Microsoft Internet Information Server (IIS), Accelio Capture Web, IBM Tivoli Storage Manager Client, BMC Patrol |
| DHCPServer*** | (2) xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-100 MB Ethernet adapters, 2 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Advanced Server, IBM Tivoli Storage Manager Client, BMC Patrol |
| EdgeServer | pSeries 610 – 6C1 Rack mount server, 1-Way Power3 –II 450 Mhz processor, 1 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM WebSphere Edge Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Policy Director WebSeal Lite, IBM Tivoli Storage Manager Client, IBM SecureWay Directory Server Client, BMC Patrol |
| LDAPServer** | (2) pSeries 610 – 6C1 Rack mount server, 2-Way Power3 –II 450 Mhz processor, 4 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM SecureWay Directory Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Storage Manager Client, BMC Patrol |
| Regatta Servers*** | (10) pSeries 690 Turbo, 32-way Power 4 1.3 Ghz processors, 52 GB memory* , 4 18.2GB hot swappable disk drives per LPAR*, FibreChannel adapters*, Gigabit Ethernet and 100MB Ethernet adapters* | *AIX5L, various other software products loaded on an LPAR basis as described in preceding sections. See previous LPAR descriptions and component definitions for details. |
| Tivoli Storage Managers*** | (1) pSeries 660, 2GB Memory, 2 way processor | AIX 5L, Tivoli Storage Manager, Tivoli Disaster Recovery Manager<br>*Configured as a part of Storage Area Network and eBHC hosting service. |
| LTO Tape Subsystem*** | 12 Tape Drive System | Embedded OS and software |
| Optical Storage*** | IBM 3995-068 Optical Subsystem with 10 terabytes of capacity, FibreChannel connection | *Configured as a part of Storage Area Network |
| Enterprise Storage System*** | Enterprise Storage Subsystem (“Shark”) with 10 terabytes of capacity, FibreChannel connection | Embedded OS and software |
| *Please see the LPAR section above for physical and logical partitioning information. | | |

| Component | Hardware | Software |
|---|---|---|
| **Shared with non-production environments<br>***Shared with all environments | | |

**Figure 4A.4-21 Production Simulation Environment eBHC Equipment –** *This table lists the equipment that is positioned in the e-Business Hosting Center in support of the Production Simulation Environment.*

### 4A.4.2.4 Summary

The CSE Production Simulation Environment allows system testing and end-to-end testing of the CSE application. Such testing allows the project team to test the interfaces between the CSE application and the entities that are interfaced into the system.

## 4A.4.3 Performance Environment

***The Performance Environment will enable the alliance and CSE end users to test the CSSAS system in a production-like environment. This will facilitate stress and load testing to validate the performance of the CSE system.***

The CSE Performance Environment is designed to support the system infrastructure necessary to accommodate the performance testing activities of the CSE application. The CSE Performance Environment duplicates the components that are used in the Production Environment and shares access to the same Wide Area Network. The CSE Production Environment utilizes a private Virtual LAN segment, so that testing of the performance Environment should not impact production or other activities.

The Performance Environment supports operations that are similar by replicating the Production Environment on a smaller scale.

The CSE Performance Environment is a subset of the CSE Production Environment, replicating services to achieve 50% of the workload of the full CSE Production Environment. Using this performance-testing configuration, the alliance has the ability to extrapolate performance out to the full load of CSE application users. The CSE Performance Environment is designed to be available from the start of the testing period through the contract termination so that new application releases may also be evaluated as needs arise. The following diagram represents a high-level view of the system and the major components that make up the Performance Environment.

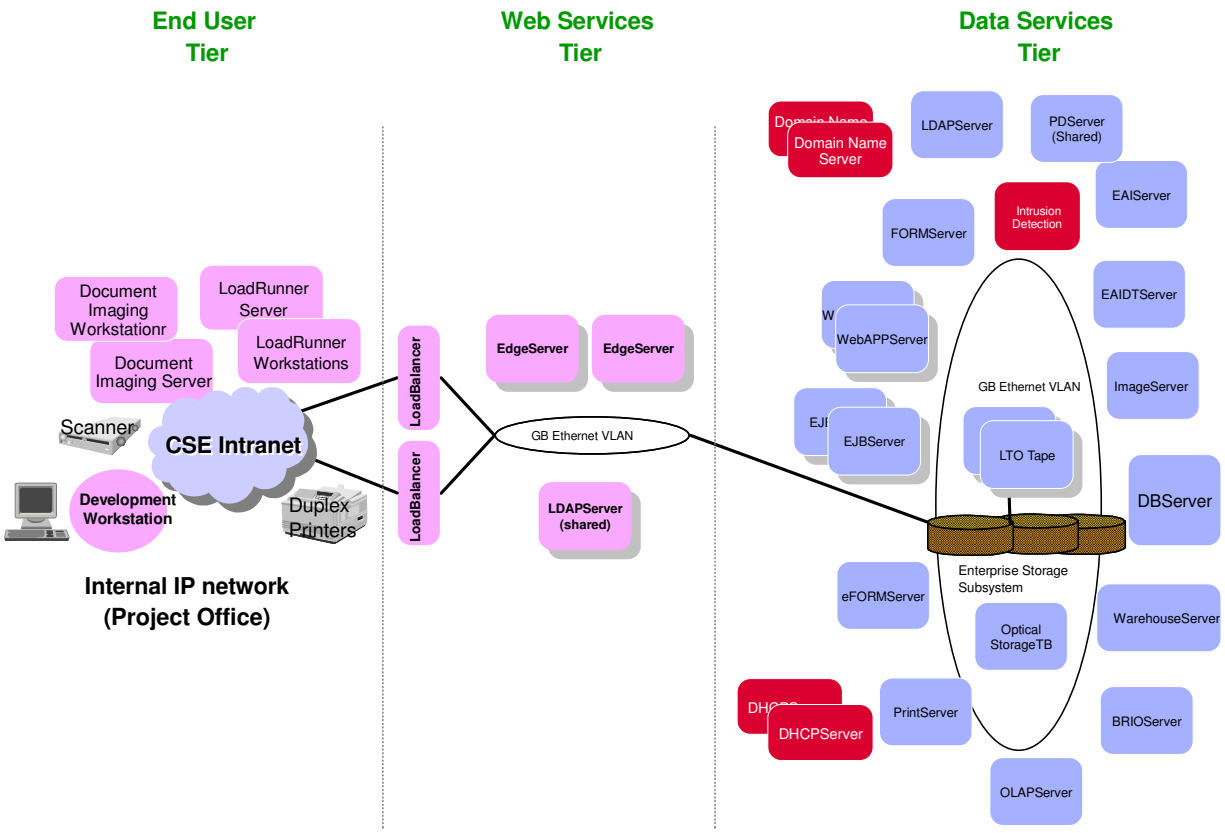



**Figure 4A.4-22 Performance Environment** – *This diagram presents the technical architecture of the Performance Environment.*

Like the CSE Production Environment, the CSE Performance Environment is located in IBM's e-Business Hosting Services Facility (eBHC). The same industry-leading management protocols support the operations and maintenance of the environment. The CSE Performance Environment is the place where alliance and State personnel perform end-to-end performance and stress testing of the CSE application during development, as well as provide a location for additional testing as the CSE application is changed while the system is in production.

Like the CSE Production environment, the CSE Performance Environment provides different 'tiers' in order to support the CSE application. For a more thorough definition of the CSE Production Environment, please refer to Section 4A.4.1.

Importantly, the alliance proposes that the Performance Environment be shared with the Conversion Environment in order to fully utilize the available system resources and enhance the State's purchasing power. Due to the similar requirements that are associated with each of these environments, the alliance believes that the shared use of these facilities will greatly extend the State's value without endangering the CCSAS project's ability to perform needed testing activities.

Like the CSE Production Environment, the CSE Performance Environment can be looked at as an interrelated set of tiered services. Reviewing the diagram above, you will see that these tiers are further subdivided into various components, each of which

provides further support to the application. Each of the components depicted represent particular types of services, and therefore can be sized depending upon the type of application services provided and the associated 'speeds-and-feeds' for that service.

The following section describes the various products and services that are supported by the components presented herein. For each component, the various factors that have a bearing on necessary sizing and placement is presented.

## 4A.4.3.1 Logical Servers

Because the CSE Performance Environment replicates the CSE Production Environment, the Logical Server description will not be repeated here. Please review the CSE Production Environment Section for details of these services.

For the needs of performance testing the system, certain components are also amongst other environments, where that sharing would not impact our ability to support the Performance testing environment. These components include:

- LDAPServer
- PDServer
- DHCPServer
- LoadBalancers
- End User Workstations
- Document Imaging Server
- Document Imaging Workstation

It is important to note, however, that where we have defined components as *shared*, they are not shared with the Production Environment. Rather, they are shared with other environments that will have no impact upon the Production Environment performance.

We will first present the new configuration of the components below in order to facilitate the discussion of the various environments. In this section, we will not attempt to describe the various products utilized. For this discussion, the reader should review the preceding Introduction. Because the Performance Environment must replicate the behaviors of the Production Environment, no new software in use at the eBHC is represented.

As in the Production Environment, each of the servers described below are hosted on either separate physical machines, or separate Logical Partitions (LPARs) on shared machines, or both. Hosting choices of the various services will be described in the following descriptions.

### 4A.4.3.1.1 LoadRunner Servers

The LoadRunner Servers represent the server platforms that reside within the alliance Project Office. These servers administer and manage the performance test cases and collect performance test results. These Windows-based server platforms primarily house the server-side components of the following Mercury Interactive LoadRunner product suite:

- Mercury Interactive LoadRunner Controller
- Mercury Interactive LoadRunner DB2 Monitor
- Mercury Interactive LoadRunner EJB Monitor
- Mercury Interactive LoadRunner Network Delay Monitor
- Mercury Interactive LoadRunner Server Monitor
- Mercury Interactive LoadRunner WebSphere Monitor

Mercury Interactive's LoadRunner is a load-testing tool that allows system behavior and performance under load to be analyzed. LoadRunner will be used for stress testing. It exercises an entire application infrastructure by emulating the traffic of many real users, using a technique known as virtual users (thousands of virtual users can be used). Each of these virtual users drives the application with real transactions while LoadRunner measures response times and key performance metrics like CPU and memory usage as well as other resources. These software products are described in more detail in the preceding introduction to these Environments.

### 4A.4.3.1.2 LoadRunner Workstations

The LoadRunner Workstations represent the special-use workstation platforms that will reside within the alliance Project Office. These workstations will be used to emulate multiple clients when the performance test cases are executed. These Windows-based workstation platforms will primarily house the client-side components of the following Mercury Interactive LoadRunner product suite:

- Mercury Interactive LoadRunner Web (HTTP/HTML)

These software products are described in more detail in the preceding introduction to these Environments.

## 4A.4.3.2 Sizing

The CSE Performance Environment was designed to represent a replication of the Production Environment. For the OLTP Database and Image storage requirements the alliance replicated the full starting size of the Production OLTP Database disk storage for the following items:

- Production Database for OLTP test cases
- Production image indexes and disk-based document storage
- Production data warehouse storage allocations

Using these factors, the CSE Performance Environment provides about 500 gigabytes of storage on the Storage Area Network to support this portion of the solution.

## 4A.4.3.3 Performance Hardware and Software Summary

Within the CSE Performance Environment, two subsidiary locations are represented. These are:

- alliance Project Office – the CSE application within the Project Office
- eBHC – the central processing site where back-end processing occurs

For each of these environments, the following sections will provide the proposed equipment and software. For those elements where additional sizing or partitioning was required, some additional definitions are provided.

### 4A.4.3.3.1 Performance Environment Equipment – alliance Project Office

The Performance Environment is accessed from the alliance Project Office when performance testing occurs. The End User Tier in the Performance Environment utilizes the same browser configuration, software, and the equivalent desktop systems to effectively simulate the end user's production experience, but uses special purpose workstations that are provisioned to support this need.

The Performance Environment is accessible from the alliance Project Office and utilizes the same CSE-managed Wide Area Network to access the eBHC. The Performance testing lab enables production load simulation. The Performance lab is configured with 20 Mercury LoadRunner desktops, each with the ability to simulate up to 2,500 concurrent CSE application end users.

| Server Name | Equipment | Software |
|---|---|---|
| LoadRunner Test Server | IBM xSeries 350, 2-way, 1 GB RAM, 50 GB hard drive, 48X CD-ROM, 10/100 Ethernet card | Windows 2000 Server, Internet Explorer V5, Java Virtual Machine, Tivoli Management Framework, Mercury Interactive LoadRunner Controller, Mercury Interactive LoadRunner DB2 Monitor, Mercury Interactive LoadRunner EJB Monitor, Mercury Interactive LoadRunner Network Delay Monitor, Mercury Interactive LoadRunner Server Monitor, Mercury Interactive LoadRunner WebSphere Monitor |
| LoadRunner Test Workstations | (20) IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 128 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 17-inch monitor, .27-dot pitch | Windows 2000, Internet Explorer V5, Java Virtual Machine, Brio Quick View, Tivoli Management Framework, Mercury Interactive LoadRunner Web (HTTP/HTML) |

**Figure 4A.4-23 Performance Environment Project Office Equipment –** *This table lists the equipment and associated software that will be deployed in the Project Office as a part of the Performance Environment.*

### 4A.4.3.3.2 Performance Environment Equipment – eBHC Equipment

#### 4A.4.3.3.2.1 Basic System Configurations

Like the CSE Production Environment, the CSE Performance Environment has been designed to leverage the use of shared environments whenever possible. By using fewer, large capacity machines, the administration and maintenance costs of the system are reduced, as are the related costs for physically flooring the equipment. However, in order to reach the required availability requirements for the OLTP application, as well as to enhance the performance characteristics of the system, the partitioning of various application types and services had to be employed. The approach that the alliance found to be most effective in answering these differing requirements was the Logical Partitioning capabilities of the IBM pSeries-690 (‘Regatta’) platform.

The solution that the alliance is proposing utilizes 10 large-scale pSeries 690 systems, each of which will be partitioned into smaller logical servers that support the services described in the preceding section. In order to meet the availability targets for the On Line Transaction Processing portions of the CSE application , multiple copies of various components are deployed on differing physical machines as well. Due to load-balancing techniques used in the application components, the failure of any single system, or partition in the OLTP supporting portions of the application suite will not force an application outage.

### 4A.4.3.3.2.2 Shared System Configurations

Each of the systems and logical partitions described is provided with independent local storage that is used to host the operating systems and the local applications that are operating upon them. For each system, four drives are configured, each running RAID 1+0 support to another disk. This configuration effectively provides two highly available logical drives on each machine or LPAR. One of the logical drives is configured to support the operating system and associated support files and operating swap areas, etc. The other drive-pair is used to host the application components that are being performed by that system. Backup and recovery are provided for these drives using a LAN-based backup mechanism. As described, therefore, each LPAR or system hosts its own local copy of the operating system and of the application software in a highly available manner.

For large, and shared file systems, a Storage Area Network will be used. This is discussed above in the Storage Area Network (SAN) section. Each of the systems that utilize storage like this (e.g., database servers, etc.) is configured with dual FibreChannel cards in the CSE Performance Environment.

Each logical partition in the Data Services Tier of the CSE Performance Environment solution is configured with independent Gigabit Ethernet connectivity to the Virtual Local Area Network in a switched environment. This Virtual LAN is shared only with the Conversion Environment. The 1 Gigabit Virtual LAN network is fully switched, allowing full-duplex, full bandwidth use of the network for each connection.

### 4A.4.3.3.2.3 Logical Partition Configurations

The following table represents the Logical Partitions that have been configured to support the CSE Performance Environment. For each logical partition, basic memory and processor configuration information is given, with the Service provided defined in the LPAR Name.

The LPAR Name will correspond with the Service description defined above. Physical machine separation (for availability and performance reasons) can be determined by reviewing the ‘Machine Name’ column.

| Machine Name | LPAR Name | Processors | Memory (GB) |
|---|---|---|---|
| P690 DService1 | EAIServer | 4 | 4 |
| P690 DService1 | WebAPPServer1 | 4 | 4 |

| Machine Name | LPAR Name | Processors | Memory (GB) |
|---|---|---|---|
| P690 DService1 | LDAPServer | 2 | 2 |
| P690 DService1 | BrioServer | 2 | 2 |
| P690 DService1 | EAIDTServer | 2 | 2 |
| P690 DService1 | OLAPServer | 2 | 2 |
| P690 DService2 | WAREHOUSEServer | 4 | 6 |
| P690 DService2 | WebAPPServer2 | 4 | 4 |
| P690 DService3 | PRINTServer | 2 | 2 |
| P690 DService3 | IMAGEServer | 4 | 4 |
| P690 DService3 | FORMServer | 2 | 2 |
| P690 DBServer2 | DBServer | 8 | 12 |
| P690 DBServer3 | EJBServer1 | 4 | 8 |
| P690 DBServer4 | EJBServer2 | 4 | 8 |

**Figure 4A.4-24 Performance Environment LPAR Configuration --** *This table shows the configuration of the IBM pSeries 690 LPARs supporting the Performance Environment on the eBHC floor.*

### 4A.4.3.3.2.4 Performance Environment –eBHC Hardware and Software

The following table presents the equipment that is positioned in the e-Business Hosting Center for the CSE Performance Environment. The components listed in the previous sections that are defined as *shared* are not positioned as additional units.

| Component | Hardware | Software |
|---|---|---|
| Load Balancer*** | (4) Alteon/Ace Director | Embedded OS and software |
| Load Balancer Inside (SSL)*** | (4) Alteon/ISD 310 | Embedded OS and software |
| EFormsServer | xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-1Gigabit Ethernet adapters, 3 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Server, Microsoft Internet Information Server (IIS), Accelio Capture Web, IBM Tivoli Storage Manager Client, BMC Patrol |
| DHCPServer*** | (2) xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-100 MB Ethernet adapters, 2 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Advanced Server, IBM Tivoli Storage Manager Client, BMC Patrol |
| EdgeServer | (2) pSeries 610 – 6C1 Rack mount server, 1-Way Power3 –II 450 Mhz processor, 1 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM WebSphere Edge Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Policy Director WebSeal Lite, IBM Tivoli Storage Manager Client, IBM SecureWay Directory Server Client, BMC Patrol |

| Component | Hardware | Software |
|---|---|---|
| LDAPServer** | pSeries 610 – 6C1 Rack mount server, 2-Way Power3 –II 450 Mhz processor, 4 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM SecureWay Directory Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Storage Manager Client, BMC Patrol |
| Regatta Servers*** | (10) pSeries 690 Turbo, 32-way Power 4 1.3 Ghz processors, 52 GB memory* , 4 18.2GB hot swappable disk drives per LPAR*, FibreChannel adapters*, Gigabit Ethernet and 100MB Ethernet adapters* | *AIX5L, various other software products loaded on an LPAR basis as described in preceding sections. See previous LPAR descriptions and component definitions for details. |
| Tivoli Storage Managers*** | (1) pSeries 660, 2GB Memory, 2 way processor | AIX 5L, Tivoli Storage Manager, Tivoli Disaster Recovery Manager<br>*Configured as a part of Storage Area Network and eBHC hosting service. |
| LTO Tape Subsystem*** | 12 Tape Drive System | Embedded OS and software |
| Optical Storage*** | IBM 3995-068 Optical Subsystem with 10 terabytes of capacity, FibreChannel connection | *Configured as a part of Storage Area Network |
| Enterprise Storage System*** | Enterprise Storage Subsystem ("Shark") with 10 terabytes of capacity, FibreChannel connection | Embedded OS and software |
| *Please see the LPAR section above for physical and logical partitioning information.<br>**Shared with non-production environments<br>***Shared with all environments | | |

**Figure 4A.4-25 Performance Environment eBHC Equipment –** *This table lists the equipment that is positioned in the e-Business Hosting Center in support of the Performance Environment.*

## 4A.4.3.4 Summary

The CSE Performance Environment enables CSE system performance and stress testing in an end-to-end fashion that emulates the CSE Production Environment. This allows the alliance to fully test the CSE application and thereby effectively extrapolate CSE application end-user experience. Like these other components in the CSE Environments, much of the CSE Performance Environment are run from the IBM e-Business Hosting Services facility.

The alliance has experience in performance and integration related testing from helping client's performance test their applications for over 20 years IBM, itself, has 14 regional testing centers across the country. In these centers are skilled practitioners who specialize in the major operating systems (AIX, Windows, UNIX, NT, OS/390, VM, etc.) and the major database systems (Oracle, DB2, Sybase, Informix), networking systems (CICS, TCP/IP, SNA) and hardware platforms (xSeries and pSeries).

# 4A.4.4 Testing Environment

***The CSE Testing Environment provides multiple test venues to support multiple concurrent iterations and production releases within the CCSAS project.***

The CSE Testing Environment is designed to support the system infrastructure necessary to accommodate testing activities of the CSE application. The CSE Testing Environment duplicates the components that are used in the Production Environment and will share access to the same Wide Area Network. The CSE Production Environment utilizes a private Virtual LAN segment so that testing within the Testing Environment will not impact production or other activities might be too strong.

The CSE Testing Environments support: CSE application testing, unit integration testing, software qualification testing, system integration testing, and system qualification testing. The testing environments are designed to support concurrent functional testing of multiple versions of the application and provide for multiple concurrent testing environments within one version. Different types of test personnel as described in this section use these testing environments.

This section does not describe some of the other testing environments that are described in separate sections of this response. Those are:

- Unit test - Unit test is an on-going activity that is performed during development. The CSE system unit testing environment is described in Section 4A.4.6 CSE Development Environment.
- Performance test - Performance test is a large-scale environment; it closely reflects production database and application characteristics so that realistic performance tests can be conducted. This is typically used for performance and stress tests of the next iteration to be released into production. The CSE Performance Testing environment is described in Section 4A.4.3 CSE Performance Environment.
- Production Simulation - Production simulation is similarly representative of the production data and environment. It is used for System Qualification (user acceptance) and final functional testing of the CSE application and for testing of fixes to the current production release when the CSE application goes into production. The CSE Production Simulation environment is described in Section 4A.4.2 CSE Production Simulation Environment.

The following diagram represents a high-level view of the system and the major components that make up the Testing Environment.

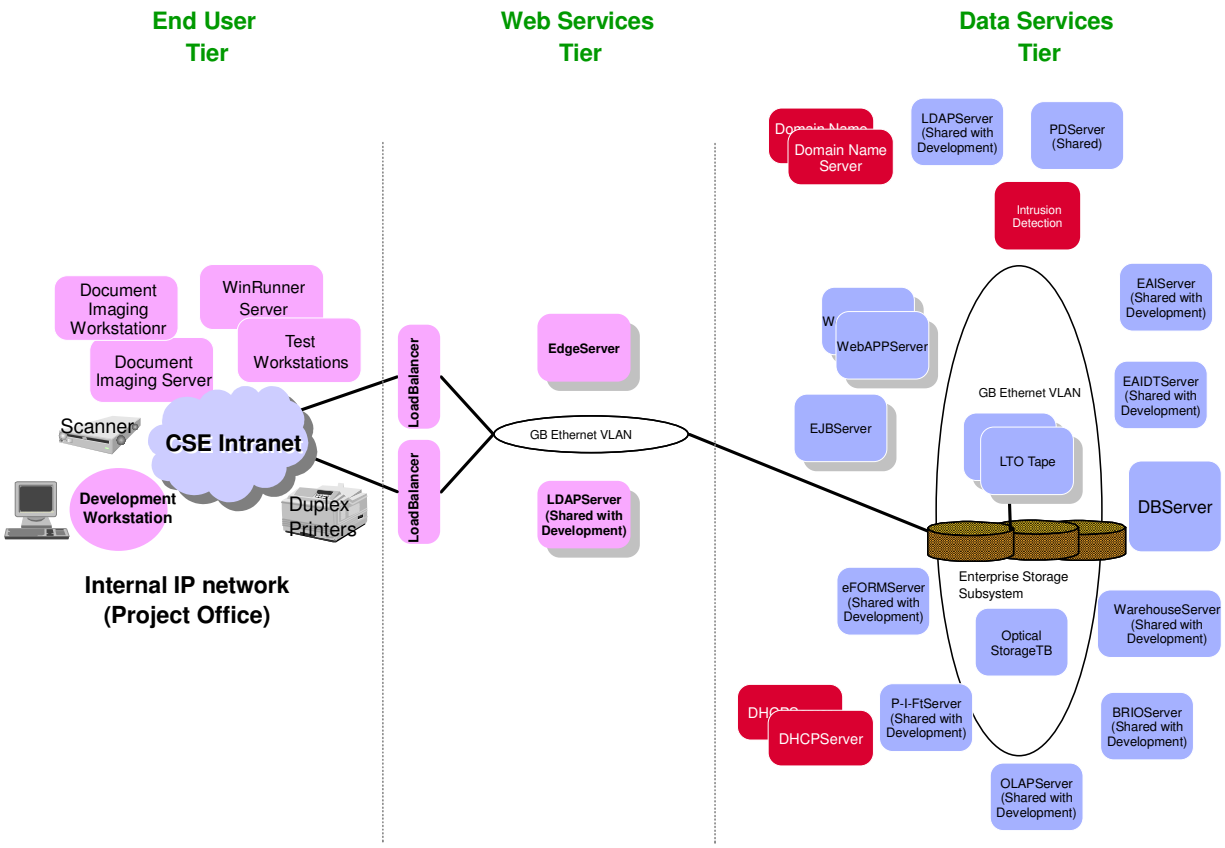



***Figure 4A.4-26 Testing Environment – This diagram presents the technical architecture of the Testing Environment.***

Like the CSE Production Environment, the CSE Testing Environment is located in IBM's e-Business Hosting Services Facility (eBHC). The same industry-leading management protocols support the operations and maintenance of the environment.

The CSE Testing Environment enables alliance and State personnel to perform end-to-end testing of the CSE application during development as well as provide a location for additional testing as the CSE application is changed while the system is in production. Additional details of the testing procedures that are performed in this environment are provided in Section 4A.4.4.0, below.

The CSE Testing Environment provides the following:

- Support for test activities for personnel during the CSE development phase
- Support for test activities for production maintenance concurrently with development
- Enablement for multiple versions of the CSE system to be tested simultaneously
- Support for the rapid and repeated loading and unloading of data into the Testing environment
- The flexibility to install supporting software products and restart individual test systems when needed

Like the CSE Production environment, the CSE Testing Environment provides different 'tiers' in order to support the CSE application. For a more thorough definition of the CSE Production Environment, please refer to Section 4.1.4.1.

Like the CSE Production Environment, the CSE Testing Environment can be looked at as an interrelated set of tiered services. Reviewing the diagram above, you will see that these tiers are further subdivided into various components, each of which provides further support to the application. Each of the components depicted represent particular types of services, and therefore can be sized depending upon the type of application services provided and the associated 'speeds-and-feeds' for that service.

## 4A.4.4.1 Development Process

In order to understand the testing environments, it is important to note that the alliance is using an iterative development and maintenance process. That process results in up to three different versions of the application at any time – versions that need to co-exist. Each of these versions is a distinct code base, and each requires a testing environment to support it.

- Iteration under development. This is the 'main' development environment, where new functionality is being developed. During this development process, new and extended functionality is being prepared.
- Iteration under test. This is the environment for applying bug fixes identified in system / acceptance test for the iteration that is next to be released to production. Fixes that are required in order to exit test are applied to this code stream and re-deployed in an iterative fashion. These fixes also have to be applied to the iteration under development.
- Production fix. This is the environment for developing fixes to bugs / problems discovered in production. Any fixes that are required in production that cannot be deferred until the next scheduled release are merged into this code base, tested, and then put into production. These fixes also have to be applied to the iteration under test and the iteration under development.

### 4A.4.4.1.1 Test Phases

The following terms were defined in Section 3C.12.9, but are summarized here for the reader's convenience:

- Unit Integration Testing (UIT). This testing is conducted to validate that the various independently developed components interoperate appropriately. In the WebSphere Studio Application Developer development environment, the developers conduct much of the unit integration test as development proceeds (see Section 4A.4.6). However, there is a separate UIT environment where the application is first deployed as part of the test cycle. To verify that the application is suitable to deploy to the software qualification testing environment, developers and system testers use the environment. This environment is only needed for the iteration under development.

- System Testing. This is the testing conducted by the system test team to validate that the application meets the functional requirements. There are likely to be a number of testing environments needed to support this phase of testing for the iteration under test, and at least one for production fix. These multiple environments allow multiple tests to be conducted concurrently, and thus permit multiple testers to be active. These environments may be a sub-set of the whole solution environment to support testing of a specific aspect of the system.
- System Verification Testing. To demonstrate that the whole system is functioning properly prior to releasing it to System Qualification Testing, the System Test team runs witnessed test scripts thatpull together the various components, such as the internal Web application, the external Web application, the IVR system, and the external interfaces. This environment also needs an equivalent testing environment or an environment simulator for each of the external systems. One testing environment should be sufficient to support this phase of testing for the iteration under test. Production fix uses the production simulation environment for this.
- System Qualification Testing. This is the testing conducted by the State Acceptance Test team to validate that the whole system functions correctly. It uses the production simulation environment.

### 4A.4.4.1.2 Testing Environments

Based on the preceding definitions, the CSE Testing environment consists of:

- One unit integration testing environment
- Four software qualification testing environments (three for system test, one for production fix)
- One system integration testing environment

## 4A.4.4.2 Logical Servers

The following section describes the various products and services that the presented components support. For each component, the various factors that have a bearing on necessary sizing and placement will be presented.

In order to successfully deploy and size the CSE Testing Environment, the various product sets have been partitioned in the following ways. Each of these partitions represents application software components that exhibit similar usage patterns. In order to simplify the presentation of these CSE Environments sections, this Environment description will not replicate components that are either re-used or are configured in a similar fashion to those defined in the CSE Production Environment Section of this response.

Because the CSE Testing Environment replicates the CSE Production Environment, the description will not be repeated here. Please review the previous CSE Environment Sections for details of these services.

For the needs of performance testing the system, certain components are also amongst other environments, where that sharing would not impact our ability to support the Performance Testing Environment. These components include:

- LDAPServer

- PDServer
- DHCPServer
- LoadBalancers
- End-User Workstations
- Document Imaging Server
- Document Imaging Workstation

It is important to note, however, that where we have defined components as *shared*, they are not shared with the Production Environment. Rather, they are shared with other environments that will have no impact upon the Production Environment performance.

We will first present the new configuration of the components below in order to facilitate the discussion of the various environments. In this section, we will not attempt to describe the various products utilized. For this discussion, the reader should review the preceding Introduction. Because the Testing Environment must replicate the behaviors of the Production Environment, no new software in use at the eBHC is represented.

As in the Production Environment, each of the servers described below are hosted on either separate physical machines, on separate Logical Partitions (LPARs) on shared machines, or both. Hosting choices of the various services will be described in following descriptions.

### 4A.4.4.2.1 WinRunnerServers

The WinRunnerServers represent the server platforms that reside within the alliance Project Office. These servers are used to administer and manage the performance test cases and collect performance test results. These Windows-based server platforms primarily house the server-side components of the following Mercury Interactive WinRunner product suite:

- Mercury Interactive TestDirector 7.2 Enterprise Server License

These software products are described in more detail in the preceding introduction to these Environments.

### 4A.4.4.2.2 Test Workstations

The Test Workstations represent the special-use workstation platforms that will reside within the alliance Project Office. These workstations are used to emulate clients and run various test cases. These Windows-based workstation platforms will primarily house the client-side components of the following Mercury Interactive WinRunner product suite:

- Mercury Interactive QuickTest Professional 5.5
- Mercury Interactive WinRunner 7.01/Astra QuickTest
- Mercury Interactive WinRunner 7.01 - Java Add-in

## 4A.4.4.3 Sizing

The CSE Testing Environment was designed to represent a replication of the Production environment. For the OLTP Database and Image storage requirements, the alliance has determined that approximately 800 gigabytes will be required to support:

- Test Database for OLTP test cases
- Test image indexes and disk-based document storage
- Test data warehouse storage allocations

These 800 gigabytes of storage will reside on the Storage Area Network to support this portion of the solution.

## 4A.4.4.4 Testing Environment Hardware and Software Summary

Within the CSE Testing Environment, two subsidiary locations are represented. These are:

- alliance Project Office – the CSE application within the Project Office
- eBHC – the central processing site where back-end processing occurs

For each of these environments, the following sections will provide the proposed hardware and software. For those elements where additional sizing or partitioning was required, some additional definitions are provided.

### 4A.4.4.4.1 Testing Environment Equipment – alliance Project Office

The Testing Environment will be accessed from the alliance Project Office when performance testing occurs. The End User Tier in the Testing Environment utilizes the same browser configuration, software, and the equivalent desktop systems to effectively simulate the end user's production experience, but uses special-purpose workstations that are provisioned to support this need.

The Testing Environment is accessible from the alliance Project Office and utilizes the same CSE-managed Wide Area Network to access the eBHC. Testing Environment end users will be located in the alliance Project Office. The alliance will establish a Test Lab in the alliance Project Office that supports each phase of coordinated testing.

The CSE Test Lab includes desktops that are the functional equivalent of the CSE end user desktops. The end user tier houses the testing tools such as Mercury Interactive's WinRunner Product Suite and Wiley Technologies' Introscope. For a description of the LoadRunner-enabled equipment, please refer to Section 4A.4.3 CSE Performance Environment.

Wiley's Introscope is an application and performance analyzer that permits many aspects of the behavior of a Java application to be viewed and analyzed. It captures information about any J2EE capability, such as JDBC or RMI calls. It also can be used to instrument the application code with custom metrics and will provide detailed information about server and network behavior. Introscope is used to capture and

analyze information about system performance and is operated on and placed on the Servers that support the Java-based application components.

Mercury Interactive's WinRunner, an integrated, functional testing tool, captures, verifies, and replays user interactions automatically to identify defects and verify that business processes work as expected and remain reliable.

| Server Name | Equipment | Software |
|---|---|---|
| WinRunner Test Server | IBM xSeries 350, 2-way, 1 GB RAM, 50 GB hard drive, 48X CD-ROM, 10/100 Ethernet card | Windows 2000 Server, Internet Explorer V5, Java Virtual Machine, Tivoli Management Framework, Mercury Interactive TestDirector 7.2 Enterprise Server License |
| Test Workstations | (20) IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 128 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 17-inch monitor, .27-dot pitch | Windows 2000, Internet Explorer V5, Java Virtual Machine, Brio Quick View, Tivoli Management Framework, Mercury Interactive QuickTest Professional 5.5, Mercury Interactive WinRunner 7.01/Astra QuickTest, Mercury Interactive WinRunner 7.01 - Java Add-in |

**Figure 4A.4-27 Testing Environment alliance Project Office Equipment --** *This table lists the equipment and associated software that will be deployed in the Project Office as a part of the Testing Environment*.

## 4A.4.4.4.2 Testing Environment Equipment – eBHC Equipment

### 4A.4.4.4.2.1 Basic System Configurations

Like the CSE Production Environment, the CSE Testing Environment has been designed to leverage the use of shared environments whenever possible. By using fewer, large capacity machines, the administration and maintenance costs of the system are reduced, as are the related costs for physically flooring the equipment. However, in order to reach the required availability requirements for the OLTP application, as well as to enhance the performance characteristics of the system, the partitioning of various application types and services had to be employed. The approach that the alliance found to be most effective in answering these differing requirements was the Logical Partitioning capabilities of the IBM pSeries-690 (‘Regatta’) platform.

The solution that the alliance is proposing will utilize 10 large-scale pSeries 690 systems, each of which will be partitioned into smaller logical servers that support the services described in the preceding section. In order to meet the availability targets for the On Line Transaction Processing portions of the CSE application , multiple copies of various components are deployed on differing physical machines as well. Due to load-balancing techniques that are used in the application components, the failure of any single system or partition in the OLTP supporting portions of the application suite will not force an application outage.

### 4A.4.4.4.2.2 Shared System Configurations

Each of the systems and logical partitions described will be provided with independent local storage that will be used to host the operating systems and the local applications that are operating on them. For each system, four drives are configured, each running

RAID 1+0 support to another disk. This configuration effectively provides two highly available logical drives on each machine or LPAR. One of the logical drives is configured to support the operating system and associated support files and operating swap areas, etc. The other drive-pair is used to host the application components that are being performed by that system. Backup and recovery will be provided for these drives using a LAN-based backup mechanism. As described, therefore, each LPAR or system hosts its own local copy of the operating system and of the application software in a highly available manner.

A Storage Area Network is used for large and shared file systems. This is discussed above in the Storage Area Network (SAN) section. Each of the systems that utilizes storage like this (e.g. database servers, etc.) is configured with a single FibreChannel card in the CSE Testing Environment.

Each logical partition in the Data Services Tier of the CSE Testing Environment solution is configured with independent 100 MB Ethernet connectivity to the Virtual Local Area Network in a switched environment. This Virtual LAN will be shared among the other non-Production environments including:

- Development Environment
- Production Simulation Environment
- System Administration Environment

The 100 Mb Virtual LAN network is fully switched, allowing full duplex, full bandwidth use of the network for each connection.

### 4A.4.4.4.2.3 Logical Partition Configurations

The following table represents the Logical Partitions (LPARs) that have been configured to support the CSE Testing Environment. For each logical partition, basic memory and processor configuration information is given, with the Service provided defined in the LPAR Name.

The LPAR Name will correspond with the Service description defined above.

An important factor in describing the deployment of the CSE Testing Environment is the fact that, for multiple components, the alliance felt that the Development and Testing Environments would be well served with shared environments. For each of these components, the software allows for a segregated logical partitioning of the data and processing within the applications themselves.

Physical machine separation (for availability and performance reasons) can be determined by reviewing the ‘Machine Name’ column.

| Machine Name | LPAR Name | Processors | Memory (GB) |
|---|---|---|---|
| P690 DService1 | EAIServer (Development and Test) | 2 | 2 |
| P690 DService1 | WAREHOUSEServer (Development and Test) | 2 | 4 |

| | | | |
|---|---|---|---|
| P690 DService2 | LDAPServer (Development and Test) | 2 | 2 |
| P690 DService2 | BrioServer (Development and Test) | 2 | 2 |
| P690 DService2 | EAIDTServer (Development and Test) | 2 | 2 |
| P690 DService2 | OLAPServer (Development and Test) | 2 | 2 |
| P690 DService3 | WebAPPServer1 | 2 | 2 |
| P690 DService3 | WebAPPServer2 | 2 | 2 |
| P690 DService3 | P-I-FServer (Development and Test) | 6 | 6 |
| P690 DBServer2 | DBServer | 4 | 4 |
| P690 DBServer4 | EJBServer1 | 4 | 6 |
| P690 DBServer4 | EJBSevrer2 | 4 | 6 |

**Figure 4A.4-28 Testing Environment LPAR Configuration --** *This table shows the configuration of the IBM pSeries 690 LPARs supporting the Testing Environment on the eBHC floor.*

### 4A.4.4.4.2.4 Testing Environment Environment–eBHC Hardware and Software

The following table presents the equipment that is positioned in the e-Business Hosting Center for the CSE Testing Environment. The components listed in the previous sections that are defined as *shared* are not positioned as additional units.

| Component | Hardware | Software |
|---|---|---|
| Load Balancer*** | (4) Alteon/Ace Director | Embedded OS and software |
| Load Balancer Inside (SSL)*** | (4) Alteon/ISD 310 | Embedded OS and software |
| EFormsServer | xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-1Gigabit Ethernet adapters, 3 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Server, Microsoft Internet Information Server (IIS), Accelio Capture Web, IBM Tivoli Storage Manager Client, BMC Patrol |
| DHCPServer*** | (2) xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-100 MB Ethernet adapters, 2 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Advanced Server, IBM Tivoli Storage Manager Client, BMC Patrol |
| EdgeServer | pSeries 610 – 6C1 Rack mount server, 1-Way Power3 –II 450 Mhz processor, 1 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM WebSphere Edge Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Policy Director WebSeal Lite, IBM Tivoli Storage Manager Client, IBM SecureWay Directory Server Client, BMC Patrol |

| Component | Hardware | Software |
|---|---|---|
| LDAPServer** | pSeries 610 – 6C1 Rack mount server, 2-Way Power3 –II 450 Mhz processor, 4 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM SecureWay Directory Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Storage Manager Client, BMC Patrol |
| Regatta Servers*** | (10) pSeries 690 Turbo, 32-way Power 4 1.3 Ghz processors, 52 GB memory* , 4 18.2GB hot swappable disk drives per LPAR*, FibreChannel adapters*, Gigabit Ethernet and 100MB Ethernet adapters* | *AIX5L, various other software products loaded on an LPAR basis as described in preceding sections. See previous LPAR descriptions and component definitions for details. |
| Tivoli Storage Managers*** | (1) pSeries 660, 2GB Memory, 2 way processor | AIX 5L, Tivoli Storage Manager, Tivoli Disaster Recovery Manager<br>*Configured as a part of Storage Area Network and eBHC hosting service. |
| LTO Tape Subsystem*** | 12 Tape Drive System | Embedded OS and software |
| Optical Storage*** | IBM 3995-068 Optical Subsystem with 10 terabytes of capacity, FibreChannel connection | *Configured as a part of Storage Area Network |
| Enterprise Storage System*** | Enterprise Storage Subsystem (“Shark”) with 10 terabytes of capacity, FibreChannel connection | Embedded OS and software |
| *Please see the LPAR section above for physical and logical partitioning information.<br>**Shared with non-production environments<br>***Shared with all environments | | |

**Figure 4A.4-29 Testing Environment eBHC Equipment –** *This table lists the equipment that is positioned in the e-Business Hosting Center in support of the Testing Environment.*

## 4A.4.4.5 Summary

Dedicated Testing environments are used to test various portions of the CSE system before each is put into production. These testing efforts help to validate that the CSE system meets the functional and data requirements of the CCSAS project. The Testing environment supports each phase of testing, including the unit testing of the individual program components, the unit integration testing of multiple program components, software quantification testing, and system integration testing.

# 4A.4.5 Conversion Environment

***The alliance's Conversion Environment supports our conversion test team that has dedicated tools and experience converting CCSAS CSE data. The Data Conversion Environment includes a mapping and data dictionary system and an operational system running the ACS conversion utilities. The data conversion system has access to 1 TB of disk space to enable the swift and complete processing of data being loaded into the CSE system.***

Our data conversion approach leverages the alliance's extensive experience converting CSE data and the technical infrastructure of the CSE Conversion Environment.

The CSE Conversion Environment is designed to support the system infrastructure necessary to accommodate testing of the CSE system and conversion between it and existing county CSE systems. Data conversion is an essential task that will greatly contribute to the successful acceptance of the CSE system.

The alliance has designed a CSE Conversion Environment system that meets the needs of the CSE system and that enables us to meet the rigorous project schedule. The key to Conversion Test is access to substantial amounts of disk space and the ability to process large amounts of data. The Conversion Testing environment will process the data being converted for each county multiple times, to enable repeated tests of the conversion system to validate the conversion data mapping and determine the condition of the data being converted. Our data conversion approach leverages our experience converting CSE application data and the technical capabilities of the CSE Conversion Environment.

Our conversion approach, executed in the CSE Conversion Environment, emphasizes converting data in discrete phases, rather than all at once, in order to enhance the alliance's ability to quickly identify the root causes of, and resolution of, data mapping or conversion issues. With this approach, data from one phase (e.g., case and member information) is mapped, extracted, and cleansed prior to moving on to the next data phase (e.g., support order and financial data).

The CSE Conversion Environment, shown in Figure 4A.4-30, allows the alliance to perform the Conversion Test methodology that includes tasks to;

- Map the data
- Extract the data
- Clean the data
- Convert the data

These actions enable the loading of valid CSE system data into production.

To support data conversion the CSE Conversion Environment includes:

- Dual systems for data mapping, data dictionary development and data conversion activities
- Access to over 1TB of high-speed disk in an Enterprise Storage System via a fiber-channel connection
- The ability to load data from various formats including tape, data received electronically, or data interfaced into the Data Conversion System

The scope of the conversion effort is significant. Over 2,000,000 IV-D cases from 58 counties must be converted from six different sources (i.e., consortiums). Non-IV-D orders must be converted from the NICE database (NICE was developed in 1998 to collect non-IV-D orders with a wage assignment to comply with Federal SCR requirements).

The following diagram represents a high-level view of the system and the major components that make up the CSE Conversion Environment.

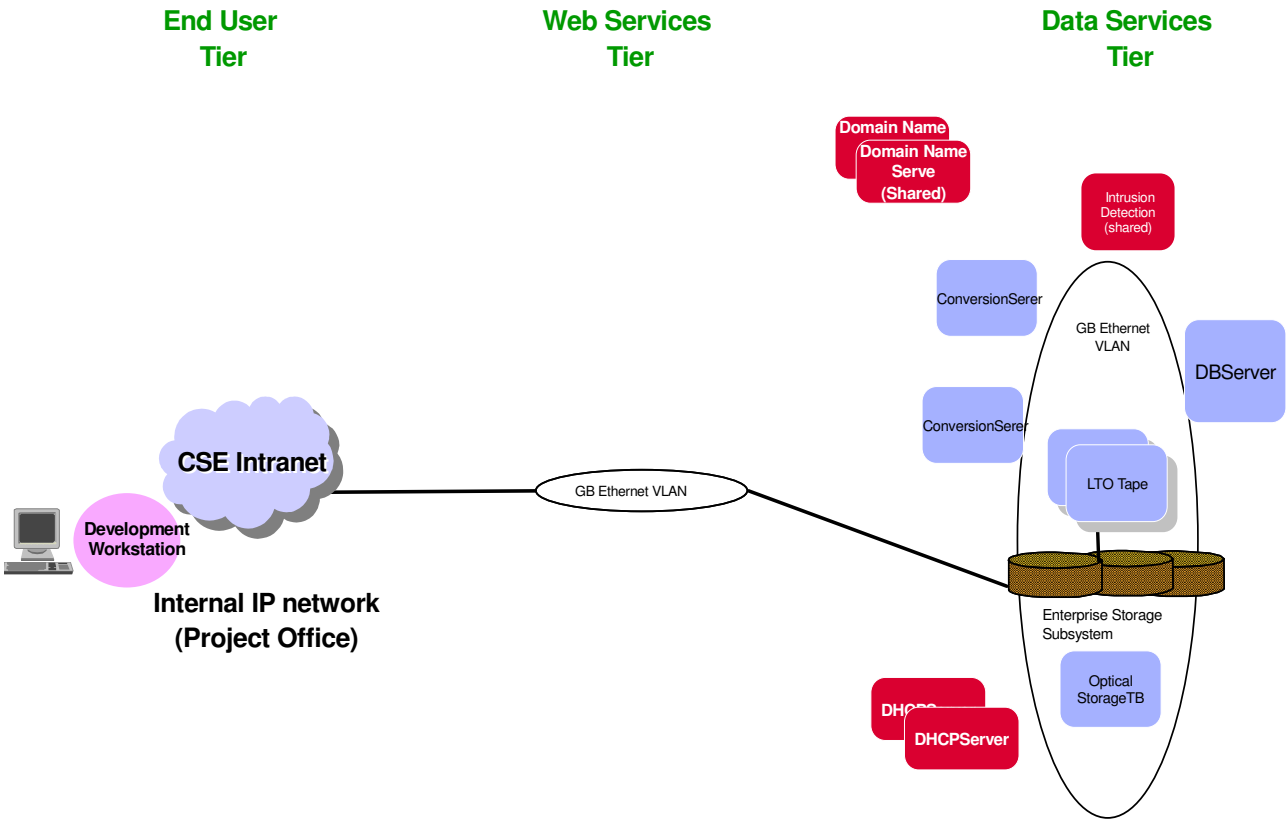



**Figure 4A.4-30 Conversion Environment –** *This diagram presents the technical architecture of the Conversion Environment.*

Like the Production Environment, the Conversion Environment is located in IBM's e-Business Hosting Services Facility (eBHC). The same industry-leading management protocols support the operations and maintenance of this environment.

The CSE Conversion Environment enables alliance personnel to perform the various data conversion activities described above using the Automated Conversion System (ACS) tools produced by AMS/Synergy, one of the alliance partners. ACS is a proven and established data conversion tool that is used to map the source and target data sources, develop data dictionaries, and then execute conversion dry runs and conversion into production.

As a portion of this effort, the converted data will be loaded into a standalone Database LPAR. Using the Conversion Database, CSE end-users will be able to perform read-only access to the data via an early-release copy of the CSE application.

The Conversion Environment is scaled identically to the Performance Environment. This allows a single physical environment to be used for both the CSE Conversion Environment and the CSE Performance Environment. Special copies of the Java-based application are hosted on the EdgeServers, WebAppServers and EJBServers of the CSE Performance Environment. These applications are configured to access data from the Conversion database during these data validation activities. For a definition of the CSE Performance Environment, please refer to Section 4A.4.3.

## 4A.4.5.1 Conversion Hardware and Software Summary

Within the CSE Conversion Environment, two subsidiary locations are represented. These are:

- alliance Project Office
- eBHC – the central processing site where back-end processing occurs

For each of these environments, the following sections will provide the proposed hardware and software.

### 4A.4.5.1.1 Conversion Environment Equipment – alliance Project Office

The CSE Conversion Environment is accessed from the alliance Project Office using the CSE Network. The End User Tier in the CSE Conversion Environment utilizes the Development workstations and client-based ACS tools.

Please refer to the CSE Development Environment section for details of the Hardware and Software in the alliance Project Office supporting these development activities.

### 4A.4.5.1.2 Conversion Environment Equipment – eBHC Equipment

#### 4A.4.5.1.2.1 Basic System Configurations

Like the CSE Production Environment, the CSE Conversion Environment has been designed to leverage the use of shared environments whenever possible. By using fewer, large capacity machines, the administration and maintenance costs of the system are reduced, as are the related costs for physically flooring the equipment. However, in order to reach the required availability requirements for the OLTP application, as well as to enhance the performance characteristics of the system, the partitioning of various application types and services had to be employed. The approach that the alliance found

to be most effective in answering these differing requirements was the Logical Partitioning capabilities of the IBM pSeries-690 ('Regatta') platform.

The solution that the alliance is proposing will utilize 10 large-scale pSeries 690 systems, each of which will be partitioned into smaller logical servers that support the services described in the preceding section.

### 4A.4.5.1.2.2 Shared System Configurations

Only one logical partition in the Data Services Tier is configured for the CSE Conversion Environment. This logical system resides upon the Gigabit Ethernet VLAN that is also used by the CSE Performance Environment. In addition, two independent systems are also configured and have access to this shared VLAN for faster data loads into the CSE Conversion Database. The Gigabit Virtual LAN network is fully switched, allowing full-duplex, full bandwidth use of the network for each connection.

This logical partition is provided with independent local storage that hosts the operating systems and the local applications that are operating upon them. For each system, four drives are configured, each running RAID 1+0 support to another disk. This configuration effectively provides two highly available logical drives on each machine or LPAR. One of the logical drives is configured to support the operating system and associated support files and operating swap areas, etc. The other drive-pair is used to host the application components that are being performed by that system. Backup and recovery is provided for these drives using a LAN-based backup mechanism. As described, therefore, this LPAR hosts its own local copy of the operating system and of the application software in a highly available manner.

For large and shared file systems, a Storage Area Network is used. This is discussed above in the Storage Area Network (SAN) section. Each of the systems in the Conversion Environment will be configured with at least one Fibre Channel card.

### 4A.4.5.1.2.3 Logical Partition Configurations

The following table represents the only specific Logical Partition (LPAR) that has been configured to support the CSE Conversion Environment. For this logical partition, basic memory and processor configuration information is given, with the Service provided defined in the LPAR Name. The LPAR Name will correspond with the Service description defined in the CSE Production Environment.

| Machine Name | LPAR Name | Processors | Memory (GB) |
|---|---|---|---|
| P690 DBServer1 | DBServer | 12 | 20 |

**Figure 4A.4-31 Conversion Environment LPAR Configuration --** *This table shows the configuration of the IBM pSeries 690 LPARs supporting the Conversion Environment on the eBHC floor.*

### *4A.4.5.1.2.4 Conversion –eBHC Hardware and Software*

The following table presents the equipment that is positioned in the e-Business Hosting Center for the CSE Conversion Environment. The components listed in the previous sections that are defined as shared are not positioned as additional units.

| Component | Hardware | Software |
|---|---|---|
| Conversion Server1 | xSeries 350 3U rack-mount system, 2-Way 900MHz/2MB Pentium III Xeon Processor, 2 GB memory, GB Ethernet adapter, 4 18GB Hot-Swappable disk drives, FibreChannel Adapter | Windows 2000 Advanced Server, custom ACS conversion tools |
| Conversion Server2 | xSeries 350 3U rack-mount system, 4-Way 900MHz/2MB Pentium III Xeon Processor, 4 GB memory, GB Ethernet adapter, 4 18GB Hot-Swappable disk drives, FibreChannel Adapter | Windows 2000 Advanced Server, custom ACS conversion tools |
| DHCPServer*** | (2) xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-100 MB Ethernet adapters, 2 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Advanced Server, IBM Tivoli Storage Manager Client, BMC Patrol |
| Regatta Servers*** | (10) pSeries 690 Turbo, 32-way Power 4 1.3 Ghz processors, 52 GB memory* , 4 18.2GB hot swappable disk drives per LPAR*, FibreChannel adapters*, Gigabit Ethernet and 100MB Ethernet adapters* | *AIX5L, various other software products loaded on an LPAR basis as described in preceding sections. See previous LPAR descriptions and component definitions for details. |
| Tivoli Storage Managers*** | (1) pSeries 660, 2GB Memory, 2 way processor | AIX 5L, Tivoli Storage Manager, Tivoli Disaster Recovery Manager<br>*Configured as a part of Storage Area Network and eBHC hosting service. |
| LTO Tape Subsystem*** | 12 Tape Drive System | Embedded OS and software |
| Optical Storage*** | IBM 3995-068 Optical Subsystem with 10 terabytes of capacity, FibreChannel connection | *Configured as a part of Storage Area Network |
| Enterprise Storage System*** | Enterprise Storage Subsystem (“Shark”) with 10 terabytes of capacity, FibreChannel connection | Embedded OS and software |
| *Please see the LPAR section above for physical and logical partitioning information.<br>**Shared with non-production environments<br>***Shared with all environments | | |

**Figure 4A.4-32 Conversion Environment eBHC Equipment –** *This table lists the equipment that is positioned in the e-Business Hosting Center in support of the Conversion Environment.*

### 4A.4.5.2 Summary

The alliance performs testing of the data conversion software using our established test methods on the systems in the CSE Conversion Environment. The CSE Conversion Environment supports the performance of the tests identified in the Data Conversion Test LAN. Using the proven and established automated data conversion utility, ACS, the alliance maps the source and target data sources, develop data dictionaries, and then executes conversion dry runs and conversion into Production. The key to an effective CSE Conversion Environment is access to large amounts of disk. In order to support multiple data conversion efforts in parallel, the alliance data conversion environment has access to 1 TB of high-performance disk.

## 4A.4.6 Development Environment

***The Development Environment enables the team to effectively perform the many tasks associated with developing the CSE system. The key to an effective development system is the provision for state-of-the-art tooling, access to production-like environments, and provision for Quality Assurance tools. These QA tools include items such as management for work products, source code control, and version control.***

The CSE Development Environment is designed to support the system infrastructure necessary to accommodate proof-of-concept and development activities of the CSE application. The CSE Development Environment mirrors the environments proposed for the Production CSE system. The CSE Development Environment allows for development and unit testing of the CSE application in a production-like environment. The CSE Development Environment duplicates the components that are used in the Production environment and shares access to the same Wide Area Network. The CSE Production Environment utilizes a separate Virtual LAN segment so that development activities should not impact production or other activities.

This section describes the structure of the Development Environment and the hardware and software used to support it. It also gives an overview of how the various Development Environments are used within the overall development lifecycle and how they fit with the various Testing environments described in sections 4A.4.2, 4A.4.3, and 4A.4.4.

The Development Environment has to support a number of concurrent code and unit integration testing environments for the reasons outlined in the Testing environment section. There is one code and one unit integration testing environment for each development. While WebSphere Studio Application Developer tool supports virtually all of this activity, there is not actually a need for separate physical environments, except for

certain specific components. This is mostly a 'logical' distinction, managed by maintaining separate code versions within the developer tool.

As mentioned in the CSE Testing Environment section, the CSE Development Environment includes support for unit test and some of the unit integration test activities. This is supported by the nature of the WebSphere Studio Application Developer tool, which is an integrated development and testing environment (IDE) for Web based applications.

The WebSphere Studio Application Developer tool incorporates a WebSphere simulation component known as the WebSphere Testing environment (WTE). Using WTE, a developer conducts unit test as an on-going, integral part of development. The initial unit integration test is also conducted in the WebSphere Studio Application Developer tool using WTE.

The work of the developers is synchronized on a regular basis by releasing their work into the public workspace. This coordinated activity effectively integrates the work done to date. Problems with changed interfaces or functionality are identified and corrected at this time. Subsequent to this, the new 'build' may be deployed to the actual unit integration testing environment for more formal testing or profiling / performance analysis.

The diagram represents a high-level view of the system and the major components that make up the Development Environment.

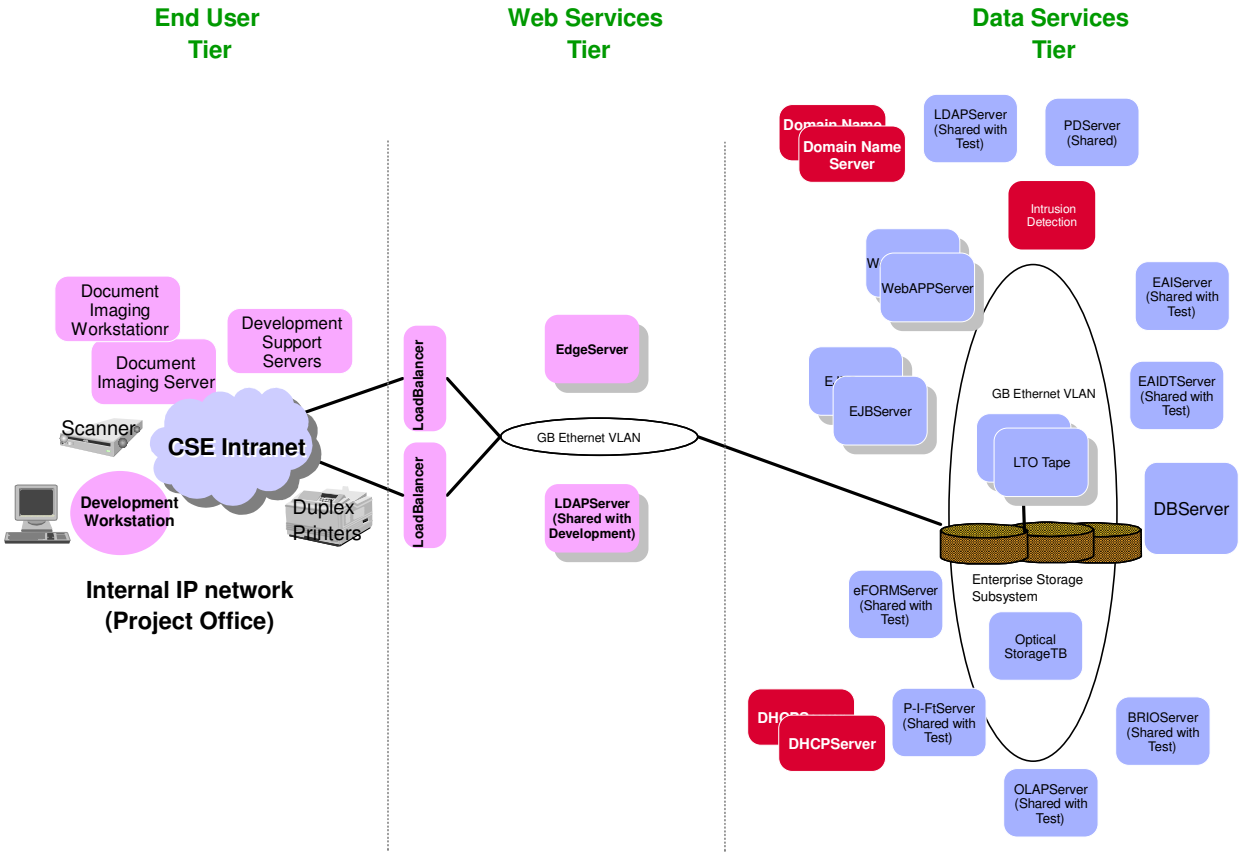


***Figure 4A.4-33 Development Environment – This diagram presents the technical architecture of the Development Environment.***

Like the CSE Production Environment, the CSE Development Environment is located in IBM's e-Business Hosting Services Facility (eBHC). The same industry-leading management protocols support the operations and maintenance of this environment. The CSE Development Environment enables alliance and State personnel to perform development and unit testing of the CSE application. Like the CSE Production environment, the CSE Development Environment provides different 'tiers' in order to support the CSE application. The tiers are described below. (Please note – for a more thorough definition, please refer to Section 4.1.4.1 CSE Production Environment .)

Like the CSE Production Environment, the CSE Development Environment can be looked at as an interrelated set of tiered services. Reviewing the diagram above, you will see that these tiers are further subdivided into various components, each of which provides further support to the application. Each of the components depicted represent particular types of services, and therefore can be sized depending upon the type of application services provided and the associated 'speeds-and-feeds' for that service.

## 4A.4.6.1 Development Process

In order to understand the testing environments, it is important to note that the alliance is using an iterative development and maintenance process. That process results in up to three different versions of the application at any time – versions that need to co-exist. Each of these versions is a distinct code base, and each requires a testing environment to support it.

- Iteration under development. This is the 'main' development environment, where new functionality is being developed. During this development process, new and extended functionality is being prepared.
- Iteration under test. This is the environment for applying bug fixes identified in system / acceptance test for the iteration that is next to be released to production. Fixes that are required in order to exit test are applied to this code stream and re-deployed in an iterative fashion. These fixes also have to be applied to the iteration under development.
- Production fix. This is the environment for developing fixes to bugs / problems discovered in production. Any fixes that are required in production, that cannot be deferred until the next scheduled release are merged into this code base, tested and then put into production. These fixes also have to be applied to the iteration under test and the iteration under development.

## 4A.4.6.2 Logical Servers

The following section describes the various products and services that the components that are presented support. For each component, the various factors that have a bearing on necessary sizing and placement will be presented.

In order to successfully deploy and size the CSE Development Environment, the various product sets have been partitioned in the following ways. Each of these partitions

represents application software components that exhibit similar usage patterns. In order to simplify the presentation of these CSE Environments sections, this Environment description will not replicate components that are either re-used or are configured in a similar fashion to those defined in the CSE Production Environment Section of this response.

Because the CSE Development Environment replicates and extends the CSE Production Environment, the description will not be repeated here. Please review the previous CSE Environment Sections for details of these services.

For the needs of performance testing the system, certain components are also amongst other environments, where that sharing would not impact our ability to support the CSE Development Environment. These components include:

- LDAPServer
- PDServer
- DHCPServer
- LoadBalancers
- End-User Workstations
- Document Imaging Server
- Document Imaging Workstation

It is important to note, however, that where we have defined components as *shared*, they are not shared with the Production Environment. Rather, they are shared with other environments that have no impact upon the Production Environment performance.

We will first present the new configuration of the components below in order to facilitate the discussion of the various environments. In this section, we will not attempt to describe the various products utilized. For this discussion, the reader should review the preceding Introduction. Because the Development Environment must replicate the behaviors of the Production Environment, no new software in use at the eBHC is represented.

As in the Production Environment, each of the servers described below is hosted on separate physical machines, on separate Logical Partitions (LPARs) on shared machines, or both. Hosting choices of the various services will be described in following subsections.

## 4A.4.6.3 Sizing

The CSE Development Environment was designed to represent a replication of the production environment. For the OLTP Database and Image storage requirements the alliance has utilized an approach that allows for numerous, simultaneous development cycles to be performed. We have estimated that the development teams will need approximately 12 ‘work cells’ to perform their tasks. Each ‘work cell’ contains data storage equal to approximately 4 ‘large counties’ data. For each ‘work cell’ the alliance has determined that the needed storage would be the equivalent of about 48 gigabytes. With storage available for customization and unit testing of the image processing and

data warehouse transformation tasks, the alliance has determined that approximately 740 gigabytes are required to support:

- Development Databases for OLTP test cases
- Development support image indexes and disk-based document storage
- Development data warehouse storage allocations

These 740 gigabytes of storage resides on the Storage Area Network to support this portion of the solution.

## 4A.4.6.4 Development Hardware and Software Summary

Within the CSE Development Environment, two subsidiary locations are represented. These are:

- alliance Project Office – the CSE application within the Project Office
- eBHC – the central processing site where back-end processing occurs

For each of these environments, the following sections will provide the proposed equipment and software. For those elements where additional sizing or partitioning was required, some additional definitions are provided.

### 4A.4.6.4.1 Development Environment Equipment – alliance Project Office

The Development Environment is accessible from the alliance Project Office and utilizes the same CSE managed Wide Area Network to access the eBHC. Development Environment end users are located in the alliance Project Office.

The CSE Development Environment includes desktops that will be the functional equivalent of the CSE end user desktops but with more storage and power in order to meet the CPU and memory needs of the developer's tools. The end-user tier houses the numerous development tools as displayed in the table below.

Additionally, development servers to support both shared file access and development tools are configured as shown below.

| Server Name | Equipment | Software |
|---|---|---|
| Development Support Server1 | IBM xSeries 350, 1-way, 1 GB RAM, 20 GB hard drive, 48X CD-ROM, 10/100 Ethernet card | Windows 2000 Server, Internet Explorer V5, Java Virtual Machine, Tivoli Management Framework, Norton Anti-Virus, Rational Rose License Server |
| Development Support Server2 | IBM xSeries 350, 2-way, 8 GB RAM, 100 GB hard drive, 48X CD-ROM, 10/100 Ethernet card | Windows 2000 Server, Internet Explorer V5, Java Virtual Machine, Tivoli Management Framework, Norton Anti-Virus |
| Development Support Server3 | IBM xSeries 350, 2-way, 2 GB RAM, 200 GB hard drive, 48X CD-ROM, 10/100 Ethernet card | Windows 2000 Server, Internet Explorer V5, Java Virtual Machine, Tivoli Management Framework, Norton Anti-Virus., Merant PVCS Version Manager |

| Server Name | Equipment | Software |
|---|---|---|
| Development Workstations | (88) IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 384 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 17-inch monitor, .27-dot pitch | Windows 2000 Professional, Internet Explorer V5, Java Virtual Machine, Brio Quick View, Tivoli Management Framework, Norton Anti-Virus, Adobe Acrobat Reader, Rational RUP, Rational Rose Professional - Java Edition, Rational Rose Modeler, RoboHELP Office standard edition, CA Erwin V4.0 OLP, CA Erwin Examiner, IBM WebSphere Studio AD, Sitraka Jprobe Suite, Parasoft Jtest, Brio Designer , Brio Insight, IBM WebSphere Admin Console, Wily Admin Console, Bobby, IBM Home Page Reader<br>* Note – not all software packages are configured on every development workstation |
| Model Office Workstations | (20)IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 128 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 17-inch monitor, .27-dot pitch | Windows XP, IE V5.x |
| Model Office Printers | (2)IBM Infoprint 1125 Duplex Printers, 32MB of Memory, 500 Sheet Drawer | |
| Model Office Scanner | Fujitsu 4097D Scanner with Adaptec SCSI Adapter and Cable | Kofax Ascent Capture Scan v5.0 AC-2500-1700 |
| Model Office Server | IBM xSeries 342, 1GB, 1 CPU, 3 18GB Disks, w/ RAID adapter | Adobe Acrobat Capture Personal Edition v3.0 |
| Model Office Image Workstation | IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 128 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 19-inch monitor, .27-dot pitch | Kofax Ascent Capture Wks v5.0 AC-1500-2000 |

**Figure 4A.4-34 Development Environment alliance Project Office Equipment** *– This table shows the Configuration of development servers to support both shared file access and development tools.*

## 4A.4.6.4.2 Development Environment Equipment – eBHC Equipment

### 4A.4.6.4.2.1 Basic System Configurations

Like the CSE Production Environment, the CSE Development Environment has been designed to leverage the use of shared environments whenever possible. By using fewer, large capacity machines, the administration and maintenance costs of the system are reduced, as are the related costs for physically flooring the equipment. However, in order to reach the required availability requirements for the OLTP application, as well as to enhance the performance characteristics of the system, the partitioning of various application types and services had to be employed. The approach that the alliance found to be most effective in answering these differing requirements was the Logical Partitioning capabilities of the IBM pSeries-690 (‘Regatta’) platform.

The solution that the alliance is proposing will utilize 10 large-scale pSeries 690 systems, each of which will be partitioned into smaller logical servers that support the services described in the preceding section.

The eBHC-based hardware and software configured for Development is utilized primarily for Unit Integration testing since initial development and testing activities are generally performed on the developers' workstations within the WebSphere environment. Even when using the private, workstation-based copies of the WebSphere Testing environment, however, the Database Servers provide access to the data that is stored on the Storage Area Network.

### 4A.4.6.4.2.2 Shared System Configurations

Each of the systems and logical partitions described is provided with independent local storage that hosts the operating systems and the local applications that are operating upon them. For each system, four drives are configured, each running RAID 1+0 support to another disk. This configuration effectively provides two highly available logical drives on each machine or LPAR. One of the logical drives is configured to support the operating system and associated support files and operating swap areas, etc. The other drive-pair is used to host the application components that are being performed by that system. Backup and recovery will be provided for these drives using a LAN-based backup mechanism. As described, therefore, each LPAR or system hosts its own local copy of the operating system and of the application software in a highly available manner.

For large, and shared file systems, a Storage Area Network is used. This is discussed above in the Storage Area Network (SAN) section. Each of the systems that utilize storage like this (e.g. database servers, etc.) is configured with a single FibreChannel cards in the CSE Development Environment.

Each logical partition in the Data Services Tier of the CSE Development Environment solution is configured with independent 100 MB Ethernet connectivity to the Virtual Local Area Network in a switched environment. This Virtual LAN is shared among the other non-Production Environments including the:

- Testing Environment
- Production Simulation Environment
- System Administration Environment

The 100 Mb Virtual LAN networks is fully switched, allowing full duplex, full bandwidth use of the network for each connection.

### 4A.4.6.4.2.3 Logical Partition Configurations

The following table represents the Logical Partitions (LPARs) that have been configured to support the CSE Development Environment. For each logical partition, basic memory, and processor configuration information is given, with the Service provided defined in the LPAR Name.

The LPAR Name corresponds with the Service description defined above.

An important factor in describing the deployment of the CSE Development Environment is the fact that, for multiple components, the alliance felt that the Development and Testing Environments would be well served with shared environments. For each of these components, the software will allow for a segregated logical portioning of the data and processing within the applications themselves.

Physical machine separation (for availability and performance reasons) can be determined by reviewing the 'Machine Name' column.

| Machine Name | LPAR Name | Processors | Memory (GB) |
|---|---|---|---|
| P690 DService1 | EAIServer (Development and Test) | 2 | 2 |
| P690 DService1 | WAREHOUSEServer (Development and Test) | 2 | 4 |
| P690 DService2 | LDAPServer (Development and Test) | 2 | 2 |
| P690 DService2 | BrioServer (Development and Test) | 2 | 2 |
| P690 DService2 | EAIDTServer (Development and Test) | 2 | 2 |
| P690 DService2 | OLAPServer (Development and Test) | 2 | 2 |
| P690 DService2 | WebAPPServer1 | 2 | 2 |
| P690 DService3 | WebAPPServer2 | 2 | 2 |
| P690 DService3 | P-I-FServer (Development and Test) | 6 | 6 |
| P690 DBServer3 | DBServer | 4 | 8 |
| P690 DBServer3 | EJBServer1 | 2 | 4 |
| P690 DBServer3 | EJBSevrer2 | 2 | 4 |

**Figure 4A.4-35 Development Environment LPAR Configuration --** *This table shows the configuration of the IBM pSeries 690 LPARs supporting the Development Environment on the eBHC floor.*

### 4A.4.6.4.2.4 Development Environment –eBHC Hardware and Software

The following table presents the equipment that is positioned in the e-Business Hosting Center for the CSE Development Environment. The components listed in the previous sections that are defined as *shared* are not positioned as additional units.

| Component | Hardware | Software |
|---|---|---|
| Load Balancer*** | (4) Alteon/Ace Director | Embedded OS and software |
| Load Balancer Inside (SSL)*** | (4) Alteon/ISD 310 | Embedded OS and software |
| EFormsServer | xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-1Gigabit Ethernet adapters, 3 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Server, Microsoft Internet Information Server (IIS), Accelio Capture Web, IBM Tivoli Storage Manager Client, BMC Patrol |

| Component | Hardware | Software |
|---|---|---|
| DHCPServer*** | (2) xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-100 MB Ethernet adapters, 2 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Advanced Server, IBM Tivoli Storage Manager Client, BMC Patrol |
| EdgeServer | pSeries 610 – 6C1 Rack mount server, 1-Way Power3 –II 450 Mhz processor, 1 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM WebSphere Edge Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Policy Director WebSeal Lite, IBM Tivoli Storage Manager Client, IBM SecureWay Directory Server Client, BMC Patrol |
| LDAPServer** | pSeries 610 – 6C1 Rack mount server, 2-Way Power3 –II 450 Mhz processor, 4 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM SecureWay Directory Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Storage Manager Client, BMC Patrol |
| Regatta Servers*** | (10) pSeries 690 Turbo, 32-way Power 4 1.3 Ghz processors, 52 GB memory* , 4 18.2GB hot swappable disk drives per LPAR*, FibreChannel adapters*, Gigabit Ethernet and 100MB Ethernet adapters* | *AIX5L, various other software products loaded on an LPAR basis as described in preceding sections. See previous LPAR descriptions and component definitions for details. |
| Tivoli Storage Managers*** | (1) pSeries 660, 2GB Memory, 2 way processor | AIX 5L, Tivoli Storage Manager, Tivoli Disaster Recovery Manager<br>*Configured as a part of Storage Area Network and eBHC hosting service. |
| LTO Tape Subsystem*** | 12 Tape Drive System | Embedded OS and software |
| Optical Storage*** | IBM 3995-068 Optical Subsystem with 10 terabytes of capacity, FibreChannel connection | *Configured as a part of Storage Area Network |
| Enterprise Storage System*** | Enterprise Storage Subsystem (“Shark”) with 10 terabytes of capacity, FibreChannel connection | Embedded OS and software |
| *Please see the LPAR section above for physical and logical partitioning information.<br>**Shared with non-production environments<br>***Shared with all environments | | |

**Figure 4A.4-36 Development Environment eBHC Equipment –** *This table lists the equipment that is positioned in the e-Business Hosting Center in support of the Development Environment.*

### 4A.4.6.5 Summary

The Development Environment mirrors and extends the Production environment. Providing significant support for version control, the Development Environment is designed to support the special needs of Web-based application development.

## 4A.4.7 System Administration Support Environment

***The System Administration Environment is used by the alliance Operations staff to implement and test operating system and system software upgrades prior to their implementation in other CCSAS environments. The alliance maintains operating system and system software versions within 6 months of general availability.***

The CSE System Administration Support Environment is designed to support the system infrastructure necessary to accommodate independent testing of platform software (operating system or COTS program products) changes and upgrades prior to installation in other CSE system environments. The CSE System Administration Support Environment duplicates many of the same components that are used in the Production Environment.

The alliance System Administration Process includes the pre-testing of Operating System Software.

The CSE System Administration Support Environment allows the alliance technical staff to perform operating system and system software upgrades in an environment prior to implementation in the other CSE environments. Activities performed in the CSE Systems Administration Support Environment include configuration, installation, administration, organization, and maintenance of systems and associated alliance provided software residing in the e-Business Hosting Center.

The systems administration process used within the CSE System Administration Support Environment provides the necessary provisioning and execution of specific requests affecting development and/or production-based systems.

The systems administration process is intended to provide a standardized approach to managing IT systems and system services with respect to the following:

- System Configuration
- Installation of System Hardware and Software
- Removal of System Hardware and Software
- Performance Tuning
- Security
- Maintenance

The CSE System Administration Support Environment includes one of each of the operating systems and system software that exist in the CSE Environments. This

environment enables the alliance to maintain the operating and system software during the term of the contract.

In support of each IBM outsourcing engagement, IBM has a centralized organization that tests and packages Unix operating system installations and upgrades. These upgrade packages are shipped to the e-Business Hosting Center pre-tested and ready for installation. The System Administration Environment is used for further testing in the specific CSE System Administration Support Environment before implementation. The CSE system administration team, which includes system programmers, administrators, and database administrators will be located in the IBM e-Business Hosting Center and in the alliance Project Office.

The following diagram represents a high-level view of the system and the major components that make up the CSE System Administration Support Environment.

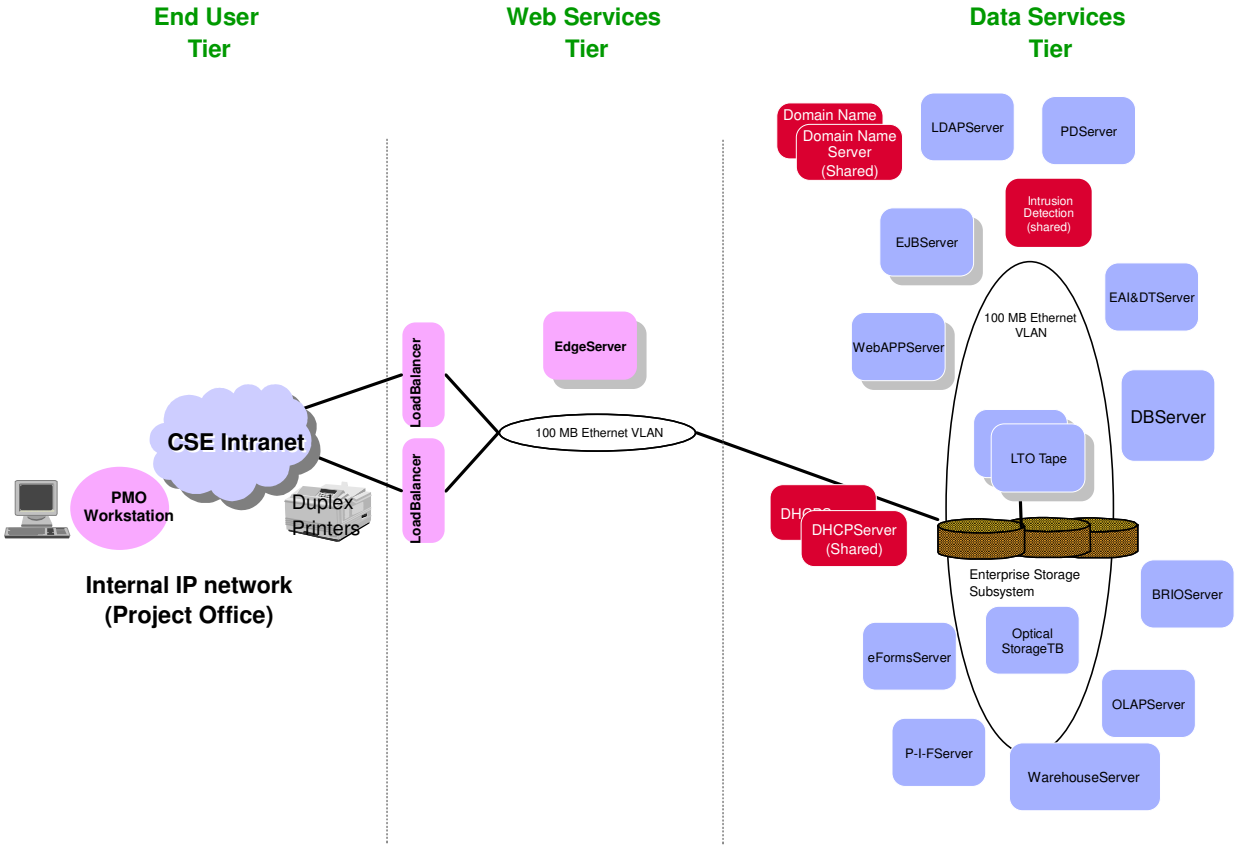



**Figure 4A.4-37 System Administration Environment –** *This diagram presents the technical architecture of the System Administration Environment.*

Like the Production Environment, the System Administration Support Environment is located in IBM's e-Business Hosting Services Facility. The same industry-leading management protocols support the operations and maintenance of this environment. Like the Production Environment, the System Administration Support Environment provides different 'tiers' in order to support the CSE application. The tiers are described

below. (Please note – for a more thorough definition, please refer to Section 4.1.4.1 Production Environment .)

Like the CSE Production Environment, the System Administration Support Environment can be looked at as an interrelated set of tiered services. Reviewing the diagram above, you will see that these tiers are further subdivided into various components, each of which provides further support to the application. Each of the components depicted represent particular types of services, and therefore, can be sized depending upon the type of application services provided and the associated 'speeds-and-feeds' for that service.

The following section describes the various products and services that the presented components support. For each component, the various factors that have a bearing on necessary sizing and placement will be presented.

## 4A.4.7.1 Logical Servers

In order to successfully deploy and size the CSE System Administration Support Environment, the various product sets have been partitioned in the following ways. Each of these partitions represents application software components that exhibit similar usage patterns.

In order to simplify the presentation of these CSE Environments sections, this Environment description will not replicate components that are either re-used or are configured in a similar fashion to those defined in the CSE Production Environment Section of this response.

Certain components are also shared amongst other environments where that sharing would not impact our ability to support the System Administration Support Testing Environment. These components include:

- DHCPServer
- LoadBalancers

It is important to note, however, that where we have defined components as *shared*, they are not shared with the Production Environment. Rather, they are shared with other environments that will have no impact upon the Production Environment performance.

Because the System Administration Support Environment must replicate the behaviors of the Production Environment, no new software is represented. Therefore, the particular LPAR designations and the associated software components definitions can be found in the 4A.4.1 CSE Production Environment section.

As in the Production Environment, each of the servers described below will be hosted on either separate physical machines, on separate Logical Partitions (LPARs) on shared machines, or both. Hosting choices of the various services will be described in following subsections.

## 4A.4.7.2 Sizing

The CSE System Administration Support Environment was designed to represent a small portion of the Production Environment. For the shared disk storage requirements, the alliance is providing about 100 gigabytes of storage on the Storage Area Network to support this portion of the solution.

The hardware supporting the CSE System Environment has been sized and configured with the purpose and use of this environment in mind. This includes accommodations for the limited number of system administration users.

## 4A.4.7.3 System Administration Support Environment Hardware and Software Summary

Within the CSE System Administration Support Environment, only the eBHC (the central processing site where back-end processing occurs) environment is needed.

For this environment, the following section will provide the proposed hardware and software.

### 4A.4.7.3.1 System Administration Support Environment Equipment – eBHC Equipment

#### 4A.4.7.3.1.1 Basic System Configurations

Like the CSE Production Environment, the CSE System Administration Support Environment has been designed to leverage the use of shared environments whenever possible. By using fewer, large capacity machines, the administration and maintenance costs of the system are reduced, as are the related costs for physically flooring the equipment. However, in order to reach the required availability requirements for the OLTP application, as well as to enhance the performance characteristics of the system, the partitioning of various application types and services had to be employed. The approach that the alliance found to be most effective in answering these differing requirements was the Logical Partitioning capabilities of the IBM pSeries-690 ('Regatta') platform.

The solution that the alliance is proposing will utilize 10 large-scale pSeries 690 systems, each of which will be partitioned into smaller logical servers that support the services described in the preceding section.

#### 4A.4.7.3.1.2 Shared System Configurations

Each of the systems and logical partitions described are provided with independent local storage that will host the operating systems and the local applications that are operating upon them. For each system, four drives are configured, each running RAID 1+0 support to another disk. This configuration effectively provides two highly available logical drives on each machine or LPAR. One of the logical drives is configured to support the operating system and associated support files and operating swap areas, etc. The other drive-pair is used to host the application components that are being performed by that system. Backup and recovery are provided for these drives using a LAN-based backup

mechanism. As described, therefore, each LPAR or system hosts its own local copy of the operating system and of the application software in a highly available manner.

For large, and shared file systems, a Storage Area Network will be used. This is discussed above in the Storage Area Network (SAN) section. Each of the systems that utilize storage like this (e.g. database servers, etc.) will be configured with one FibreChannel card in the CSE System Administration Support Environment.

Each logical partition in the Data Services Tier of the CSE System Administration Support Environment solution will be configured with independent 100 MB Ethernet connectivity to the Virtual Local Area Network in a switched environment. This Virtual LAN will be shared among the other non-Production environments including the:

- Development Environment
- Testing Environment and
- Production Simulation Environment

The 100 Mb Virtual LAN networks is fully switched, allowing full duplex, full bandwidth use of the network for each connection.

### 4A.4.7.3.1.3 Logical Partition Configurations

The following table represents the Logical Partitions that have been configured to support the CSE System Administration Support Environment. For each logical partition, basic memory and processor configuration information is given, with the Service provided defined in the LPAR Name.

The LPAR Name will correspond with the Service description defined above.

Physical machine separation (for availability and performance reasons) can be determined by reviewing the 'Machine Name' column.

| Machine Name | LPAR Name | Processors | Memory (GB) |
|---|---|---|---|
| P690 DService1 | LDAPServer | 2 | 2 |
| P690 DService1 | OLAPServer | 2 | 2 |
| P690 DService2 | WebAPPServer | 2 | 2 |
| P690 DService2 | EAI&DTServer | 2 | 2 |
| P690 DService2 | WAREHOUSEServer | 2 | 2 |
| P690 DService2 | BrioServer | 2 | 2 |
| P690 DService3 | P-I-Fserver | 4 | 4 |
| P690 DService3 | PDServer | 2 | 2 |
| P690 DBServer3 | DBServer | 2 | 2 |
| P690 DBServer3 | EJBServer | 2 | 2 |

**Figure 4A.4-38 System Administration LPAR Configuration --** *This table shows the configuration of the IBM pSeries 690 LPARs supporting the System Administration Environment on the eBHC floor.*

### *4A.4.7.3.1.3.1 System Administration Support Environment –eBHC Hardware and Software*

The following table presents the equipment that is positioned in the e-Business Hosting Center for the CSE System Administration Support Environment. The components listed in the previous sections that are defined as *shared* are not positioned as additional units.

| Component | Hardware | Software |
|---|---|---|
| Load Balancer*** | (4) Alteon/Ace Director | Embedded OS and software |
| Load Balancer Inside (SSL)*** | (4) Alteon/ISD 310 | Embedded OS and software |
| EFormsServer | xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-1Gigabit Ethernet adapters, 3 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Server, Microsoft Internet Information Server (IIS), Accelio Capture Web, IBM Tivoli Storage Manager Client, BMC Patrol |
| DHCPServer*** | (2) xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-100 MB Ethernet adapters, 2 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Advanced Server, IBM Tivoli Storage Manager Client, BMC Patrol |
| EdgeServer | pSeries 610 – 6C1 Rack mount server, 1-Way Power3 –II 450 Mhz processor, 1 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM WebSphere Edge Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Policy Director WebSeal Lite, IBM Tivoli Storage Manager Client, IBM SecureWay Directory Server Client, BMC Patrol |
| LDAPServer** | (2) pSeries 610 – 6C1 Rack mount server, 2-Way Power3 –II 450 Mhz processor, 4 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM SecureWay Directory Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Storage Manager Client, BMC Patrol |
| Regatta Servers*** | (10) pSeries 690 Turbo, 32-way Power 4 1.3 Ghz processors, 52 GB memory* , 4 18.2GB hot swappable disk drives per LPAR*, FibreChannel adapters*, Gigabit Ethernet and 100MB Ethernet adapters* | *AIX5L, various other software products loaded on an LPAR basis as described in preceding sections. See previous LPAR descriptions and component definitions for details. |
| Tivoli Storage Managers*** | (1) pSeries 660, 2GB Memory, 2 way processor | AIX 5L, Tivoli Storage Manager, Tivoli Disaster Recovery Manager<br>*Configured as a part of Storage Area Network and eBHC hosting service. |
| LTO Tape Subsystem*** | 12 Tape Drive System | Embedded OS and software |

| Component | Hardware | Software |
|---|---|---|
| Optical Storage*** | IBM 3995-068 Optical Subsystem with 10 terabytes of capacity, FibreChannel connection | *Configured as a part of Storage Area Network |
| Enterprise Storage System*** | Enterprise Storage Subsystem ("Shark") with 10 terabytes of capacity, FibreChannel connection | Embedded OS and software |
| *Please see the LPAR section above for physical and logical partitioning information.<br>**Shared with non-production environments<br>***Shared with all environments | | |

**Figure 4A.4-39 System Administration Environment eBHC Equipment –** *This table lists the equipment that is positioned in the e-Business Hosting Center in support of the System Administration Environment.*

### 4A.4.7.4 Summary

The CSE System Administration Support Environment includes components of the CSE Production Environment. According to the Production Support Change Management process, operating system upgrades and system software enhancements are planned, scheduled, executed, and tested in the System Administration Environment. The Production Support Change Management Process dictates that every phase of any change introduced into the CSE Production Environment must be tested and documented before it can be completed.

The CSE System Administration Support Environment systems are located in the IBM e-Business Hosting Facility and are accessed by a network connection to the alliance technical staff supporting the CSE Project.

## 4A.4.8 Training Environment

***The Training Environment allows the alliance and DCSS to perform system user and system operator training in a production-like environment. This provides an effective training system with the ability to control the data loaded into the system and to coordinate it with training activities in the field.***

The CSE Training Environment is designed to support the system infrastructure necessary to accommodate CSE system application user training. The CSE Training Environment duplicates many of the same components that are used in the Production environment.

The CCSAS Training Environment supports both classroom and desktop learning.

The CSE Training Environment is centralized in the e-Business Hosting Center. The Training Environment includes the same functional components as the CSE Production Environment, enabling training on the same application that is run in the Production Environment.

Multiple training databases run in the CSE Training Environment, allowing multiple classes to be run simultaneously. The large training databases support the formal CSE training and the e-learning performed from the user's desktop.

The CSE Training Database contains cases for each CSE end user, minimizing the need for database loads to support the CSE classroom and individualized e-learning. Periodic loads of the database tables are performed in order to refresh content after user-directed training has been performed.

The Training Environment includes a Learning Management System (LMS) to coordinate, track, and deliver CSE individualized training to the end user's desktop.

The Training Environment is accessed from the alliance Project Office and any DCSS location attached to the CSE Network or any location hosting training sessions. The alliance will connect regional training centers to the network for the duration of the training sessions. The End User Tier in the Training locations utilizes the same browser configuration, software, and the equivalent desktop systems to effectively simulate the end user's Production Environment experience.

The following diagram represents a high-level view of the system and the major components that make up the CSE Training Environment

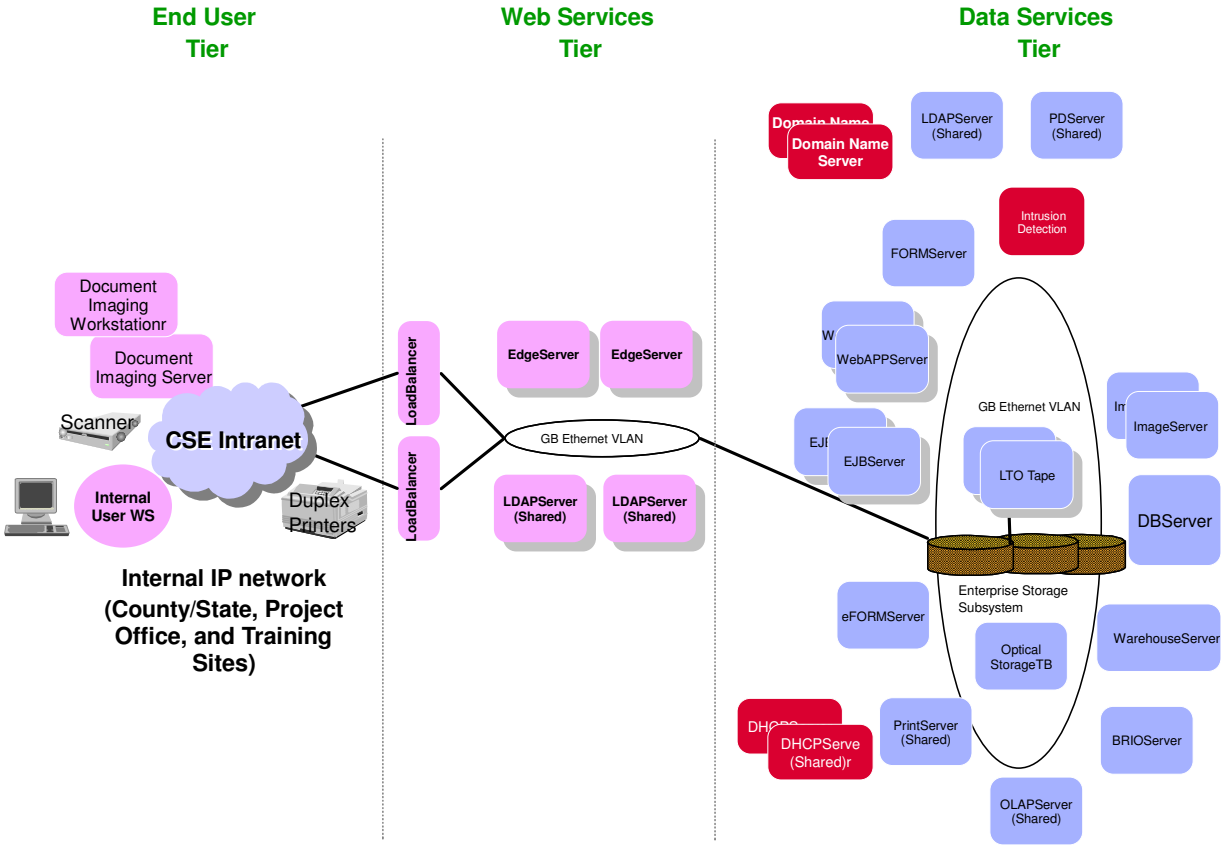



***Figure 4A.4-40 Training Environment – This diagram presents the technical architecture of the Training Environment.***

Like the Production Environment, the Training Environment is located in IBM's e-Business Hosting Services Facility. The same industry-leading management protocols support the operations and maintenance of this environment.
Like the Production Environment, the Training Environment provides different 'tiers' in order to support the CSE application. The tiers are described below. (Please note – for a more thorough definition, please refer to Section 4.1.4.1 Production Environment.)

Like the CSE Production Environment, the Training Environment can be looked at as an interrelated set of tiered services. Reviewing the diagram above, you will see that these tiers are further subdivided into various components, each of which provides further support to the application. Each of the components depicted represent particular types of services, and therefore can be sized depending upon the type of application services provided and the associated 'speeds-and-feeds' for that service.

The following section describes the various products and services that the components that are presented support. For each component, the various factors that have a bearing on necessary sizing and placement will be presented.

## 4A.4.8.1 Logical Servers

In order to successfully deploy and size the CSE Training environment, the various product sets have been partitioned in the following ways. Each of these partitions represents application software components that exhibit similar usage patterns.

In order to simplify the presentation of these CSE Environments sections, this Environment description will not replicate components that are either re-used or are configured in a similar fashion to those defined in the CSE Production Environment Section of this response.

Certain components are also shared amongst other environments where that sharing would not impact our ability to support the Training Environment. These components include:

- DHCPServer
- LoadBalancers
- LDAPServers
- PDSevrer
- PrintServer
- OLAPServer

These listed components are shared with the Production Environment. The CSE Training Environment is configured in this way because of the requirement to provide for self-paced training to CSE case workers at the LCSA offices.

The user community served by the Training Environment is identical; the associated network access requirements are also the same. Because the Production and Training Environments cannot be concurrently accessing (and therefore placing load upon) the CSE Production Environment, no real additional loading should be engendered by this configuration. Those items that are shared are capable of logically partitioning the

Training needs from those of the Production Environment. For others, such as the LDAPServers and PrintServers, the actual entries in each area will be identical because they are user or environmentally based.

Other components are hosted independently (such as the EJBServers, WebAPPServers and EdgeServers) because they require differing configurations or different loading patterns. Clearly, the Database Server and WarehouseServer are also configured independently from the Production Environment, due to the different data requirements.

Because the Training Environment must replicate the behaviors of the Production Environment, no new software is represented. Therefore, the particular LPAR designations and the associated software components definitions can be found in the 4A.4.1 CSE Production Environment section.

As in the Production Environment, each of the servers described below are hosted on either separate physical machines, on separate Logical Partitions (LPARs) on shared machines, or both. Hosting choices of the various services will be described in the following descriptions.

## 4A.4.8.2 Sizing

The CSE Training environment is designed to represent 20% of the Production Environment storage and processing capacity. For the shared disk storage requirements, the alliance is providing almost one terabyte of storage on the Storage Area Network to support this portion of the solution.

The databases used to support the Training Environment are created based upon the training scenarios that are developed by the training team. Within each scenario one or more cases may be represented. Because each user is allowed to perform self-paced instruction, these scenarios (with their associated cases) will need to be replicated many times.

## 4A.4.8.3 Training Environment Hardware and Software Summary

Within the CSE Training Environment, a number of subsidiary locations are represented. Among these are:

- County Offices – the actual end-user tier for the CCSAS end-user community will perform self-paced training from these locations
- eBHC – the central processing site where back-end processing occurs
- Training Centers – The Training Centers are used to support classroom-based training to CSE application users

Because the County Offices are identical to those that are to be available for the Production Environment, no discussion of this location is presented here. Rather, the reader should refer to 4A.4.1 Production Environment for more definition.

### 4A.4.8.3.1 Training Environment Equipment – Training Sites

The Training Sites are configured as copies of the Production Environment County offices.

The Training Sites contain end-user workstations and servers connected to the back-end systems using the CSE network. Each of the client machines runs application components using a Web browser and utilizes a web-based client to operate system components.

Scanning and printing equipment is included at the Training Sites. Specific workstations used to support document scanning and processing tasks are required to support training activities for document intake and management tasks. The alliance will provide desktops, print systems, scanning, LAN and other system components of the CSE Training Environment.

The following table displays the equipment and associated software that will be deployed in the field to support the CSE Training Environment.

| Component | Quantity | Hardware | Software |
|---|---|---|---|
| Desktops | 248 | IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 256 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 17-inch monitor, .27-dot pitch | Windows XP, IE V5.x |
| Printers | 17 | IBM Infoprint 1125 Duplex Printers, 32MB of Memory, 500 Sheet Drawer | |
| Document Scanners | 4 | Fujitsu 4097D Scanner with Adaptec SCSI Adapter and Cable | Kofax Ascent Capture Scan v5.0 AC-2500-1700 |
| Image Servers | 4 | IBM xSeries 342, 1GB, 1 CPU, 3 18GB Disks, w/ RAID adapter | Adobe Acrobat Capture Personal Edition v3.0 |
| Image Workstations | 4 | IBM NetVista M Series desktop, Pentium IV 1.6 GHz processor, 256 MB RAM, 40 GB hard drive, 48X CD-ROM, 10/100 Ethernet card, 19-inch monitor, .27-dot pitch | Kofax Ascent Capture Wks v5.0 AC-1500-2000 |

**Figure 4A.4-41 Training Equipment -** *The equipment and associated software that will be deployed in the field as a part of the CSE Training Environment.*

### 4A.4.8.3.2 Training Environment Equipment – eBHC Equipment

#### 4A.4.8.3.2.1 Basic System Configurations

Like the CSE Production Environment, the CSE Training Environment has been designed to leverage the use of shared environments whenever possible. By using fewer, large capacity machines, the administration and maintenance costs of the system are reduced, as are the related costs for physically flooring the equipment. However, in order to reach the required availability requirements for the OLTP application, as well as

to enhance the performance characteristics of the system, the partitioning of various application types and services had to be employed. The approach that the alliance found to be most effective in answering these differing requirements was the Logical Partitioning capabilities of the IBM pSeries-690 ('Regatta') platform.

The solution that the alliance is proposing will utilize 10 large-scale pSeries 690 systems, each of which will be partitioned into smaller logical servers that support the services described in the preceding section.

### 4A.4.8.3.2.2 Shared System Configurations

Each of the systems and logical partitions described are provided with independent local storage that host the operating systems and the local applications that are operating upon them. For each system, four drives are configured, each running RAID 1+0 support to another disk. This configuration effectively provides two highly available logical drives on each machine or LPAR. One of the logical drives is configured to support the Operating system and associated support files and operating swap areas, etc. The other drive-pair is used to host the application components that are being performed by that system. Backup and recovery is provided for these drives using a LAN-based backup mechanism. As described, therefore, each LPAR or system hosts its own local copy of the operating system and of the application software in a highly available manner.

For large, and shared file systems, a Storage Area Network is used. This is discussed above in the Storage Area Network (SAN) section. Each of the systems that utilize storage like this (e.g., database servers, etc.) are configured with two FibreChannel cards in the CSE Training Environment.

Each logical partition in the Data Services Tier of the CSE Training Environment solution is configured with independent Gigabit Ethernet connectivity to the Virtual Local Area Network in a switched environment. This Virtual LAN is shared with the Production Environment.

The Gigabit Virtual LAN network is fully switched, allowing full-duplex, full bandwidth use of the network for each connection.

### 4A.4.8.3.2.3 Logical Partition Configurations

The following table represents the Logical Partitions (LPARs) that are configured to support the CSE Training Environment. For each logical partition, basic memory, and processor configuration information is given, with the Service provided defined in the LPAR Name.

The LPAR Name will correspond with the Service description defined above.

Physical machine separation (for availability and performance reasons) can be determined by reviewing the 'Machine Name' column.

| Machine Name | LPAR Name | Processors | Memory (GB) |
|---|---|---|---|
| P690 PTService1 | LDAPServer (shared with Prod) | 2 | 2 |
| P690 PTService1 | WebAPPServer1 | 2 | 2 |

| | | | |
|---|---|---|---|
| P690 PTService2 | WebAPPServer2 | 2 | 2 |
| P690 PTService2 | IMAGEServer1 | 2 | 2 |
| P690 PTService2 | IMAGEServer2 | 2 | 2 |
| P690 PTService2 | BrioServer | 2 | 4 |
| P690 PTService3 | WAREHOUSEServer | 2 | 2 |
| P690 PTService3 | LDAPServer (backup – shared with Prod) | 2 | 2 |
| P690 DBServer3 | DBServer | 12 | 12 |
| P690 DBServer4 | EJBServer1 | 4 | 6 |
| P690 DBServer4 | EJBServer2 | 4 | 6 |

**Figure 4A.4-42 Training Environment LPAR Configuration --** *This table shows the configuration of the IBM pSeries 690 LPARs supporting the Training Environment on the eBHC floor.*

The Data Warehouse provided for in the CSE Training Environment is accessible using the DB2 OLAP Analyzer and Brio toolsets, just as they are in the Production System. However, because the Training Environment does not need to demonstrate the replication of data from an OLTP data store, the EAIDTServrer is not configured. Similarly, no external interface requirements are required within the environment and therefore the EAIServer is also not needed. In fact, introducing either of these servers into the Training Environment operationally would prove to be problematic because they would modify Database or Data Warehouse based scenarios.

### 4A.4.8.3.2.4 Training Environment – eBHC Hardware and Software

The following table presents the equipment that is positioned in the e-Business Hosting Center for the CSE Training Environment. The components listed in the previous sections that are defined as *shared* are not positioned as additional units.

| Component | Hardware | Software |
|---|---|---|
| Load Balancer*** | (4) Alteon/Ace Director | Embedded OS and software |
| Load Balancer Inside (SSL)*** | (4) Alteon/ISD 310 | Embedded OS and software |
| EformsServer | xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-1Gigabit Ethernet adapters, 3 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Server, Microsoft Internet Information Server (IIS), Accelio Capture Web, IBM Tivoli Storage Manager Client, BMC Patrol |
| DHCPServer*** | (2) xSeries 342 3U rack-mount system, 1.25Ghz processor, 1 GB memory, 2-100 MB Ethernet adapters, 2 18GB Hot-Swappable disk drives | Microsoft Windows 2000 Advanced Server, IBM Tivoli Storage Manager Client, BMC Patrol |

| Component | Hardware | Software |
|---|---|---|
| EdgeServer | (2) pSeries 610 – 6C1 Rack mount server, 1-Way Power3 –II 450 Mhz processor, 1 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM WebSphere Edge Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Policy Director WebSeal Lite, IBM Tivoli Storage Manager Client, IBM SecureWay Directory Server Client, BMC Patrol |
| LDAPServer** | (2) pSeries 610 – 6C1 Rack mount server, 2-Way Power3 –II 450 Mhz processor, 4 GB memory, 2-Gigabit Ethernet adapter, 4 – 18.2GB Hot Swappable Disk Drives, Redundant Power Supply | AIX 5L, IBM SecureWay Directory Server, IBM DB2 Universal Database Extended Edition, IBM Tivoli Storage Manager Client, BMC Patrol |
| Regatta Servers*** | (10) pSeries 690 Turbo, 32-way Power 4 1.3 Ghz processors, 52 GB memory* , 4 18.2GB hot swappable disk drives per LPAR*, FibreChannel adapters*, Gigabit Ethernet and 100MB Ethernet adapters* | *AIX5L, various other software products loaded on an LPAR basis as described in preceding sections. See previous LPAR descriptions and component definitions for details. |
| Tivoli Storage Managers*** | (1) pSeries 660, 2GB Memory, 2 way processor | AIX 5L, Tivoli Storage Manager, Tivoli Disaster Recovery Manager<br>*Configured as a part of Storage Area Network and eBHC hosting service. |
| LTO Tape Subsystem*** | 12 Tape Drive System | Embedded OS and software |
| Optical Storage*** | IBM 3995-068 Optical Subsystem with 10 terabytes of capacity, FibreChannel connection | *Configured as a part of Storage Area Network |
| Enterprise Storage System*** | Enterprise Storage Subsystem (“Shark”) with 10 terabytes of capacity, FibreChannel connection | Embedded OS and software |
| *Please see the LPAR section above for physical and logical partitioning information.<br>**Shared with production environments<br>***Shared with all environments | | |

**Figure 4A.4-43 Training Environment eBHC Equipment –** *This table lists the equipment that is positioned in the e-Business Hosting Center in support of the Training Environment.*

## 4A.4.8.4 Summary

The CSE Training Environment includes components of the CSE Production Environment that are required to support both classroom and self-paced training scenarios.

The CSE Training Environment runs in the IBM e-Business Hosting Center. The Training Environment will be deployed to meet the deadlines outlined in the Training Plan. The

Training staff will have the ability to coordinate training activities with the data loaded in the training systems.

The training systems are maintained in ready state with operating system, system software, and application software that matches the Production Environment. These systems have the capacity to meet the training requirements during the CSE application rollout.

# 4A Appendix A

See Acronyms and Glossary in Part 4 of this Attachment G1.

# 4A Appendix B - BSR Assumptions

This section contains scope and approach clarifications on certain aspects of the CSE system to be developed by the Business Partner. These items are consistent with the Business Partner's proposed solution. They are specifically listed to describe how the proposed solution addresses the requirements in the BRL, and clarify the approach and scope of the CSE System to be developed by the alliance.

## Appointment Register

The CCSAS CSE System will address calendaring and scheduling requirements as described in the BSR.

## Reporting

### General Reporting:

The BRL reporting requirements will be met using two separate approaches. First, specific reports have been identified that are part of normal system operations. These reports will be designed, developed, and tested along with the system's online, batch, and interface functions. Second, ad-hoc reporting and OLAP capabilities will be provided that will allow skilled State personnel to generate as-needed management reports, and perform analysis on data copied from the production database, and held in a separate environment.

The CSE System includes the standard reports necessary to implement a certifiable child support system. In addition to these reports, the CSE system has been scoped to develop 15 "yet to be determined" reports. As new reports are identified during requirements analysis, the project scope change management process will be available to apply these new reports against this allocation of 15 "yet to be determined" reports. The Business Partner highly recommends reserving many of these "yet to be determined" reports until system rollout and developing these reports during the system maintenance phase. In our experience, there are reports identified during the requirements phase of the project that are never used as extensively as originally planned. But once the system is in production use, the need for several more reports is invariably identified based on a policy change or other operational urgency. Reserving some of these 15 "yet to be determined" reports would help the State and the Business Partner manage changing reporting needs.

### Federal Reporting:

The CCSAS CSE System will support the creation of the OCSE-34A, OCSE-157, and OCSE-396 reports at the statewide level and at the county level. Information captured and maintained within the State's accounts management system may be required to complete the OCSE-396A.

### Statistical calculations, probability samplings, data analysis, longitudinal studies:

The CSE System will use Brio Intelligence and DB2 OLAP Analyzer to provide OLAP capabilities. The system will provide capabilities for statistical and analytical activities such as those listed above, to the extent supported by these tools.

**MetaData Driven Reporting:**

The CSE System will use a number of techniques and tools to protect CSE system reports from a direct dependence on the structure of operational data store(s), so that structural changes to operational data store(s) may not require changes to the reporting system software.

- The use of Structured Query Language (SQL) and database views provides an abstraction layer that hides the details of the actual physical storage mechanisms from the reporting tools.
- The use of a separate data warehouse with purpose built data marts to support reporting needs isolates the reporting tools from the operational data store(s).
- The use of metadata driven Data Management tools to copy data between the operational data store(s) and the warehouse and data marts, provides a flexible and modifiable mapping interface between operational and reporting data.
- The use of Brio and Accellio Central Pro, which support the use of XML to define the report layouts, are independent of the database definitions

## Forms

The CCSAS CSE system requires the creation of legal and other forms that are critical to the State's child support operations. The forms to be included in the system are those forms necessary to support standard child support business operations currently in use by DCSS AND LCSAs. As such, the system provides for the legal forms and notices required to meet the BRL. The CSE System assumes the LCSAs will use a standardized form defined by DCSS.

The system-generated forms will be produced in English. However, the system will be able to print written materials in the following languages, as required by Federal Regulations, Departmental Regulations, and State Law: English, Spanish, Vietnamese, Cambodian, Hmong, Armenian, Cantonese, Korean, Lao, Russian and Farsi. The State will be responsible for providing the written materials in these languages in a mutually agreeable format.

## Case Assignment

The CSE System will provide up to five algorithms for automated case assignment. In addition, the system will provide the ability to manually assign cases independent of the automated algorithms.

## County Recorder's Interface

The CSE System will support a single/common interface that can be used to record liens with agencies responsible for real and personal property titles. The CCSAS CSE System will support the generation of documents for recording liens in the event an external entity is unable to use the common automated interface.

## Interfaces to Retirement Systems

The CSE System will interface with the California Public Employees Retirement System to intercept retirement benefits. For other public and private entities who are unable to use the PERS interface format, the CCSAS CSE application will allow users to generate documents in order to intercept retirement funds.

## Applying GAAP to financial processing

During the design phase, the Business Partner will evaluate GAAP for applicability to child support financial processing. The federal requirements governing payment distribution and other financial functions are extensive. The certification requirements and business rules may or may not be GAAP-compliant and such a standard could be open to wide interpretation. The system will maintain focus on federal certification and avoid implications that CCSAS CSE will be measured against standards more applicable to traditional accounting systems. However, sound accounting principles will be applied to the CCSAS CSE payment processing functions and other related financial functions.

## Payment Identification

For the CSE system to apply its rules, a payment transaction must be formatted with adequate identification information, so that CCSAS may apply the payment to the appropriate accounts. The SDU has responsibility for initially providing the minimum data requirements for payment transactions.

## Interface with Public Assistance Programs

The CSE System is scoped to accommodate interfaces with the four public assistance program consortia systems in production at the time of CCSAS CSE application implementation. It is recognized that the four consortia systems have differing capabilities and constraints, and as such, representatives from the four consortia systems are expected to assist with the design of a mutually agreeable standard interface format.

## Data on the efficiency and effectiveness of political subdivisions' [local child support agency] operations

The CSE System will provide the ability, using the OLAP tools Brio Intelligence and DB2 OLAP Analyzer, to analyze and report on the efficiency and effectiveness of the political subdivisions' operations, based on data used by the CSE System and held in the system .

## System access for individuals with disabilities

The CCSAS CSE will be consistent with current State and Federal laws regarding system access.

## Audit trail for data changes

The CCSAS CSE System will maintain a record of the date, time, and user for records added and the last date, time, and user for records modified. The CCSAS CSE system will also maintain a record of the changing and deletion of selected data records/elements into a log file. These audit records and log files will be available for review by appropriate personnel using system administration tools.

## Storing previously produced forms/letters for later retrieval

The CCSAS CSE System will support the storage and retrieval of low volume documents and forms generated by workers locally. High volume documents such as bills, mass mailings, and IRS notices will be documented through a log entry rather than preserving the entire document. Selected high volume documents that are generated centrally in batch will be stored in such a way that they will be retrievable by system

operations staff for a limited period of time. Categorizations of "high volume" and "low volume" will be determined to mutual agreement during system analysis and design activities.

## Distributing payments within specific timeframes

The CCSAS CSE System will allocate and distribute collections data received from the SDU vendor and forward disbursement information back to the SDU in accordance with timeframes to be established and documented in the CSE-SDU Interface Design Description.

## General System Performance Measures

### System Response Time

The CSE System will be measured for response time service level objectives in the on-line production environment. There will be two types of response times measured:

- On-line system response time is the time taken for the system to respond to a user initiated transaction, and is defined as: "The time taken for a specified transaction measured from the receipt of the request at the server to the sending of the response from the server".
- The time taken to produce pre-defined forms or letters on demand within a pre-specified number of seconds of a user's request. The explicit definition of the measured time taken to produce a form or letter is not yet defined, but will be such that the measurement is wholly within the technical control of the Business Partner's solution.

The following approach will be used to monitor on-line system response time:

- Specific significant transactions will be selected as mutually agreed and documented in the Capacity and Performance Management Plan (CDL TM 086) for the purpose of measuring response time.
- A target response time value will be specified for each transaction, based on the transaction's database access and application logic characteristics. The response time values shall be determined such that they are commercially reasonable and cost-effective for the proposed e-business architecture.
- These response time targets may be refined and verified during design, development and performance test based on observed behavior and to accommodate issues such as performance vs functionality trade-offs.
- The transaction metrics will be captured using the Wily Introscope tool.
- Compliance with the defined target response time will be determined using a statistical sampling of the transaction over a period of time. The definition of compliance shall recognize and accommodate some degree of activity spikes that may impact performance, and as may be caused by unusually high concentrations of user activity or other unexpected combinational effects of system activity.

### System Availability

The CSE System availability metrics have been defined in Rider D of this Contract. These are to be applied to the production on-line system as defined in Rider D.

**Recovery and Restart**

The CSE System will be measured on overall availability for the production on-line environment as defined in Rider D. The production environment will be designed for high availability using redundant resources and failover mechanisms to meet the availability service level agreement. Recovery and restart procedures will be implemented to restore system operation with minimal processing time loss in the event of system failure.

# 4A Appendix C – Document Management

## Introduction

The CSE Program, like many government entities worldwide, is driven by paper. Much of the output in the form of paper documents are mailed, returned, filed, and stored, often for very long periods. Child support systems are no different, they are "forms intensive" paper systems, requiring support both for high volume printing at the local office, mass mailings to the case membership, image capture, storage, archiving and retrieval requirements.

The CSE Program and the CCSAS project team have a unique opportunity to build an enhanced Document Management system and processes with a single statewide electronic system to help ensure statewide uniformity of policy, forms, procedures, and practices. Traditionally Document Management systems have fallen under the jurisdiction of very structured, highly specialized document applications - applications built to be used by a small group of specialists, working in close proximity to each other. With the World Wide Web and corporate Intranets, it becomes clear that today's document management systems must offer far more extensive capabilities and ease of use to a wider range of users. This section of the response describes the solution for an integrated single statewide Document Management system to support the business needs for the CSE programs.

*In brief*, Document Management incorporates the following services:

- Forms Management Services
- Imaging Services
- Printing Services
- On-line Forms (e-forms) Services

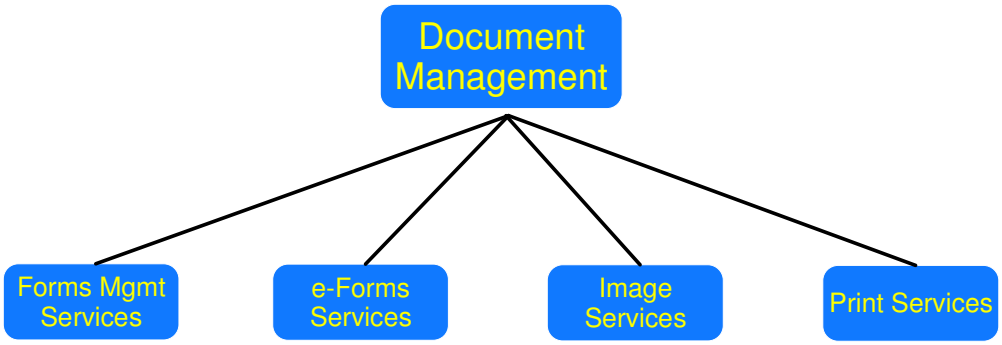



**Figure 4A Appendix C-1 Document Management Services** – *These services support the CCSAS forms, printing and imaging needs.*

Each of these services is described on the following pages. The alliance design team understands the importance of forms, documents and the processes that are involved and dependent on paper for a successful implementation. This is why the services encompassing documents are grouped within the Document Management Common Service for their relationship and importance as it relates to paper, giving the solution not only a single centralized view, but an integrated view as well. Within the Child Support

Programs across the State today there is no statewide repository or statewide standards for forms, imaging, printing or the routing of critical documents as we move to a single system. This lack of centralization and standardization is one of the key business problems being asked of vendors to resolve as part of their proposed solution. The proposed document management solution does this with an integrated software solution to empower the LCSA staff to capture, integrate, present, archive and retrieve relevant information for itself, its partners and its customers. Shown below is the logical architecture or view of the document management integrated lifecycle.

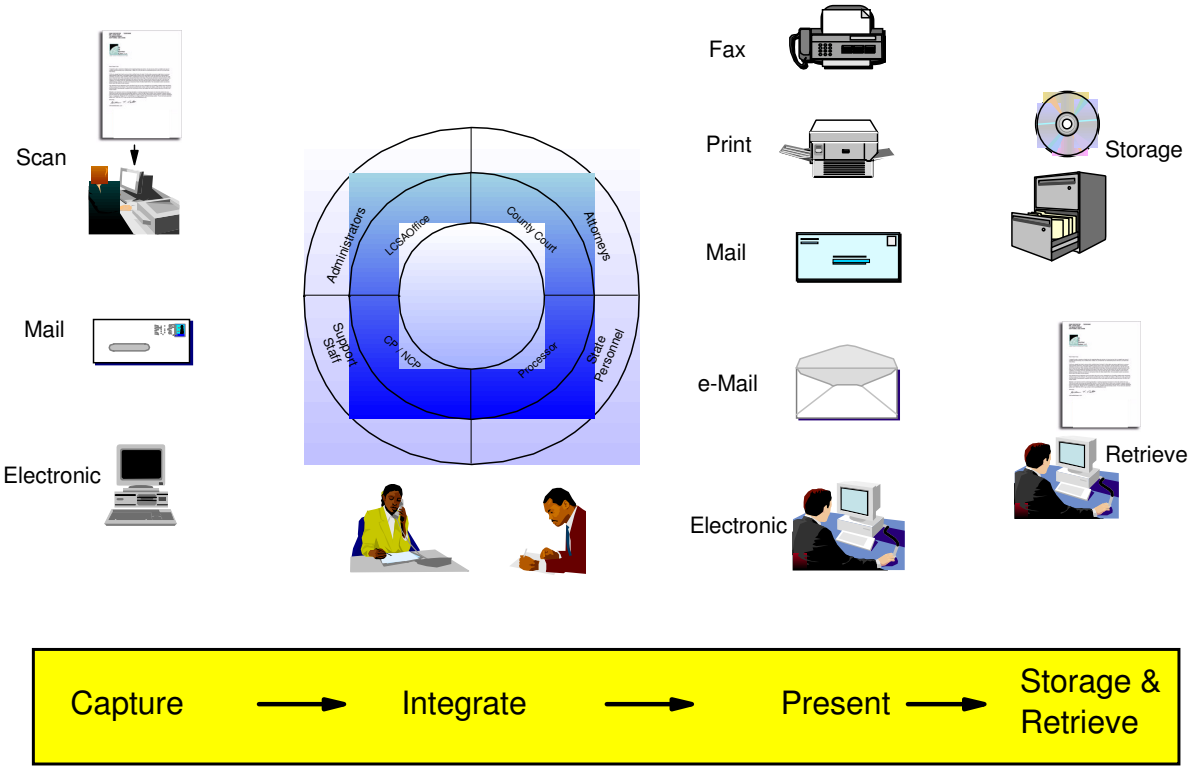



**Figure 4A Appendix C-2 Document Integrated Lifecycle** – *The logical architecture or view of the document management integrated lifecycle.*

The primary objective of the Document Management environment is to provide the most cost-effective solution to support business requirements and assist with solving the business problems as stated in the SCP. A key design point has been to optimize costs while still providing for high availability, performance, security, and scalability for future growth. The proposed Document Management solution is aimed directly at addressing the business problems as stated in the SCP.

## Image Services

Business Environment: The CCSAS project team is pursuing an effort to improve worker effectiveness and accountability which is constrained by the lack of timely, adequate and accurate data; the lack of uniformity; and limited system functionality and automation. A critical piece to this will be the ability to electronically capture, store, and archive paper documents, reports, and a variety of other incoming files. The image services will provide the capacity to capture these paper documents in electronic format, associate them to the appropriate CSE entity (such as case or participant), and then

store the image permanently in the image data store. These imaged documents become a fixed part of the 'electronic case folder' and are accessible statewide. By capturing incoming paper information into electronic form, LCSAs will be able to gain efficiencies unavailable using manual paper processes. Caseworkers today do not have access to automated statewide data or image repositories that would facilitate the sharing of information about case members across counties. This is a key design and business point for proposing a statewide integrated imaging solution.

*In brief*, the proposed Image Services component has been designed with the following objectives and goals:

- Provide the capability to convert hard copy legal or critical documents to electronic media
- Provide each LCSA with the capability to capture documents locally and then store them centrally for a single Statewide repository
- Provide electronic access to centrally stored "documents" available via Web Browsers using Intranet / Internet technology
- Use of a central image repository to allow a county, cross-county or State view
- Provide a "single view" of all relevant document information in the form of an electronic case folder available to caseworkers and appropriate staff personnel

Logical Architecture: The proposed statewide imaging platform will enable the CCSAS project team to significantly improve the productivity for users enabling them to focus more on important issues and less on clerical paper issues. At the heart of the proposed imaging architecture is IBM's latest product, Content Manager - IBM's production imaging software. The proposed solution will enable the CCSAS project and LCSA staff to replace paper-based information with electronic images using an enterprise-wide distributed capture system to support each county and county office, but with a central repository, central security and control under one system.

The Image Services platform will collect and store critical case documents and printed forms (documents) as well. Electronic access to these documents will be available for any authorized user needing to view these documents. This will allow for improved accuracy and productivity for the LCSA case workers and their customers.

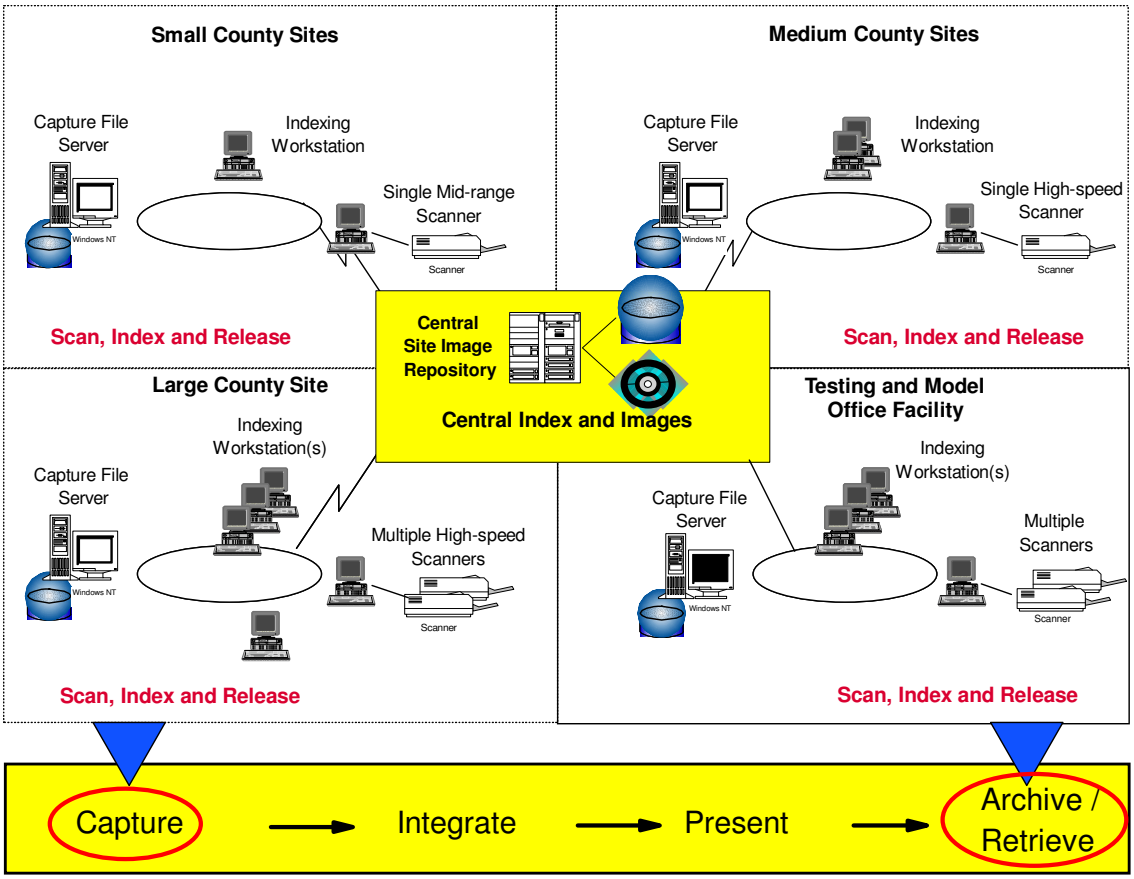



**Figure 4A Appendix C-3 Image Services** – *The logical architecture or view of the image services.*

There are two primary components comprising the Image Services solution:

- Image Capture
- Long Term Archiving (Storage) and Retrieval

Image Capture: This process focuses on capturing documents and then releasing the images and case data permanently to long-term storage for later retrieval. Customer documents will be scanned at a central county facility (one per county). In addition and in parallel to image capture, printed forms (documents) will also be sent to long-term storage for later retrieval creating a consolidated electronic case folder.

A forms redesign process is recommended to include bar-code values on turn-around documents, where feasible. The bar-code values will speed up the capture of documents by electronically reading the indexing (bar code values) information. A joint application design session will also need to be conducted to determine which case documents should be or should not be captured and their retention periods to maximize the use of an electronic folder. The imaging and print solutions will be configured to capture and store printed forms as PDF files for items in the electronic folder.

**Image Capture Processing Steps:**

Batch Preparation: Image case documents will go through a batch preparation process that will separate and prepare documents for scan or fax input.

Scan Input: Scan stations and scanners will be provided to accommodate the estimated volumes for each county / scanning facility. The scan process will support automatic document separation, in the form of bar codes and patch codes, which helps to speed the processing of scanned documents. At scan time, the software will read the barcode on the document, and route the image and barcode values to the index process.

Optical Character Recognition (OCR): Any document type defined for OCR will automatically be routed through the OCR process. OCR is an available option that can be used, but only if needed and appropriate.

Index: Any information captured by the bar code or OCR process will be passed along with the image to the indexing module. During this step, the user is presented with the image and the index fields simultaneously to allow for heads-down data entry. During this step, the user can enter the information that was not captured via the incoming bar code or OCR process.

Release to Long-Term Storage: Once a batch has been processed and validated, it is routed to the Release module. The Release module formats the indices and images for storage to the backend image repository and then posts receipt of images to the CSE image store. After posting, the images are available to be retrieved from within the CSE applications or by ad hoc image retrieval.

**Storage and Retrieval Steps**

The proposed imaging solution will support foldering to organize and manage documents more effectively. A set of index values will be captured or extracted from the documents as attributes for use with the electronic case folders. Once the index information has been captured, the documents are released to an electronic folder and case linkages are posted to the CSE database. In most cases, document retrievals will be initiated from within the CSE application, but ad hoc queries from a web browser will also be available if needed. While the user is viewing case data from within the application, they will have the option to press a “document hot key” which will then retrieve the desired folder and documents for that case. The documents will be presented side-by-side within the application via Acrobat Reader for quick access and review. The diagram below shows the concept of the electronic folder and possible attribute values for image and printed documents. As mentioned earlier, documents will be stored as PDF files to provide a consistent viewer (Acrobat Reader) when requesting a case folder. Once selected, images and documents can be displayed, printed, faxed or e-mailed.

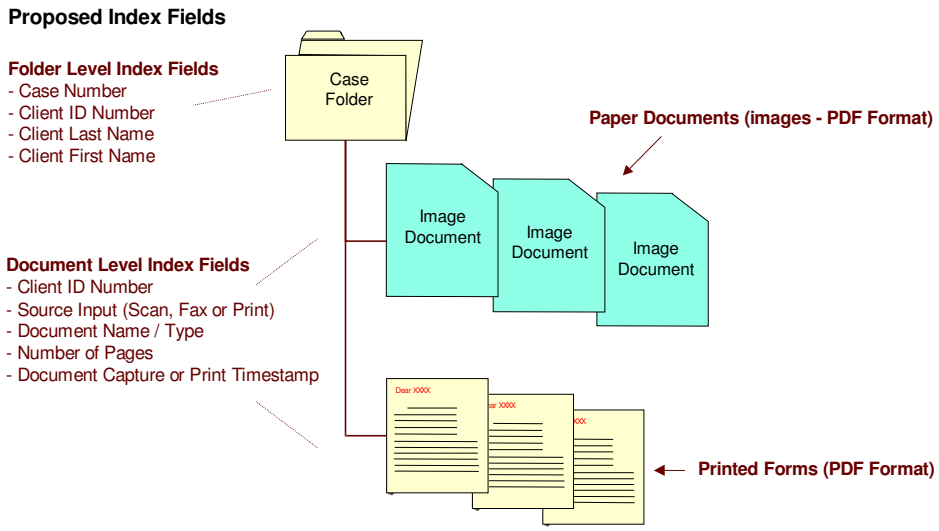



**Figure 4A Appendix C-4 Electronic Case Folder** – *Sample electronic case folder and possible attributes.*

**Estimated Image Volumes**

| | |
|---|---|
| Estimated Number of Documents per Year | 34,136,163 |
| Estimated Number of Documents per Day | 129,304 |
| Estimated Number of Pages per Day | 387,911 |
| Estimated Number of Pages per Day (peak) | 775,822 (2x) |

*In Summary*, The proposed Image Services solution will provide several benefits:

- To enhance client service through the implementation of electronic case folders
- To enhance the quality and consistency of business processes
- To optimize the productivity of case and knowledge users
- To reduce risk of customer dissatisfaction due to work or documents being lost;
- To provide efficiency by reducing and avoiding operational costs
- To reduce the reliance on paper
- To provide strong control and security of documents
- To reduce the risk and exposures found in current paper environments
- To provide a single view and consolidation of paper and forms

## Forms Management Services

Business Environment: Business processes have become increasingly complex as users, partners and customers demand immediate service and access to information. Manual, paper-based procedures are not fast enough by today's standards, and they also introduce too many opportunities for processing errors and delays. Effectively managing and sharing information is critical in today's changing government environments. The proposed forms management solution will ensure the uniformity and consistency of forms through a centralized integrated unit that manages all form updates and changes. The forms management process (creation, management and assembly) are critical to the success of a statewide implementation and to address the key business problems as outlined in the SCP. Forms Management is concerned with the construction, and use of forms in the system. This includes specifying the formatting and layout of all forms, including the language and data. Forms and report templates will be created and maintained centrally and made available to print centrally or locally on demand. As part of the Forms Management process, Accelio (formerly Jet Forms) will be used extensively to be consistent with it's already installed base throughout most of the LCSAs. The proposed Forms Management solution will empower the case workers to enhance the way they do business by extending and accelerating core systems and processes, and by improving creation and flow of business documents.

*In brief*, the proposed Forms Management solution has been designed with the following objectives and goals:

- Forms and report templates will be created and maintained centrally and made available to print centrally or locally "on demand"
- The system must provide the capability to store, retrieve and print local addresses and letterheads
- The system must provide the capability to specify the order in which the forms in each form set are printed
- The system must provide the capability to print barcodes on forms and letters
- The system must provide the capability to store, retrieve and print digitized signatures on forms/letters
- The system must provide the capability for the reprinting of forms and letters, such that identical replicas can be produced

Logical Architecture: The logical architecture diagram shown below makes up the Forms Management creation, assembly and management process. Data will come from online or batch applications passed to the assembly server-based processing engine for document creation and presentment. It will merge data (including XML) from the CSE application(s), and other core business applications with an electronic XML template created with an easy-to-use WYSIWYG (what-you-see-is-what-you-get) design tool.

The proposed forms management solution will support many types of document outputs, from local print, to high-volume central batch print, to fax, to e-mail, to PDF, and offers multiple language support as required by the SCP.

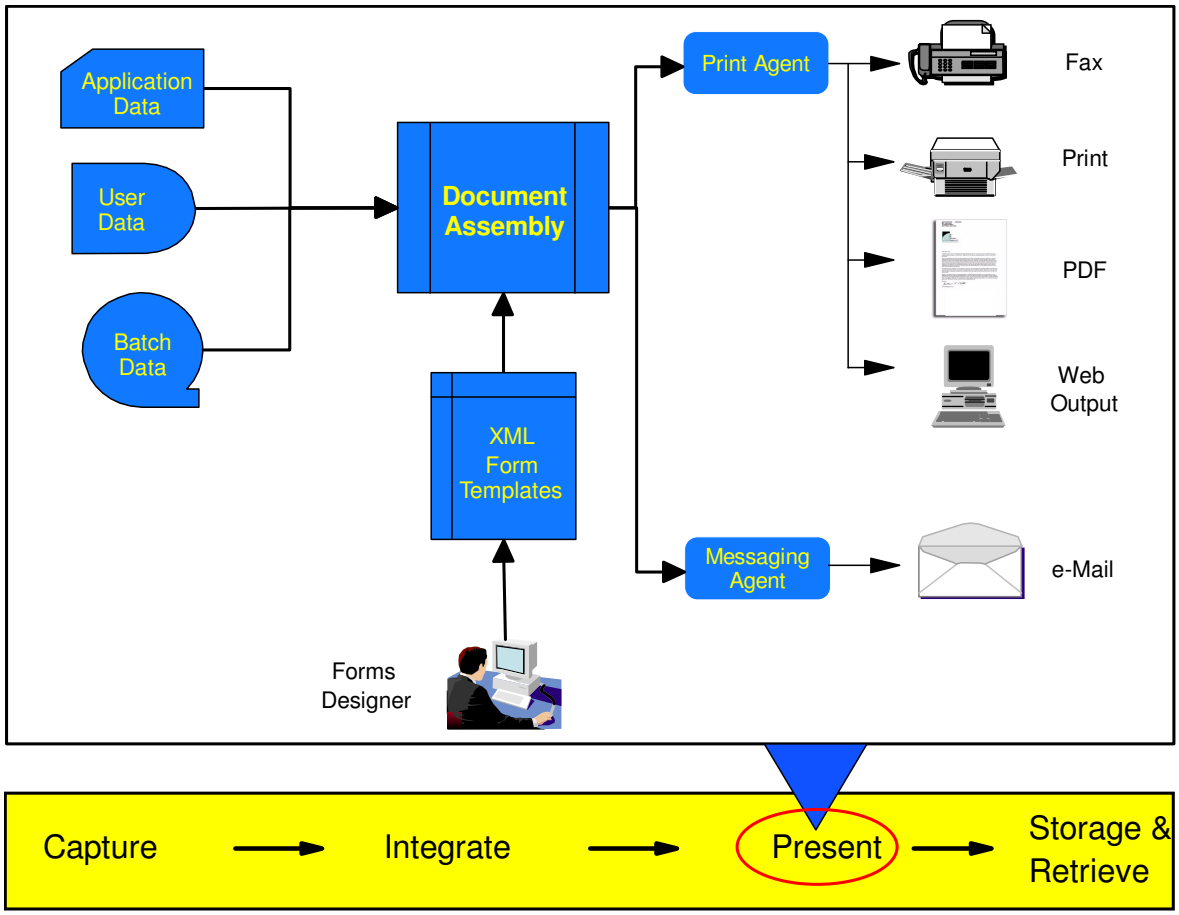



**Figure 4A Appendix C-5 Forms Management Services** – *The creation, assembly and presentation process of forms management.*

The proposed solution will include a dynamic document feature that allows application data to control the look and feel of each document produced. Documents will be able to grow or shrink to accommodate the number of line items being presented and can include calculations like subtotals or currency conversions. Based on specific customer information, caseworkers will be able to personalize the documents for furthering clarification and individual customer service.

The proposed solution will use a graphical template design and development tool that enables an administrator to easily create even the most complex electronic documents that exactly replicate existing paper documents. This WYSIWYG tool eliminates the need for custom programming and the cost of managing preprinted forms inventories. Just point and click to customize documents with logos, complex graphics and bar codes or to create multi-page or multi-part documents; no programming is required.

| Estimated Forms Management Volumes | |
|---|---|
| Printed Forms (local print) | 35,000,000 |
| Avg. Pages per Form | 4 |
| Total Pages per Year | 140,000,000 |
| Total Pages per Month | 11,666,667 |
| Total Pages per Day | 530,303 |
| Total Pages per Hour | 66,288 |
| Total Pages per Hour (Peak 2x) | 132,576 |

In Summary, the proposed Forms Management solution will provide several benefits:

- Customer-focused documents
- Cost reductions
- Multi-language and multiple currency support for global audiences
- Dynamically generated documents that shrink or grow to accommodate the data
- Support for multiple document formats (print, PDF, HTML) and multiple delivery channels (printer, fax, Web, e-mail)
- Flexibility to quickly change documents
- Dynamic documents
- Easy document design

## Print Services

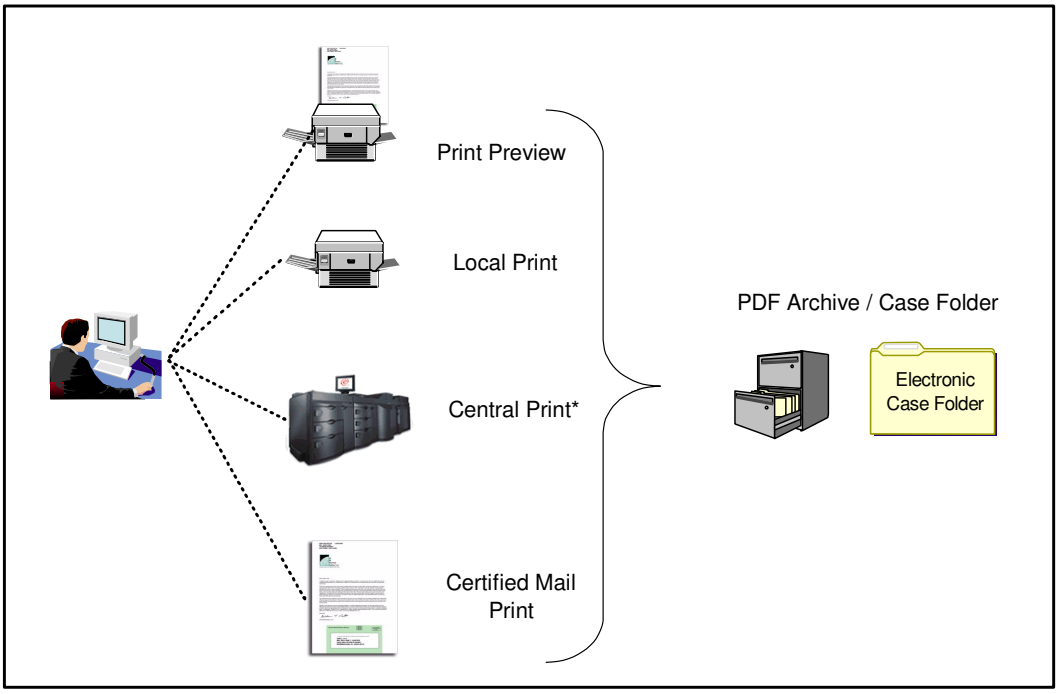
Business Environment: As mentioned earlier, Child Support Systems are “forms intensive” systems, and the counties require printer support both for high volume printing at the local office, and mass mailings to the whole case membership, or a selected sub-set of the case membership. The proposed print solution is a centralized system managing both local and central resources. It will provide support for high-volume printing at central facilities as well as local printing at each LCSA office. High-volume printing will be used for correspondence such as billing statements, monthly support statements, and mass mailings to case members. (This capability will rely on existing State print facilities, and is external to the CCSAS project scope.) The print services component will provide print files to the State print facility for printing, stuffing, and mailing. Local printing will be used for low-volume case work, such as letters, specific requested documents or custom reports. These will print on a ‘local’ printer (i.e. in an LCSA office), but via a central print ‘manager’ that allows the worker to direct the output to the appropriate printer.

*In brief*, the proposed printing solution has been designed with the following objectives and goals:

- The system must print a minimum of 2.5 million monthly billings
- The system must print a minimum of 2.5 million monthly distribution statements
- The system must print a minimum of 1.1 million monthly billings for NCP's with current obligation and/or arrearage. The average monthly bill is no less than 4 pages printed duplex on letter size (8 1/2 x 11) paper.

- The system must be capable of printing a minimum of 35 million multiple page forms per year
- The system must print written materials in the following languages as required by Federal Regulations and Departmental Regulations: English, Spanish, Vietnamese, Cambodian, Hmong, Armenian, Cantonese, Korean, Lao, Russian and Farsi.
- The system must print address information for delivery through the U.S. Postal Service in compliance with U.S. Postal Service standards that provide for the lowest cost for delivery (e.g. use of ZIP+4 +2, OCR readable print, bar-coding and presorting)
- The system must provide the capability for a user to specify to which printer each formset is printed
- The system must provide the capability to select print preview with the data fields populated for all forms/letters
- The system must provide the capability to perform duplex printing
- The system must provide the capability to print barcodes on forms and letters
- The system must provide the capability to store, retrieve and print digitized signatures on forms/letters
- The system must provide the capability to save print files on TBD media for printing outside the system
- The system must sort forms, notices, billings and statements without zip codes or with foreign addresses separated to the top of the regular mail output
- The system must sort, batch, bundle and print forms, notices, billings or statements
- The system must allow the capability, at the user's option, to preview any form, notice, billing or statement online as to be printed

Below is a brief diagram showing the print options that will be available to users of the system. These functions and which options users will have access to, will be controlled by application security privileges:




* Central Print will be performed as part of background processing jobs (batch jobs)

**Figure 4A Appendix C-6 Print Services** – *CCSAS CSE application users will have multiple printing options.*

- Print Preview – The proposed solution will allow users to select "print preview" to verify the to be printed form or ad hoc report ensuring the correct output.
- Local Print – The system will allow users to print to their local printer(s) closest to them while in their local office. In addition, users will be able to select a local printer while in a sister office or remote location. Local printers are defined as those printers installed by the alliance and managed by the proposed printing solution. Local printers will all be duplex capable printers with rated speeds of 25 pages per minute. Printers were calculated at a ratio of 1 printer to 20 caseworkers, where the office has 20 or more caseworkers. If less then 20 caseworkers per office, two printers will be supplied for redundancy.
- Central Print - For central batch print jobs the alliance will provide a "print file" to be transmitted to the State printing facility of choice for printing, stuffing and mailing. The proposed printing solution will provide address information for delivery through the U.S. Postal Service in compliance with U.S. Postal Service standards (e.g. use of ZIP+4 +2, OCR readable print, bar-coding and presorting).

- Certified Mail Print - Certified mail printing will be provided through an authorized USPS service provider. The proposed solution recommends that the communication link for Certified Mail be done via the Internet using a secure connection as provided by the service provider. The alliance will perform the initial setup, configuration and testing of this feature within the application. The costs associated with using Certified Mail will be billed directly to the State or county office. This option will provide a cost effective and efficient means for LCSA staff to send Certified Mail directly from the system.

Logical Architecture: The proposed solution will use IBM's Infoprint Manager to provide centralized management of printers and jobs through a graphical user interface (GUI) from any networked desktop in the enterprise. The characteristics and defaults for both printers and jobs can be monitored, viewed, set or changed. The GUI application also presents options for starting, stopping, deleting, reordering and resubmitting jobs, in addition to remotely controlling such printer processes as starting, stopping, forward spacing, back spacing and shutting down. Infoprint Manager is rich in features that enable more effective management of the printing environment. With the ability to print multiple copies within applications and to submit print jobs into the queue directly from the application, Infoprint Manager increases printing efficiency by eliminating time-consuming processes.

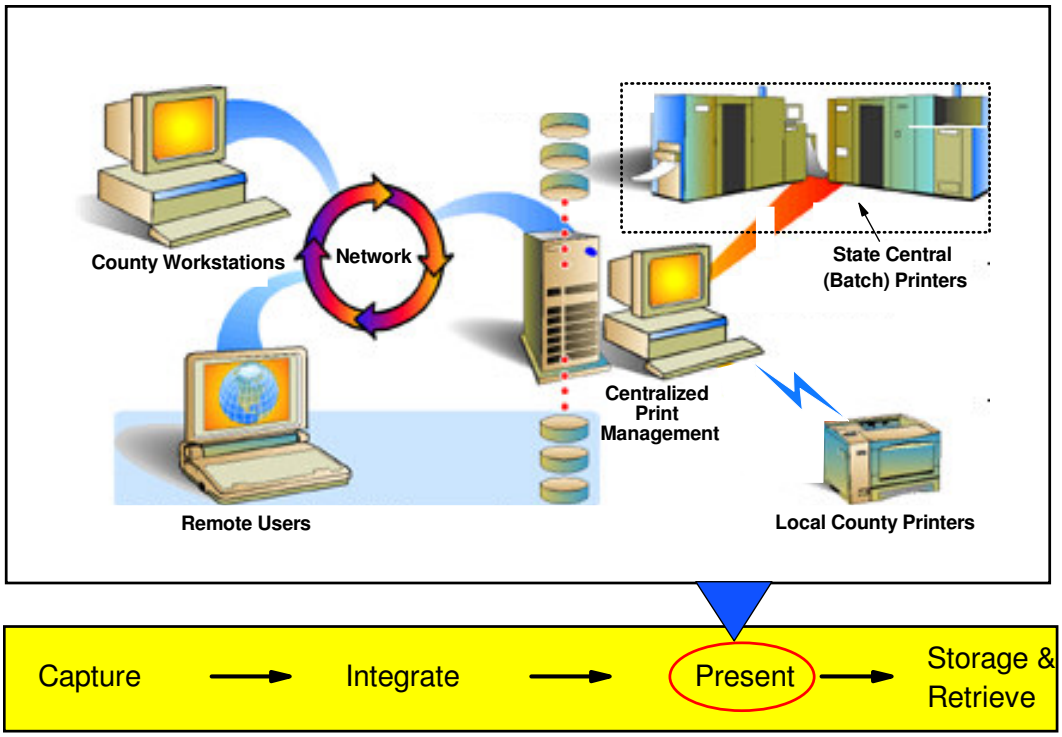



**Figure 4A Appendix C-7 Print Services** *–Centralized printing provides an efficient solution for the CCSAS CSE system high volume printing needs.*

We have sized the printing solution to accommodate the 35 million documents plus the monthly distribution mailings as well. IBM Infoprint Manager is a comprehensive software solution for managing digital printing that combines award-winning print management technology, enhanced file management and spooling capabilities to

address the critical and diverse needs of the State as outlined in the SCP. Infoprint Manager combines reliable queue and job management with comprehensive print and job control to deliver the highest possible data integrity by ensuring documents are printed completely and accurately the first time.

**Estimated Print Volumes**

**Local Print at County Offices (annual):**

| | | |
|---|---|---|
| Documents | 35,000,000 | (SCP requirement) |
| Avg Pages per Document | 4 | |
| Total Pages | 140,000,000 | |
| Avg Pages per Month | 11,666,666 | |
| Avg Pages per Day | 530,303 | |
| Avg Pages per Hour | 66,287 | |
| Avg Pages per Hour (peak 2x) | 132,575 | |

Central Batch Print:

| | | |
|---|---|---|
| Monthly billings | 2,500,000 | (SCP requirement) |
| Monthly statements | 2,500,000 | (SCP requirement) |
| Monthly billings for NCP's | 1,100,000 | (SCP requirement) |
| Avg Pages per Document | 4 | |
| Total Pages | 24,400,000 | |

In Summary, the proposed Printing solution will provide several benefits:

- Manage and monitor printers and print jobs from anywhere in the enterprise
- Operators and administrators can manage jobs and printers from various platforms using Java based GUI's
- Add, delete, configure, manage printer queues
- Manage print jobs (delete, hold, release, move)
- Receive notification of print completion
- Automatic print scheduling along with job accounting
- Print a wide variety of formats, including PCL, PS, PDF, and AFP
- Print to a wide variety of print devices, including distributed network printers to high speed production printers
- Scalable for networks of all sizes, from LAN to WAN

## e-Forms Services

Business Environment: Business processes begin with the capture of information, often through the use of forms. Organizations everywhere are looking for ways to make data capture a more efficient process and a more convenient experience for the end user. In the United States alone, the federal government has legislated that by the year 2003, every agency and department must have the ability to support the capturing of data that has been electronically submitted by its citizens. Customers increasingly expect service via multiple channels, including the Web. The alliance design team felt it was crucial to

provide and extend customer service touch points for those forms that would be applicable to be web-enabled, versus traditional print and mail methods.
In brief, the proposed e-Forms solution has been designed with the following objectives and goals:

- Present consistent, easy-to-use data capture forms to customers supporting different browser types and versions
- Be consistent with the Forms Management "paper" solution, by utilizing the same XML form templates database and forms
- Be consistent with the Forms Management "paper" solution, by utilizing the same forms designer tool

Logical Architecture: The proposed solution uses the Accelio Capture product as the e-Forms platform (formerly Jet Forms) to enable the State to rapidly deploy electronic forms to it's customers and special needs users. Accelio Capture will present consistent, easy-to-use data capture forms to customers allowing them to use different browser types and versions - no downloads of proprietary software or plug-ins will be required. The proposed solution using Accelio Capture will also ensure that data collected from the end user (customer) is validated according to business rules embedded in the form. The Server automatically detects the browser type and platform, whether PC, Mac, UNIX or Linux and delivers the form template in the appropriate language, such as DHTML, HTML or Java TM. Accelio Capture integrates with Web-based security solutions that provide digital signatures without having to access or manage certificates on the desktop. Shown below is the logical architecture for the proposed e-Forms solution.

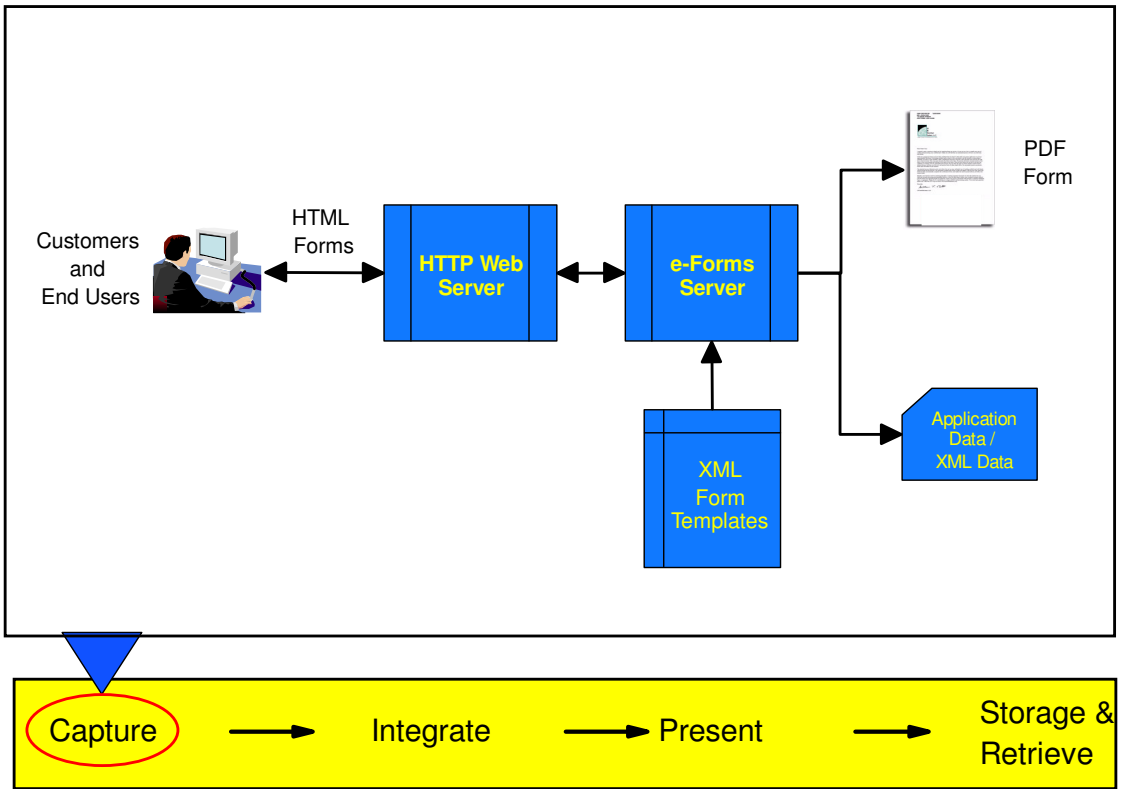



**Figure 4A Appendix C-8 Forms Services** – *The logical architecture or view of the e-Forms Services.*

| **Estimated e-Forms Volumes** | |
|---|---|
| Estimated e-forms per Year | 2,000,000 |
| Avg. Pages per Form | 3 |
| Total Pages per Year | 6,000,000 |
| Total Pages per Month | 500,000 |
| Total Pages per Day | 22,727 |
| Total Pages per Hour | 2,841 |
| Total Pages per Hour (Peak 2x) | 5,682 |

In Summary, the proposed e-Forms solution will provide several benefits:

- Transforms the form template into a version of HTML or Java that best suits the browser type
- Provides server-side execution of the intelligence contained in the form template
- Dynamically generates a PDF document of the form template and/or data for fill-and-print capability or to have the form locally
- Validates data entry by performing calculations, accessing databases or enforcing business rules on field-level data
- Allows the use of certificates to digitally sign form data
- The Web application has the option of specifying an XML data file to be merged with the form template before it has been transformed

# 4A Appendix D – System Architecture Additional Detail

## 4A Appendix D.1 Purpose

The purpose of this appendix is to provide a lower level of detail than is represented in the CSE System Architecture described in Section 4A.3.2. As stated in Section 4A.3.2, the reason for including this additional material is both to demonstrate the methodology that will be employed to decompose the higher level representation provided by the system architecture, and to introduce the design products that will be produced. It is intended to demonstrate the direct relationship between the enterprise, informational and computational viewpoints defined in Section 4A.3.2 and this lower level of detail. This level of detail also more clearly shows how the common and support services represented in the functional architecture are incorporated into the system architecture models. The additional detail therefore can be seen to be a direct continuation of the system architecture definition.

We also repeat the disclaimer provided at the start of Section 4A.3.2. It is inevitable that there will be aspects of the model that will change during further analysis and design. This is only to be expected during an iterative development effort. In the case of this proposal, there is an additional factor, which is that the model has been developed thus far without the direct involvement of DCSS or FTB staff. The alliance requests that the reviewers of this appendix focus on the intent behind including this additional level of detail in the proposal. If there are specific features or approaches represented that may raise a question or perhaps seem different to what was expected by the reviewer, remember that what is presented is not a final product. We view these lower level models and any ‘issues’ they raise as a good starting point for more detailed analysis and design.

The remainder of this appendix presents first the Informational Viewpoint taken to a lower level of detail, and then a subset of the Computational Viewpoint taken to a lower level of detail.

## 4A Appendix D.2 Informational Viewpoint

### 4A Appendix D.2.1 Introduction

In this section, an expanded version of the Informational Viewpoint is presented as a UML static model, which consists of class diagrams and class specifications. A class diagram shows classes and the relationships between classes, the class attributes and operations. For simplicity and clarity the operations are not represented on the diagrams in this section. The class specification provides a textual definition of the class and its attributes.

# 4A Appendix D.2.2 Business Services Class Diagrams

## 4A Appendix D.2.2.1 Case Initiation & Update

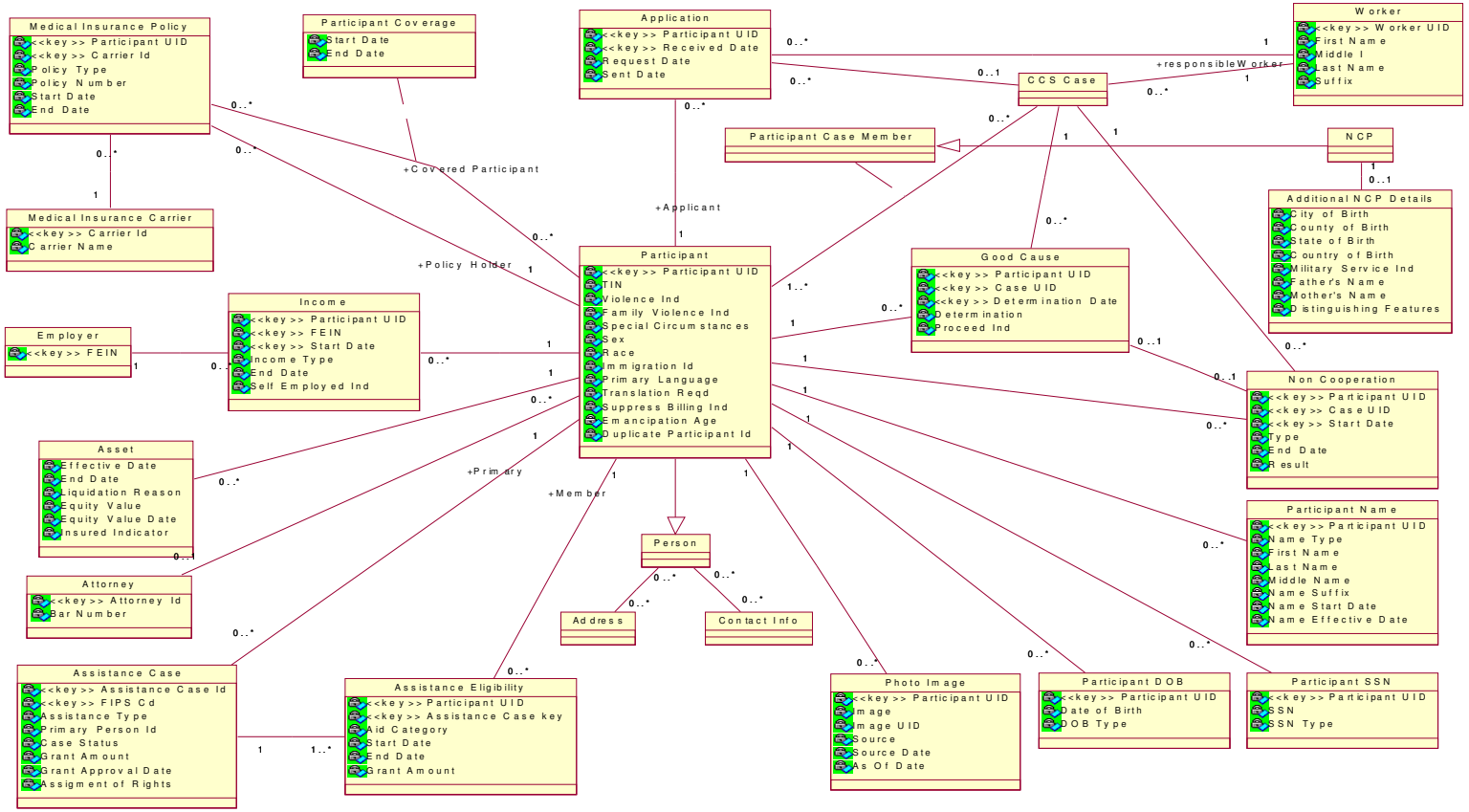



**Figure 4A Appendix D-1 Case Initiation & Update - Participant**

*Significant Features*

- Participant represents a person who is of interest to the system. This might be a case member, an applicant (who does not yet have a case), or even someone who pays non-support collections (like a traffic fine) into the system. Participant includes details like name, income, demographic data, social security number, emancipation age, and good cause information. Certain types of participants, who are not associated with cases, will be archived on a regular, user-defined basis.
- Participant inherits from Person. This relationship is represented in greater detail in the Inheritance section in the Entity diagram. A Person may have zero or more Addresses, and an Address may belong to zero or more Persons. This design approach allows cleansed, valid addresses to be held once in the system and linked to as many Persons as necessary. This not only reduces redundant data storage, but helps to ensure that valid addresses are used.
- Most of the 'attributes' of a Participant are separate objects. This permits many to one relationships, and allows these objects to implement their own business rules.
- Participant Case Member is an associative class between a Case and a Participant. There are other types of Case Members; these are shown in the next diagram, Case Initiation & Update – Case.
- Participant Coverage is an associative class between a Participant and a Medical Insurance Policy.
- NCP is a derived type of Participant Case Member. This relationship is shown in greater detail in the Inheritance section in the Case Member diagram.

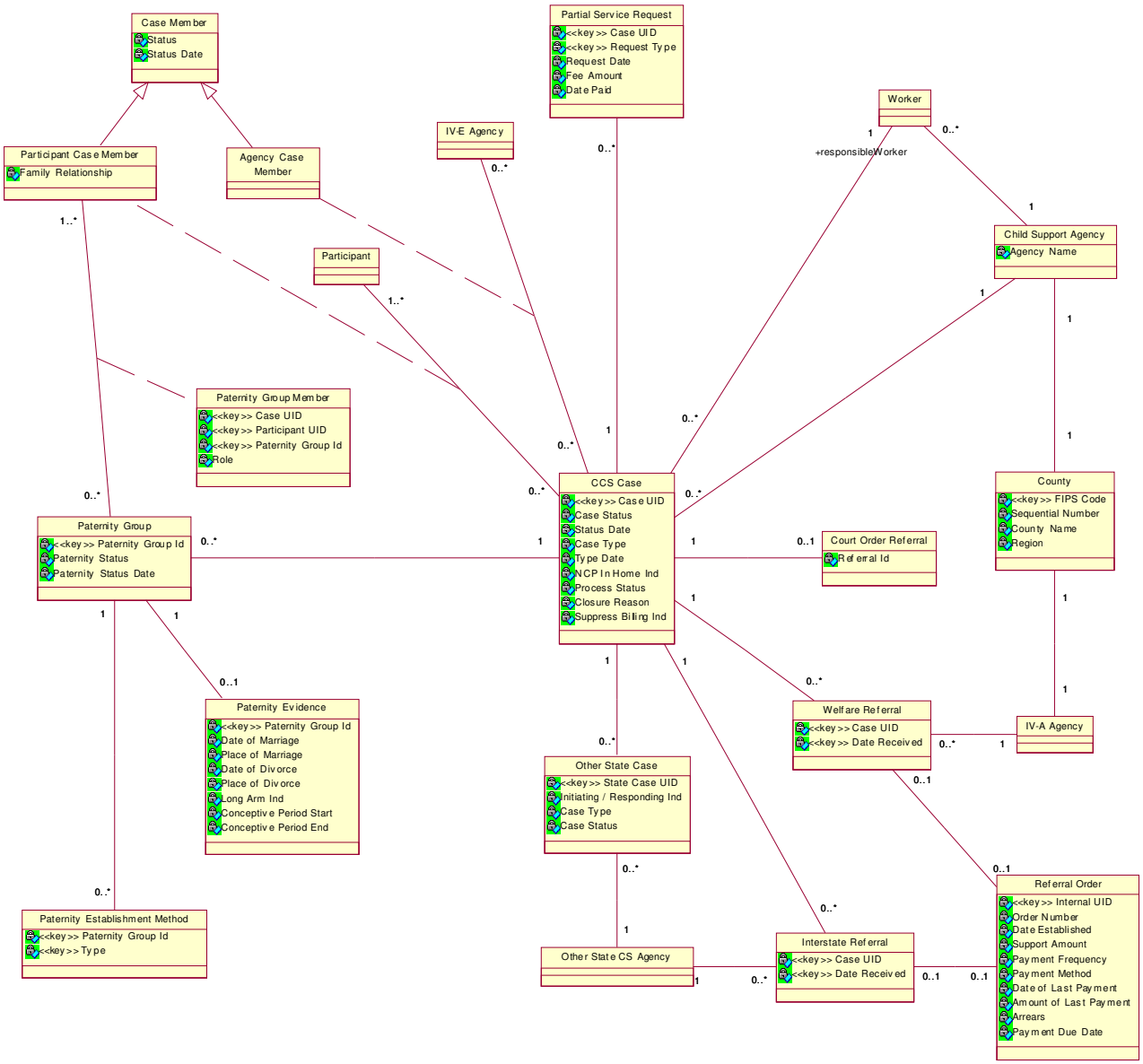



**Figure 4A Appendix D-2 Case Initiation & Update - Case**

*Significant Features*

- CCS Case includes links to the mother, father, and multiple children in common, as well as other custodians as appropriate. There can only be one mother per case, but there can be multiple alleged fathers (for example, before paternity is established).
- The relationships between participants are represented in the Participant Case Member, Paternity Group Member, and Obligation Group Member classes. These relationships provide the basis for presenting various views of the members and cases in the system based on the function driving the process. The independence of these relationships from a case provides the system with flexibility in defining and managing a workable case construct.
- The Paternity Group is the construct used to allow multiple alleged fathers to be linked to a case. A paternity group consists of a mother, child and a potential father.
- A Case Member can be a Participant or a IV-E Agency.

## 4A Appendix D.2.2.2 Establishment

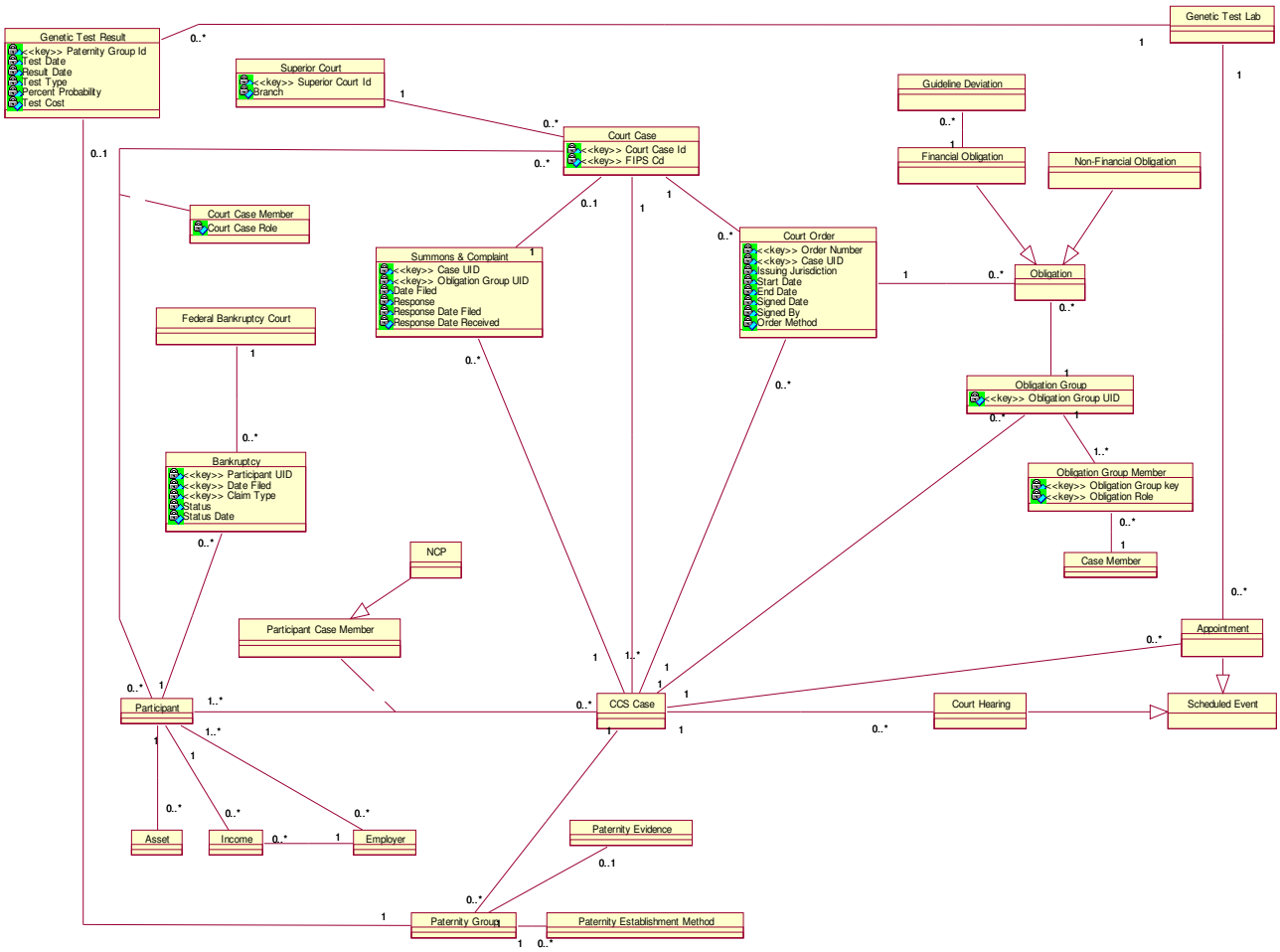



**Figure 4A Appendix D-3 Establishment**

### *Significant Features*

- Paternity Group; a child, mother and a father or alleged father. A case may be related to more than one paternity group.
- Paternity Evidence is stored in relation to the Paternity Group. This ties the information to the child, mother, and father regardless of any other case members. Cases involving siblings may be consolidated without losing the detailed paternity information.
- Obligation Group: a payer, payee, and beneficiary. Participants may play different roles in the context of the obligation. The Obligation Group eliminates the need to require that the CP in the CCS Case is the payee for a specific obligation within that case. The Obligation Group enables the CCS Case to have a single CP with multiple payees for the obligations.

- Obligation; a court-ordered responsibility placed on a participant. An obligation may be financial (current support) or non-financial (health insurance).
- Guideline Deviation; records the deviation amount and reason for deviation when support orders differ from the amount calculated using the Guideline Support Calculator.

## 4A Appendix D.2.2.3 Enforcement

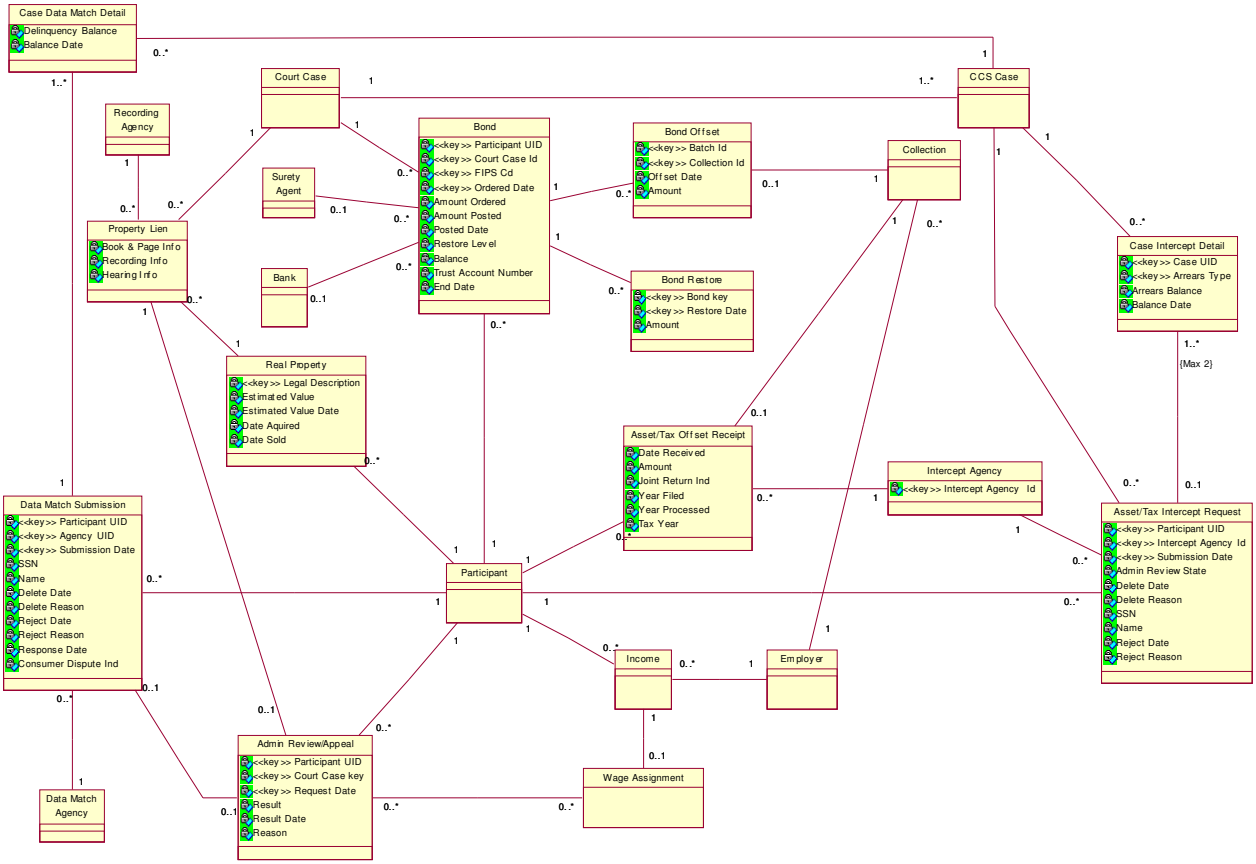



**Figure 4A Appendix D-4 Enforcement**

### *Significant Features*

- Asset/Tax Intercept Request, is a request to intercept a payer's tax refund (Federal and State) for payment of a support arrearage. The intercept request is aggregated for the obligor and the arrears for all cases are submitted as a single request.
- Bond, is a sum of money held to ensure future payment of child support. When a bond is offset for payment of support payment, the amount may be ordered to be restored by the payer to the original amount.
- Property Lien, is an attachment to real property (real estate). The lien is recorded with an agency within the county in which the property is located.
- Data Match Submission; submitting payers for matching to an external agency to identify "asset" information in order to proceed with enforcement activities such as license suspension, financial account seizure, etc.

## 4A Appendix D.2.2.4 Locate

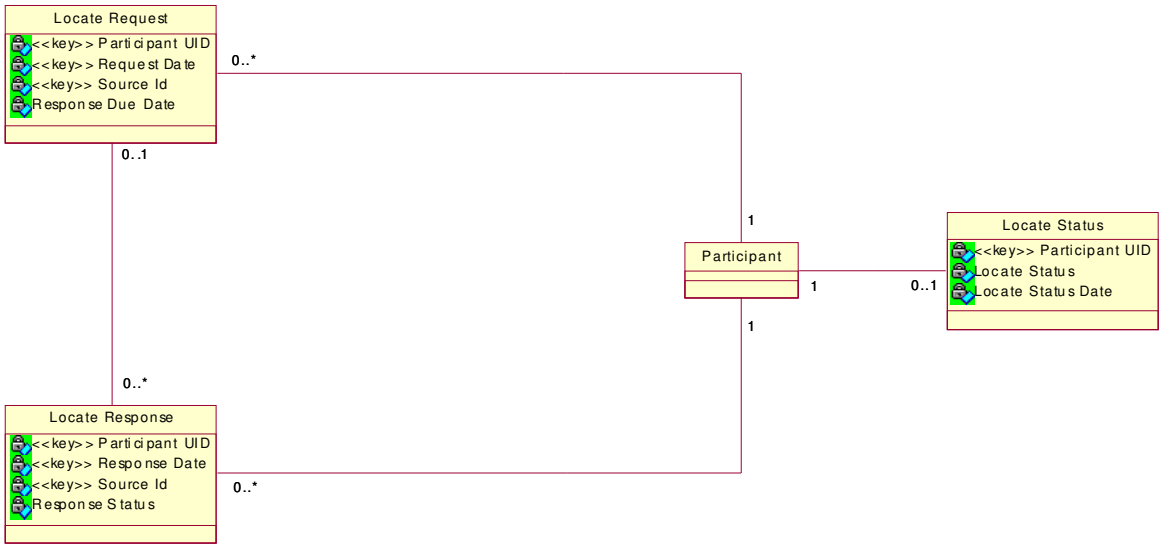



**Figure 4A Appendix D-5 Locate**

### *Significant Features*

- Locate Status, indicates the type of information that is needed for the participant; identity, physical whereabouts, income, assets
- Locate Request, is a request to an external agency for information about a participant
- Locate Response, is the response received from an external agency to a request for information about a participant. A locate response may contain information about a participant's demographics (ssn, date of birth, name, etc), address, employer, medical insurance, income/assets.

# 4A Appendix D.2.2.5 Obligation Management

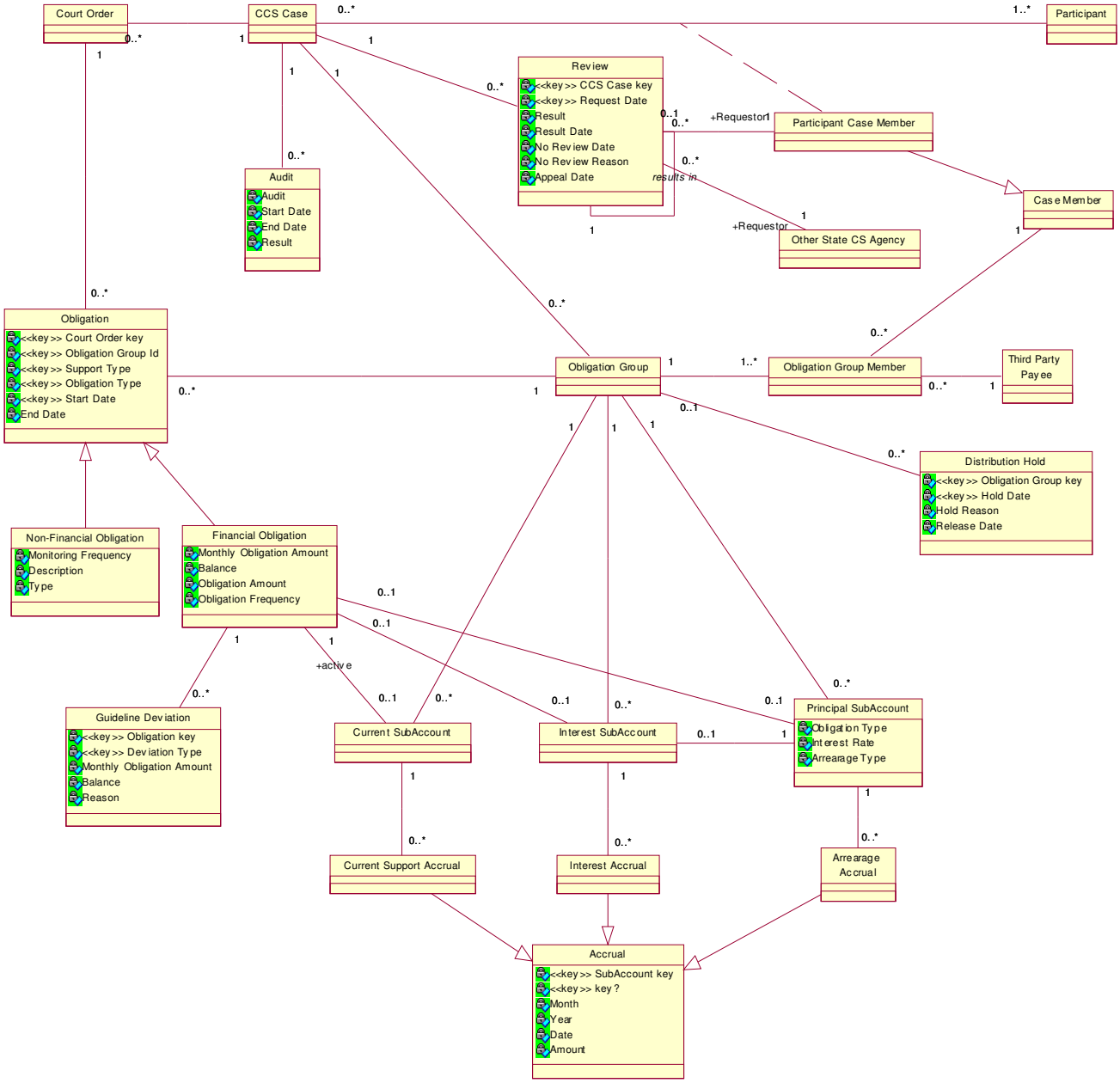



**Figure 4A Appendix D-6 Obligation Management**

*Significant Features*

- Court Order; a legally binding decision by a judicial officer. Multiple obligations may be ordered in one court order; payment toward current support and arrears in addition to health insurance coverage.
- Obligation Group; a group of participants associated with an obligation. An obligation group contains a payee, payer and beneficiary.
- Subaccount; an account receivable owed by a payer; payable to the payee; on behalf of the beneficiary(ies).
- Review; a process to determine if a payer's support obligation amount should be adjusted; a review may or may not result in a modification to the support obligation.

## 4A Appendix D.2.2.6 Collections

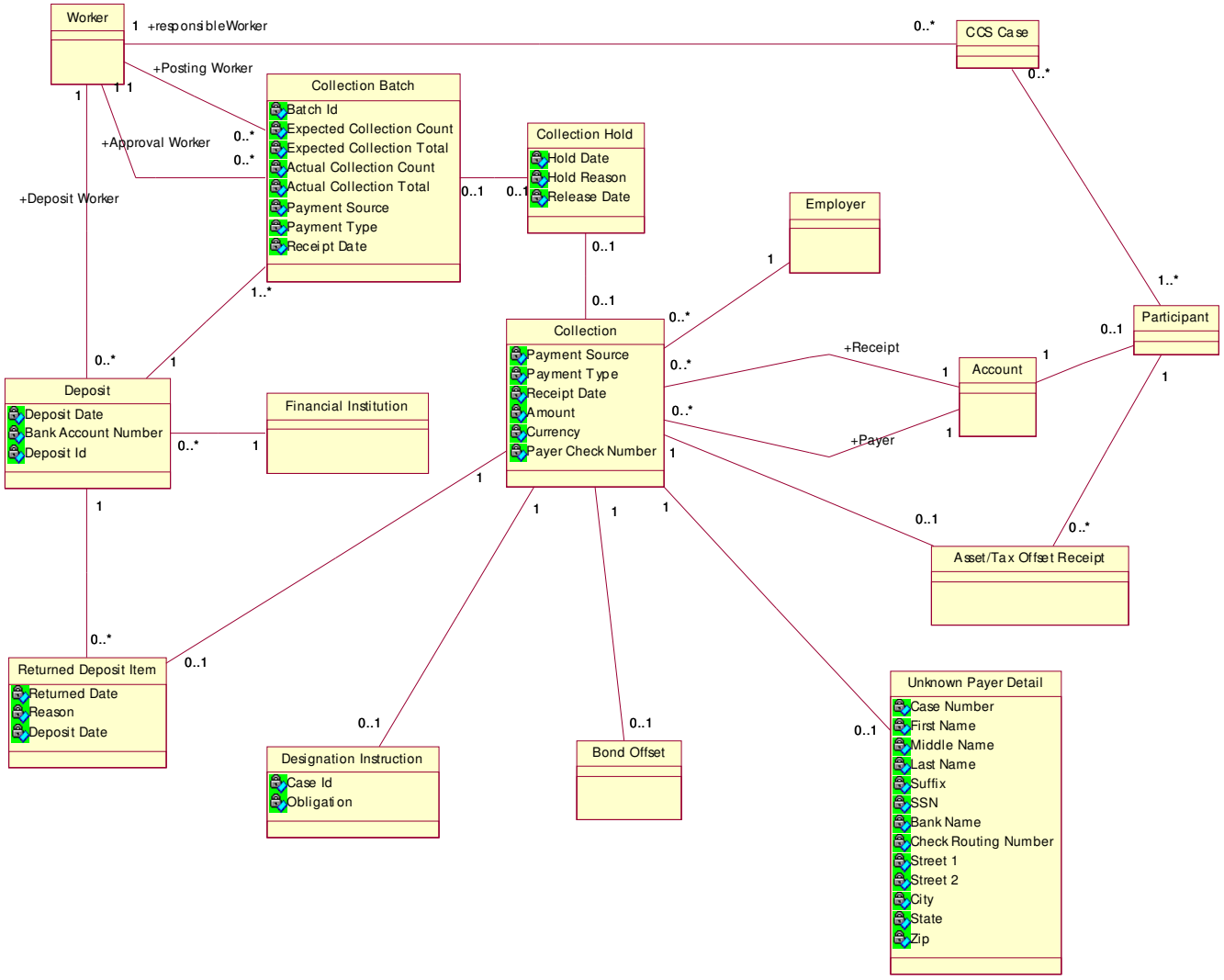



**Figure 4A Appendix D-7 Collections**

### *Significant Features*

- Collection; is the receipt of money paid by or on behalf of the payer. A collection is a single item in a collection batch.
- Unknown Payer Detail, is used to record as much identifying information as possible when a specific payer (participant) cannot be determined

# 4A Appendix D.2.2.7 Distribution

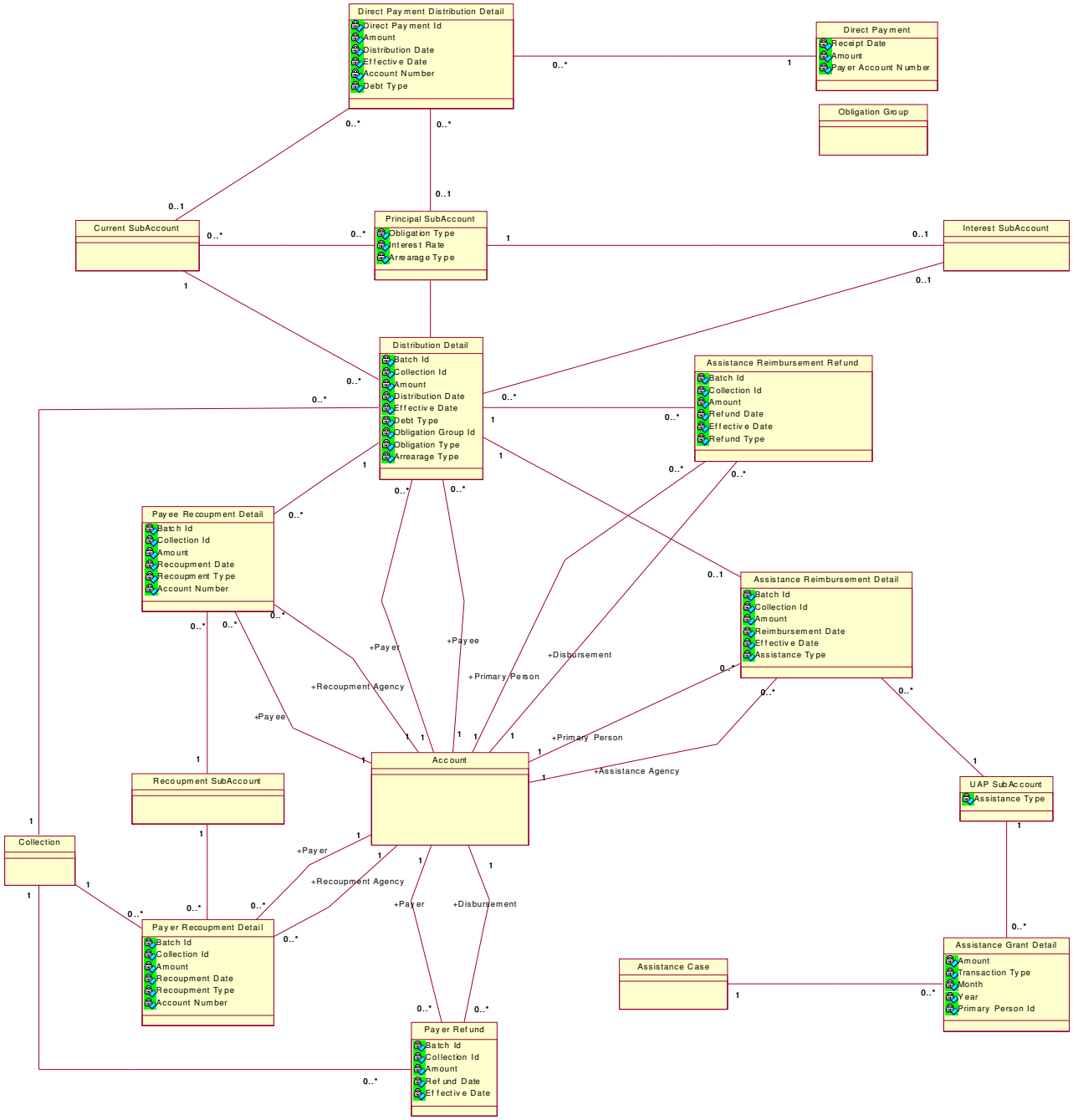



**Figure 4A Appendix D-8 Distribution**

*Significant Features*

- Direct Payment is a payment of child support made directly to the payee, without receipt by the CSE system. Detail can be recorded for each direct payment. These are non-cash transactions and do not affect reconciliation activity.
- Distribution Detail is a ledger entry reflecting the distribution of a collection to satisfy a specific account receivable (subaccount). The distribution transfers the funds from the payer account to the payee account and reduces the accounts receivable for the payer.
- Payee/Payer Recoupment Detail transfers the funds from the payee/payer account to the State's account and reduces the accounts receivable for the payee/payer.
- Assistance Reimbursement Detail is an amount of child support collected and retained by the State to reimburse the benefit amount issued to an assistance case.

## 4A Appendix D.2.2.8 Disbursement

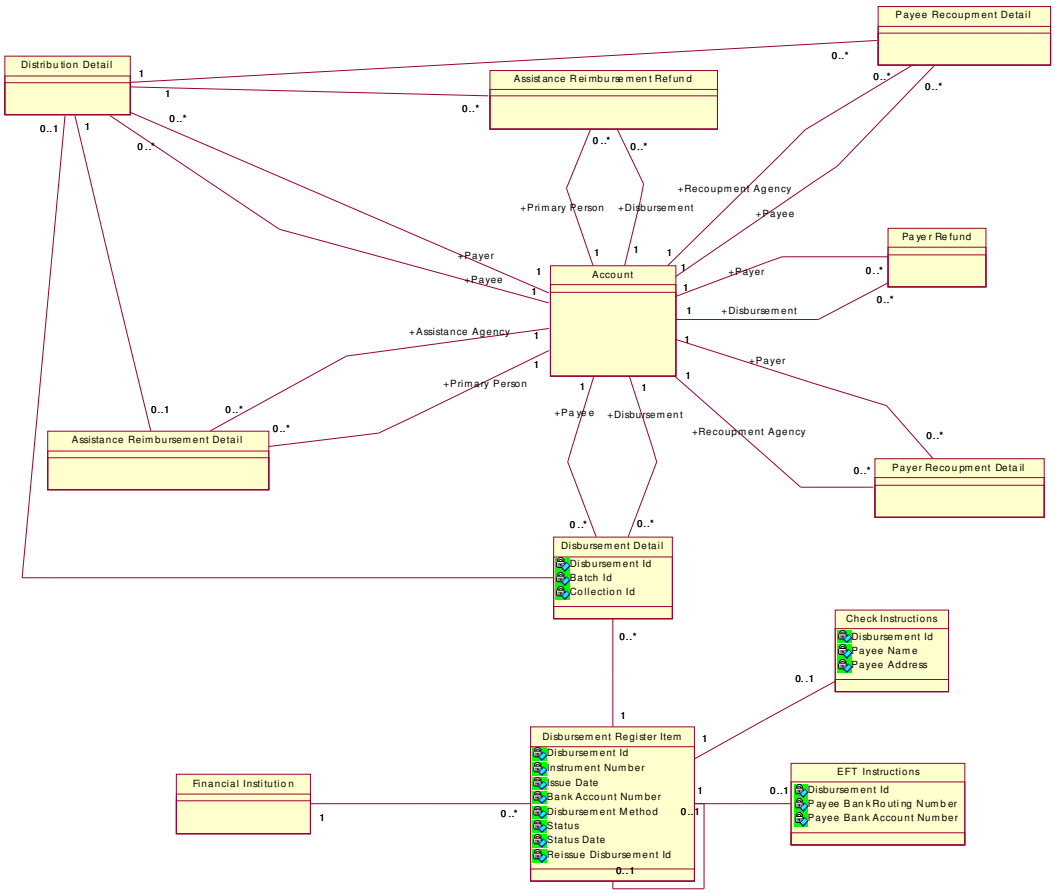



**Figure 4A Appendix D-9 Disbursement**

### *Significant Features*

- Disbursement Register Item, is a register entry representing a discrete disbursement to a payee. It may be an aggregation of multiple distributions to the payee's account.
- Disbursement Detail, is specific information on the discrete disbursement to the payee.
- Check Instructions, are instructions to produce a disbursement in the form of a check drawn on the account used by DCSS. The information includes the check payee, address, and the amount of child support to be included on the check.

## 4A Appendix D.2.2.9 IV-D Fund Management

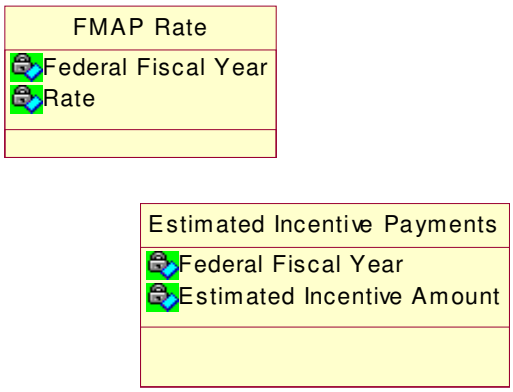



**Figure 4A Appendix D-10 IV-D Fund Management**

*Significant Features*

- FMAP Rate, is the Federal Medical Assistance Percentage Rate applicable to each State as defined in Section 1905(b) of the Social Security Act.
- Estimated Incentive Payments, is an estimate of the total incentive payment, as calculated by HHS, that each State will receive for the upcoming fiscal year. Following the end of the fiscal year, HHS calculates the actual incentive payment the State should have received. If adjustments to the estimated amount are necessary, an additional positive or negative Title IVD grant is issued to the State.

# 4A Appendix D.2.3 Common Services Class Diagrams

## 4A Appendix D.2.3.1 Accounting Services

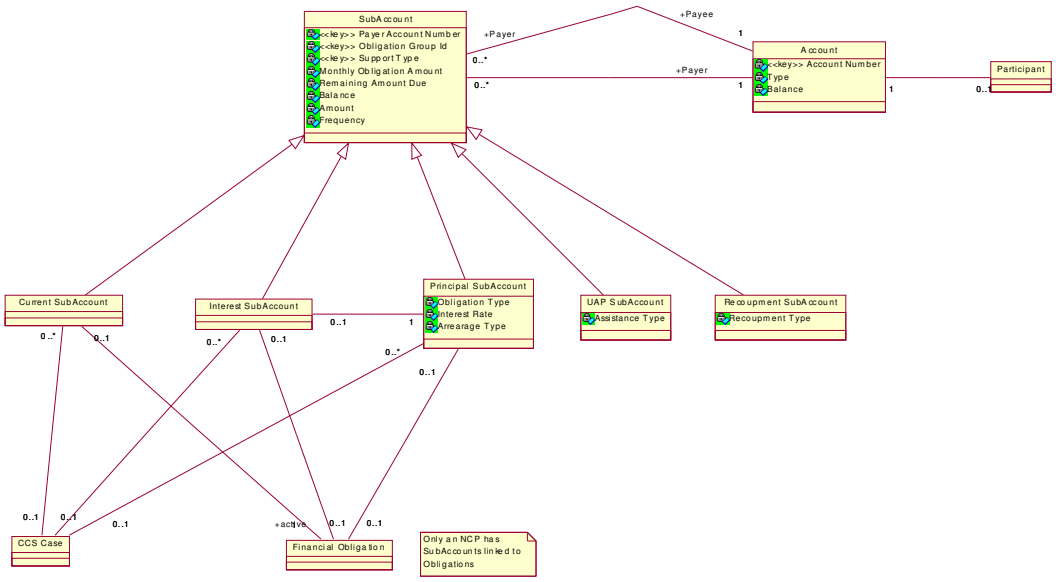



**Figure 4A Appendix D-11 Accounts**

### *Significant Features*

- Accounts are provided at the participant level. Accounts are used for moving cash in and out of the system in the form of collections and disbursements. The CSE system model does not contain case level accounts for tracking support obligations. Instead, the support obligations are tracked under the payer's account as subaccounts. The subaccounts are also related to the obligation groups and CCS Cases through which they were created. These structures enable the system to maintain a view of a payer's obligations, or specific obligations within a case.
- In addition to the subaccounts needed to track support obligations (current, principal, and interest) the participant may have subaccounts to track one or more Unreimbursed Assistance Pools, and one or more recoupment/recovery subaccounts to recover funds due to adjustments.

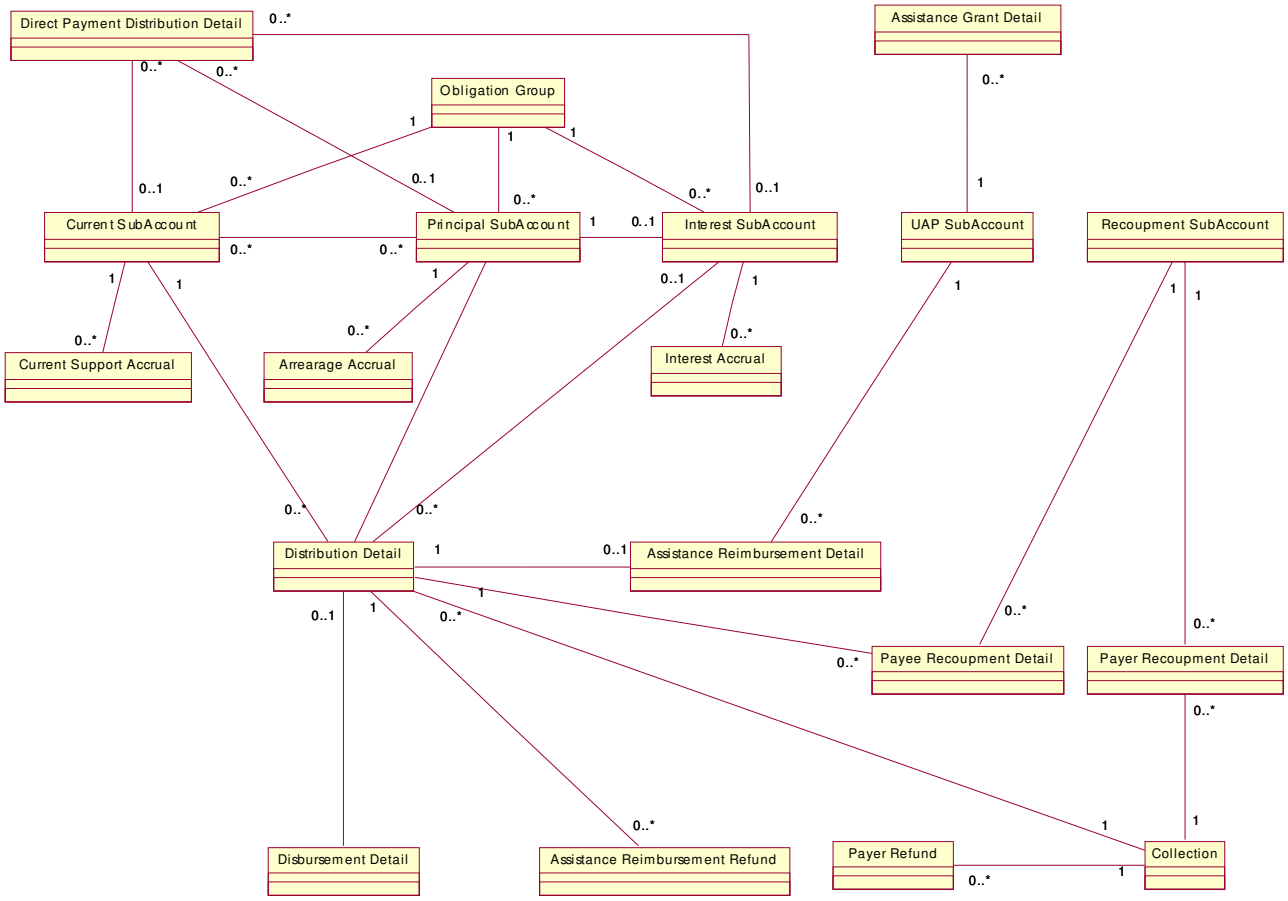



**Figure 4A Appendix D-12 Accounts- Transactions**

## *Significant Features*

- Various transaction types are represented in the CSE system model as separate classes.
- The classes depicted above represent the transactions used to operate on subaccounts. These transactions move funds from one account to another while modifying the target subaccount in a predefined way. Additionally, some of these transactions manipulate the subaccount to modify the obligation amount or the accounts receivable.

## 4A Appendix D.2.3.2 Appointments & Hearings

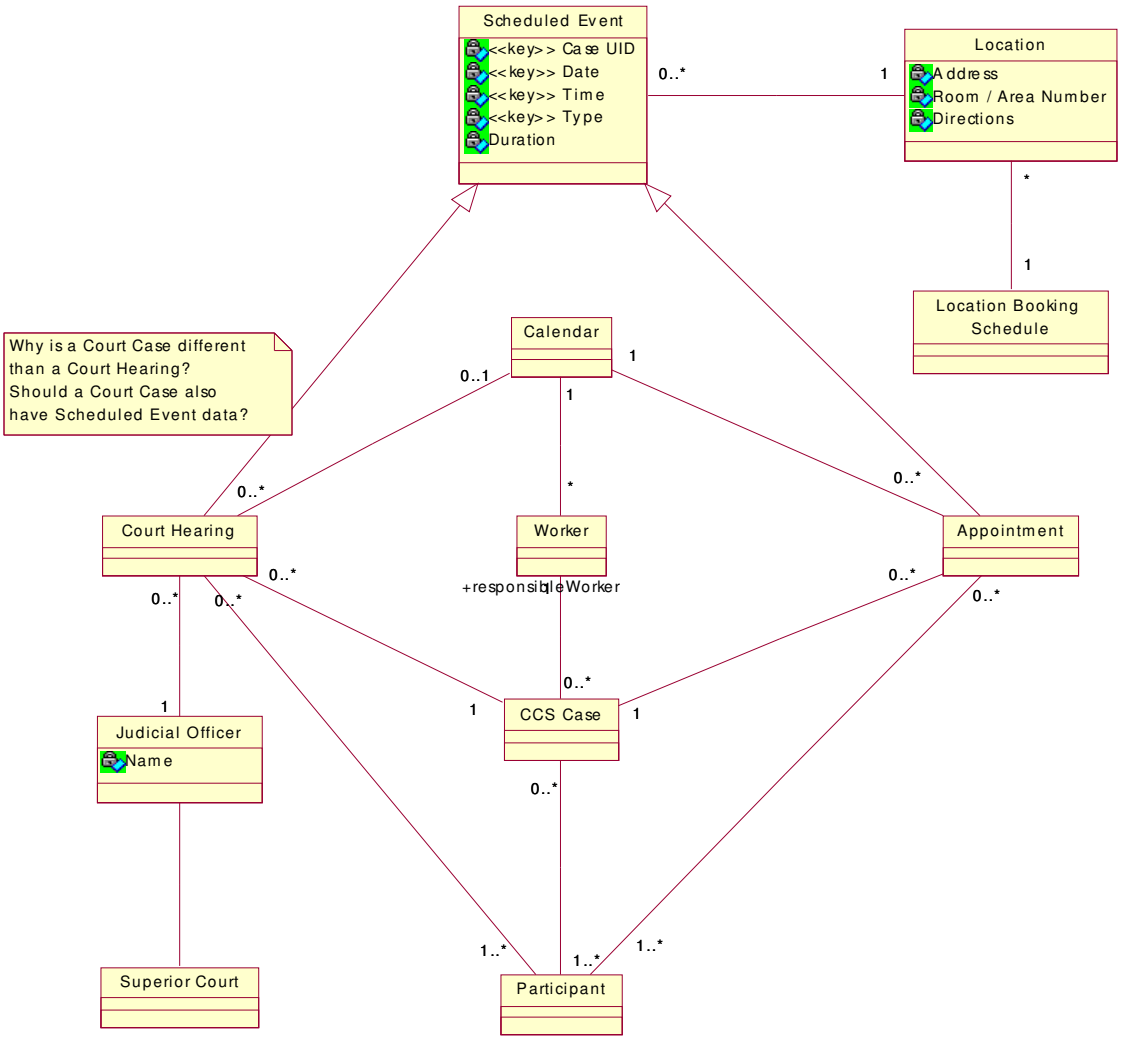



**Figure 4A Appendix D-13 Appointments & Hearings**

### *Significant Features*

- Scheduled Event, is an appointment or hearing that has been scheduled on the calendar.
- Location, is the place in which the appointment will be conducted (address, room number, etc).
- Worker, is the worker who will attend and conduct the appointment.
- Judicial Officer, is the presiding official that will conduct the hearing.

## 4A AppendixD.2.3.3 Service of Process

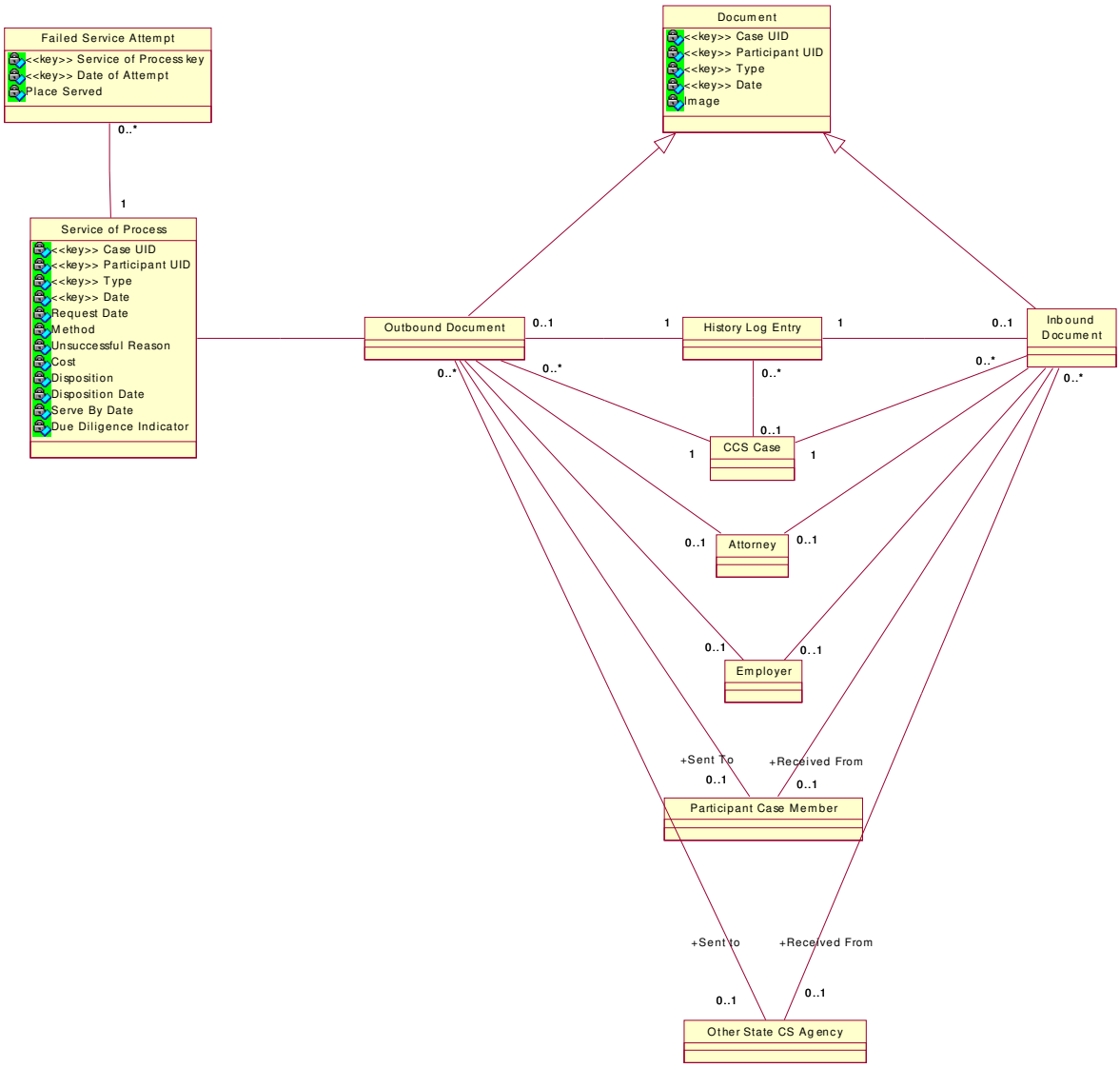



**Figure 4A Appendix D-14 Service of Process**

### *Significant Features*

- Service of Process; details of each Service of Process are recorded and tracked in the CSE system to facilitate workflow and timeline management. A “serve-by date” will be tracked to alert a worker when a response has not been received from a process server. The cost of service will be recorded to facilitate court-ordered reimbursement.
- Failed Service Attempt; Multiple attempts made by a process server will be recorded to prove due diligence.

## 4A Appendix D.2.3.4 Event (History) Management

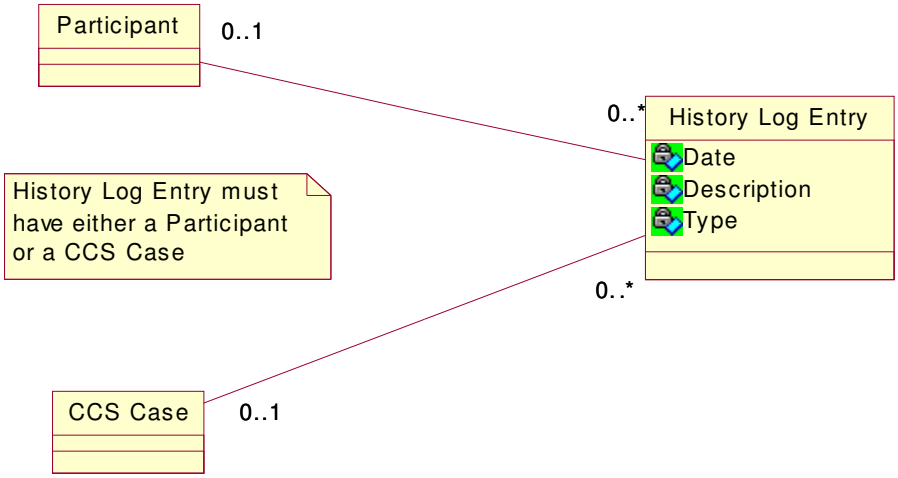



**Figure 4A Appendix D-15 Event (History) Management**

*Significant Features*

- Participant, CCS Case; an event history is maintained for each participant in addition to each case. Events that are relevant to a participant regardless of the CCS Case(s) they are involved in are stored in a single participant event log. The CCS Case event log is a critical tool for workers in providing services to the case. Consideration should be given to the definition of a case to ensure that a workable structure is defined for housing the event log.
- History Log Entry; the specific type of action taken, the date and result of the action will be automatically recorded.

## 4A Appendix D.2.3.5 Wage Withholding

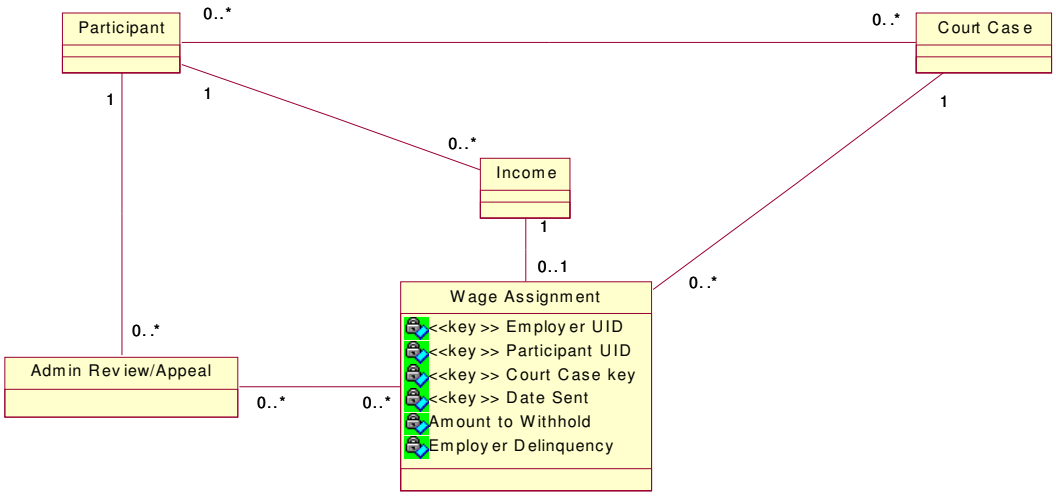



**Figure 4A Appendix D-16 Wage Withholding**

### *Significant Features*

- Wage Assignment, is a standardized notice to an employer to withhold money from a participant's wages for the payment of child support
- Income, is an asset that produces money; i.e., Wages, rent commission, interest
- Employer, Wage assignments are sent to employers and employers send the child support collection to the SDU

# 4A Appendix D.2.4 Inheritance Class Diagrams

## 4A Appendix D.2.4.1 Agency

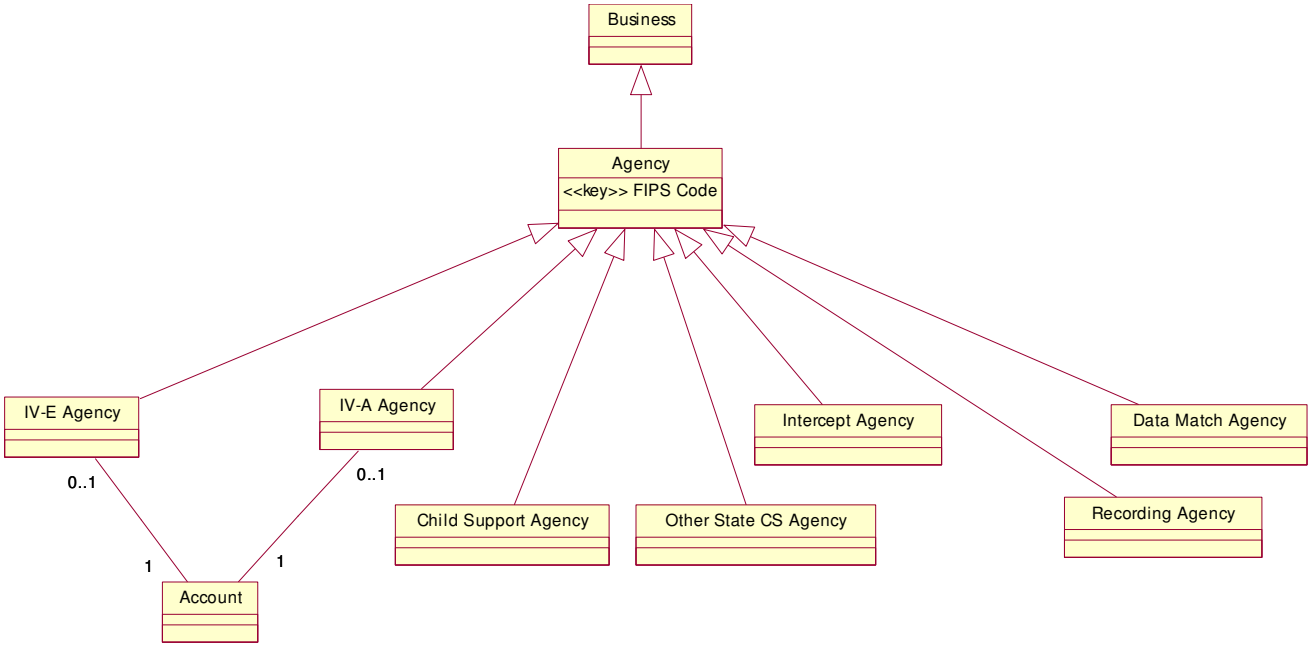



**Figure 4A Appendix D-17 Agency Inheritance**

*Significant Features*

- Agency inherits from Business
- The detailed design of these classes should take into consideration the definitions provided in the Interstate Referral Guide and the requirement to interface with OCSE via CSENet
- IV-E and IV-A agencies have accounts to support the need to assign support on their behalf and disburse funds to these agencies

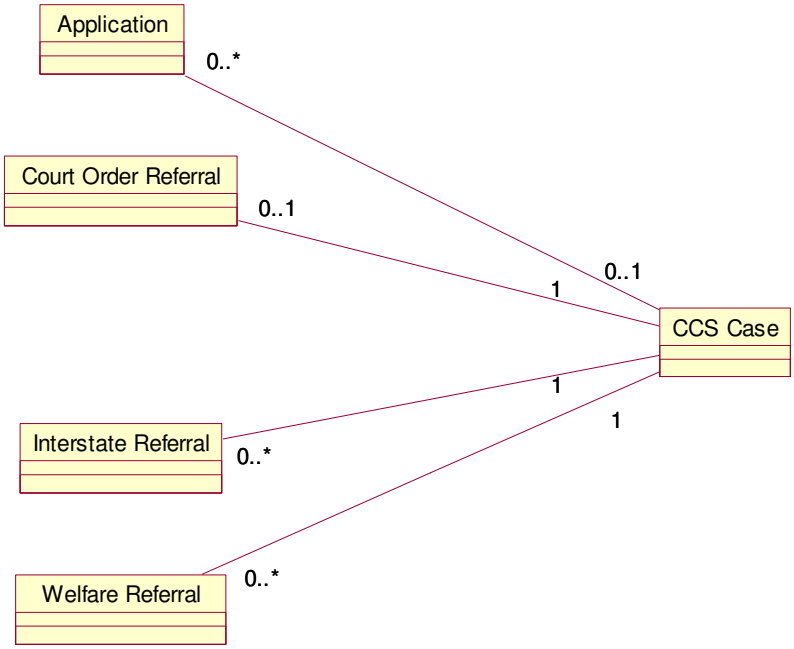



**Figure 4A Appendix D-18 Application / Request for Services**

## *Significant Features*

- A CCS Case is created as a result of receiving an application or a request for services. Non IV-D cases are created as a result of receiving a court order referral. Interstate and Welfare referrals are considered to be requests for services.

## 4A Appendix D.2.4.2 Asset

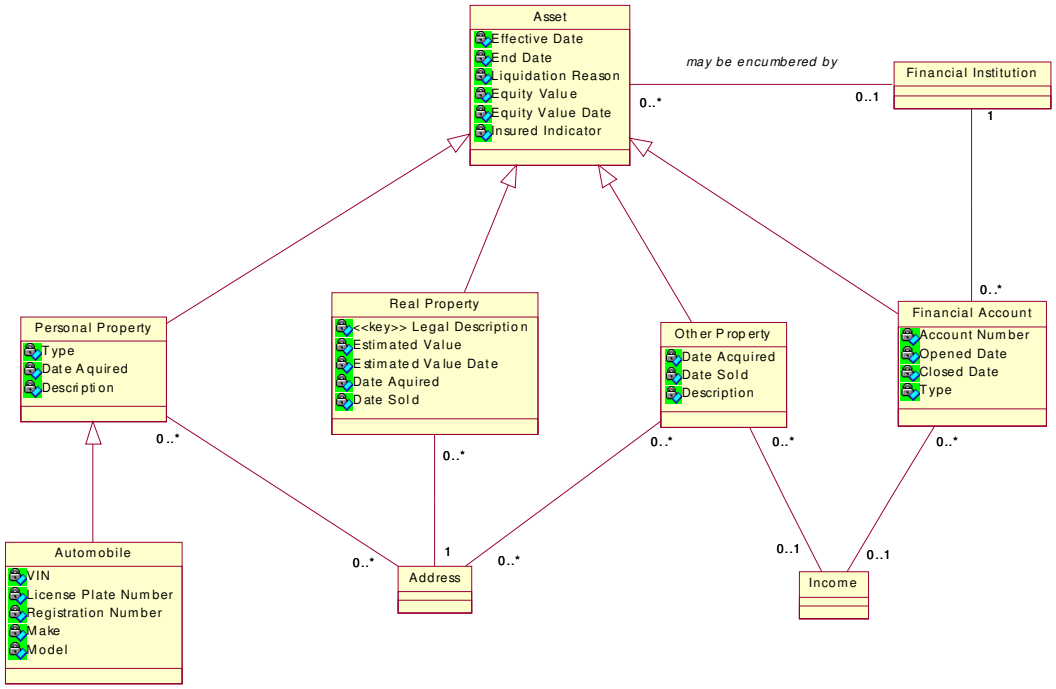



**Figure 4A Appendix D-19 Asset Inheritance**

### *Significant Features*

- The CSE system model supports tracking various types of assets
- Asset values can be useful in both establishment and enforcement of support obligations
- Some assets may produce income that can be used in establishment and enforcement

## 4A Appendix D.2.4.3 Case Member

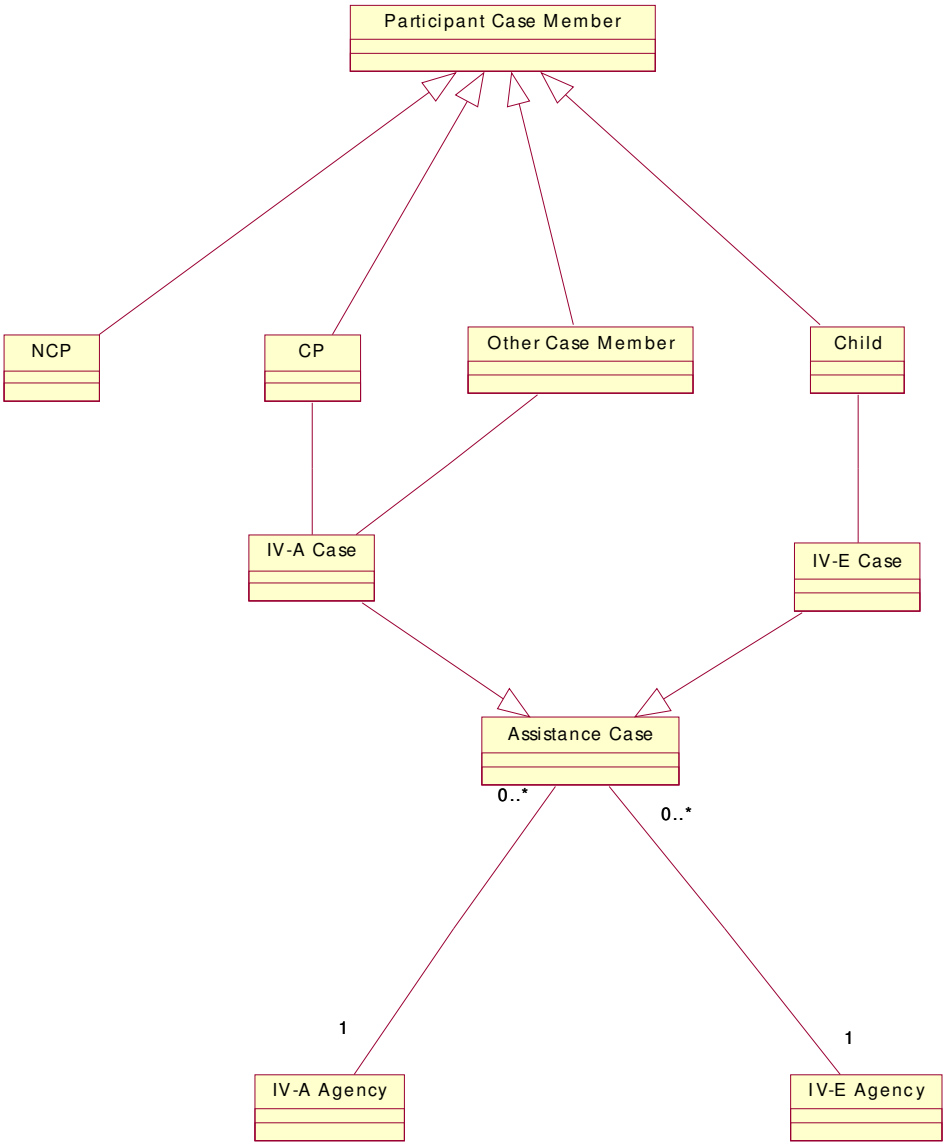



**Figure 4A Appendix D-20 Case Member Inheritance**

### *Significant Features*

- Multiple case members may participate in a CCS Case. The role of the case member is significant in establishing the context of the participant.

- The relationship of a CP and their welfare case is maintained as an independent and explicit relationship.
- The relationship of a Child and their foster care case is maintained as an independent and explicit relationship.

## 4A Appendix D.2.4.4 Entity

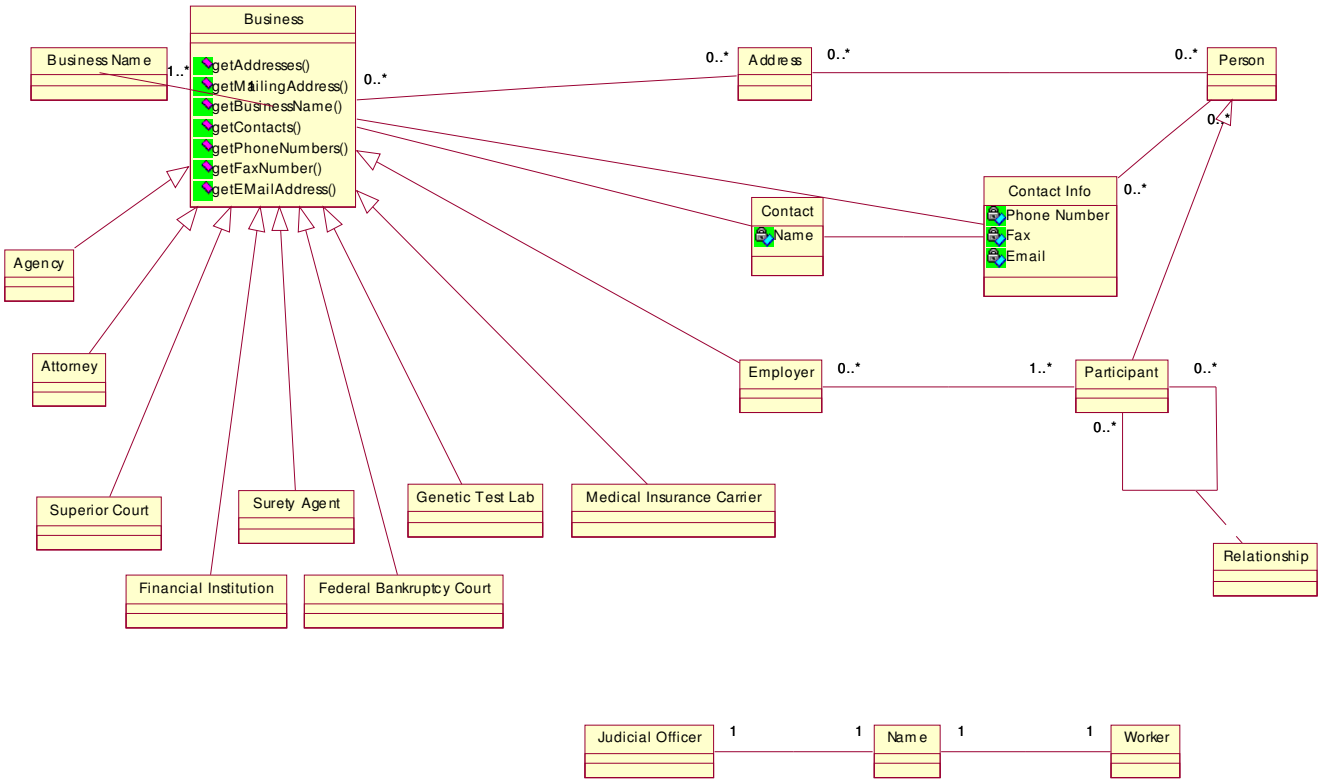



**Figure 4A Appendix D-21 Entity Inheritance**

### *Significant Features*

- The Business class serves as a base class for many types of business and agencies in the CSE system model

## 4A Appendix D.2.4.5 Obligation

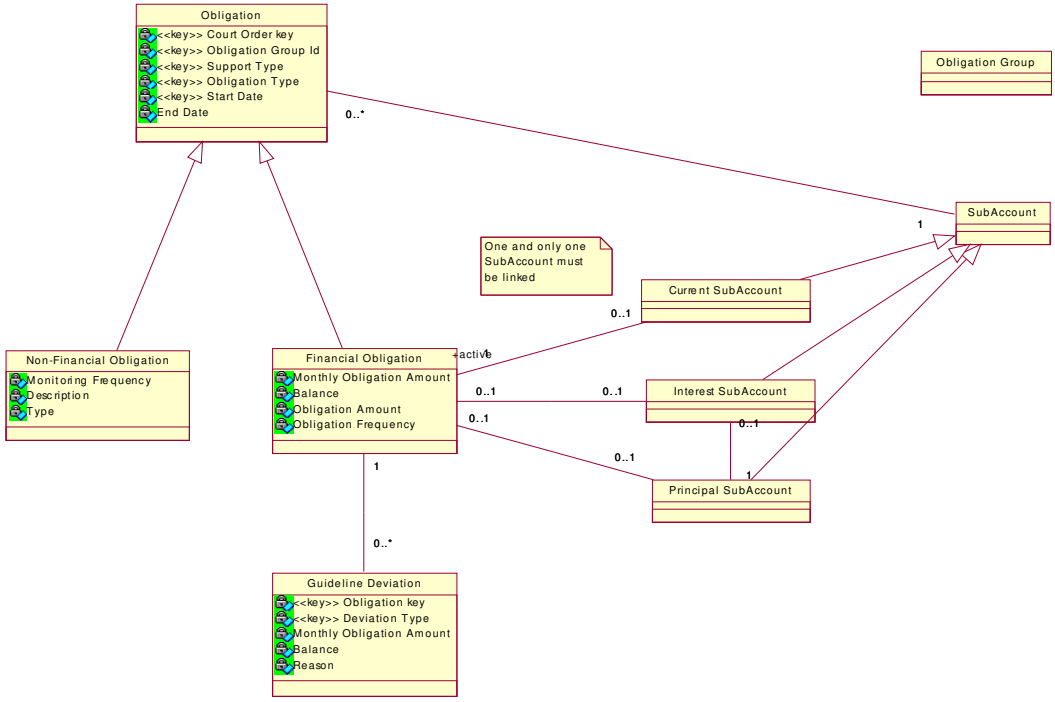



**Figure 4A Appendix D-22 Obligation Inheritance**

### *Significant Features*

- Obligations are used to maintain information about the court ordered, or stipulated, support obligations. Subaccounts are used to track the real-time accounts receivable for each obligation.
- The Financial Obligation and Non-financial Obligation classes are inherited from the Obligation class.

## 4A Appendix D.2.4.6 Verifiable Objects

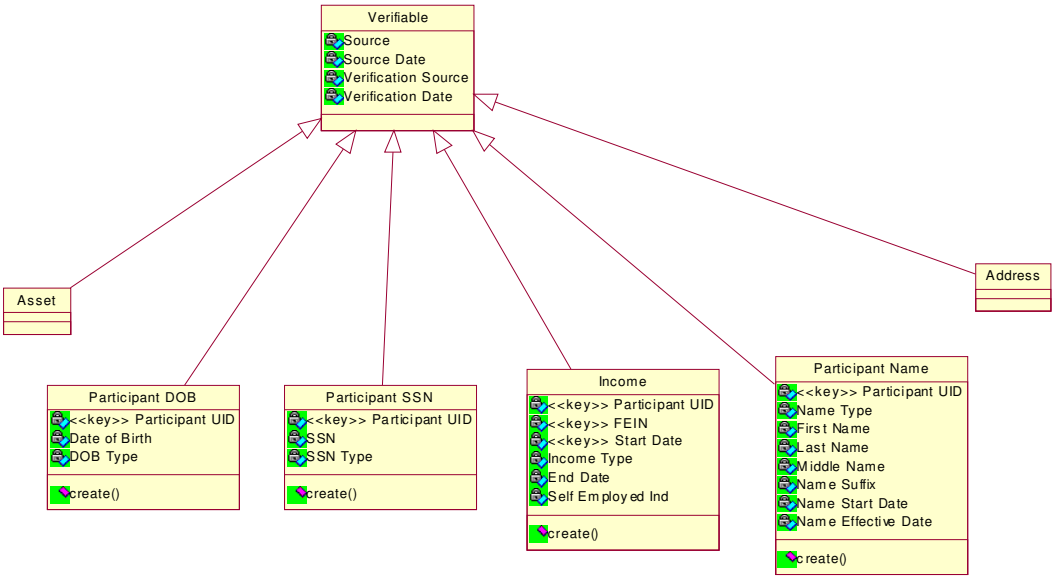



**Figure 4A Appendix D-23 Verifiable Objects Inheritance**

### *Significant Features*

- Information used to locate and identify an individual can be verified by pre-defined sources. Knowing the reliability of this information can improve automated processes.
- Tracking both the original source and the verification source will enable the CSE system to monitor the quality and efficiency of each locate source. Refinements can be made to leverage the higher quality and more reliable data sources.

## 4A Appendix D.2.5 Class and Attribute Specifications

*Account*

Accounts are used to post financial transactions through the General Ledger. Each participant who plays a role of NCP, CP, Other has a financial Account to track the flow of funds through the CSE system. System control accounts are also used for Accounts Receivable, Accounts Payable, and Cash handling purposes. A positive balance in a cash account reflects funds that must be processed in order to disburse them.

Private Attributes: Account Number, Type, Balance

*Accrual*

An Accrual is an Accounts Receivable ledger entry to manage the balances of the detail SubAccounts.

Private Attributes: SubAccount key, Month, Year, Date, Amount

*Additional NCP Details*

Descriptive information about a Participant that is useful primarily in manual locate activities. Typically, this data is only captured for NCPs.

Private Attributes: City of Birth, County of Birth, State of Birth, Country of Birth, Military Service Ind, Father's Name, Mother's Name, Distinguishing Features

*Address*

Formatted data describing the location of an entity. For participants a variety of addresses may be recorded including a history of mailing addresses. Of primary importance is the mailing address. It is also useful in many situations to store partial addresses to reflect what limited information is available. International addresses must also be supported. For mailing purposes, postal standards must be adhered to in maintaining mailing addresses.

Derived from Verifiable

*Admin Review/Appeal*

A reconsideration of a decision by an administrative body or court.

Private Attributes: Participant UID, Court Case key, Request Date, Result, Result Date, Reason

*Agency*

An administrative division of government

Derived from Business

Private Attributes: FIPS Code

*Agency Case Member*

An instance of an Agency playing the role of Case Member in a CCS Case. An Agency may be involved in many CCS Cases (e.g. a Substitute Care Agency).

Derived from Case Member

*Application*

A form completed by a person to request child support services.

Private Attributes: Participant UID, Received Date, Request Date, Sent Date

*Appointment*

A scheduled date and time for a participant to appear at a specified location.

Derived from Scheduled Event

Arrearage Accrual
An occurrence of past due, unpaid support. An Arrearage Accrual is used to transfer an accounts receivable amount from a current support subaccount to a principal subaccount (arrears).

Derived from Accrual

*Asset*
A possession of value owned by a participant, including income or income producing property.

Derived from Verifiable

Private Attributes: Effective Date, End Date, Liquidation Reason, Equity Value, Equity Value Date, Insured Indicator

*Asset/Tax Intercept Request*

A request to intercept a non-custodial parent's tax refund for the payment of a support arrearage. Asset/Tax Intercept Requests are aggregated for the obligor and the arrears for all cases are submitted as a single request (IRS requires distinction between assigned and unassigned arrears at the participant level).

Private Attributes: Participant UID, Intercept Agency Id, Submission Date, Admin Review State, Delete Date, Delete Reason, SSN, Name, Reject Date, Reject Reason

*Asset/Tax Offset Receipt*

The receipt of a non-custodial parent's tax refund for payment of a child support arrearage.

Private Attributes: Date Received, Amount, Joint Return Ind, Year Filed, Year Processed, Tax Year

*Assistance Case*

A Case that is native to a Welfare, Medicaid or Substitute Care system. The Assistance Case refers to a group of individuals that are receiving services through another program.

Private Attributes: Assistance Case Id, FIPS Cd, Assistance Type, Primary Person Id, Case Status, Grant Amount, Grant Approval Date, Assignment of Rights

*Assistance Eligibility*

Detail regarding the time period and status of a participant's eligibility for public assistance.

Private Attributes: Participant UID, Assistance Case key, Aid Category, Start Date, End Date, Grant Amount

*Assistance Grant Detail*

The benefit amount issued to an assistance case.

Private Attributes: Amount, Transaction Type, Month, Year, Primary Person Id

*Assistance Reimbursement Detail*

An amount of child support collected and retained by the State to reimburse the benefit amount issued to an assistance case.

Private Attributes: Batch Id, Collection Id, Amount, Reimbursement Date, Effective Date, Assistance Type

*Assistance Reimbursement Refund*

An amount of child support collected, retained by the State to reimburse the benefit amount issued to an assistance case and then subsequently refunded to the custodial party.

Private Attributes: Batch Id, Collection Id, Amount, Refund Date, Effective Date, Refund Type

*Attorney*

A person who legally represents a participant in a court action.

Derived from Business

Private Attributes: Attorney Id, Bar Number

*Audit*

An examination or review of financial accounts and transactions.

Private Attributes: Audit, Start Date, End Date, Result

*Automobile*

Derived from Personal Property

Private Attributes: VIN, License Plate Number, Registration Number, Make, Model

*Bank*

A financial institution

Derived from Business

*Bankruptcy*

The process of claiming relief from debt under prescribed federal laws.

Private Attributes: Participant UID, Date Filed, Claim Type, Status, Status Date

*Beneficiary*

The participant (dependent) benefiting from the child support payment.

*Bond*

A sum of money held to guarantee payment of child support.

Private Attributes: Participant UID, Court Case Id, FIPS Cd, Ordered Date, Amount Ordered, Amount Posted, Posted Date, Restore Level, Balance, Trust Account Number, End Date

*Bond Offset*

An amount of money deducted from a bond used to pay child support

Private Attributes: Batch Id, Collection Id, Offset Date, Amount

*Bond Restore*

An amount of money used to replenish a bond to an original sum after deducting for payment of child support.

Private Attributes: Bond key, Restore Date, Amount

*Business*

A company or organization

*Business Name*

The name of the company or organization

*CCS Case*

California Child Support Case; A group of people associated with a particular child(ren), including a Custodial Party (CP), and Non-custodial Parent (NCP) or a Putative Father (PF).

Private Attributes: Case UID, Case Status, Status Date, Case Type, Type Date, NCP In Home Ind, Process Status, Closure Reason, Suppress Billing Ind

*CP*

Custodial Party; The person who has primary care, custody, and control of the child(ren).

Derived from Participant Case Member

*Calendar*

Dates, time and locations available for appointments and court hearings.

*Case Data Match Detail*

Information on the amount of child support owed for a case submitted to a data match agency

Private Attributes: Delinquency Balance, Balance Date

*Case Intercept Detail*

Information on the amount to be intercepted from an intercept agency

Private Attributes: Case UID, Arrears Type, Arrears Balance, Balance Date

*Case Member*

An instance of a Participant playing a role in a CCS Case

Private Attributes: Status, Status Date

*Check Instructions*

Instructions to produce a disbursement in the form of a check drawn on the account used by DCSS. This Information includes the check payee, address, and the amount of child support to be included on the check.

Private Attributes: Disbursement Id, Payee Name, Payee Address

*Child*

A dependent of the custodial party and non-custodial parent. The beneficiary of a child support obligation.

Derived from Participant Case Member

*Child Support Agency*

The agency that provides services of the Child Support Enforcement Program according to the guidelines set forth in Title IVD of the Social Security Act.

Derived from Agency

Private Attributes: Agency Name

*Collection*

The receipt of money paid by, or on behalf of, an obligor.

Private Attributes: Payment Source, Payment Type, Receipt Date, Amount, Currency, Payer Check Number

*Collection Batch*

A grouping of Collections. Used for cash control and balancing purposes to facilitate quality assurance.

Private Attributes: Batch Id, Expected Collection Count, Expected Collection Total, Actual Collection Count, Actual Collection Total, Payment Source, Payment Type, Receipt Date

*Collection Hold*

An instruction to bypass automated processing of a Collection.

Private Attributes: Hold Date, Hold Reason, Release Date

*Contact*

Person / Dept etc to use as contact for this organization

Private Attributes: Name

*Contact Info*

The detail of how to communicate with an individual or business unit.

Private Attributes: Phone Number, Fax, Email

*County*

A political subdivision of State government.

Private Attributes: FIPS Code, Sequential Number, County Name, Region

*Court Case*

A group of individuals involved in a legal proceeding before the Court.

Private Attributes: Court Case Id, FIPS Cd

*Court Case Member*

An individual involved in a Court Case.

Private Attributes: Court Case Role

*Court Hearing*

The date, time, and location of a legal proceeding before a Court official.

Derived from Scheduled Event

*Court Order*

A legally binding edict issued by a court of law. A child support order may establish the amount and frequency of support to be paid, an arrearage balance, and/or health insurance coverage.

Private Attributes: Order Number, Case UID, Issuing Jurisdiction, Start Date, End Date, Signed Date, Signed By, Order Method (Adjudicated, Default, Stipulation)

*Court Order Referral*

A court order containing a child support obligation for which a party has not submitted an application for child support services (a Non-IVD case)

Private Attributes: Referral Id

*Current SubAccount*

An account created to record obligations due for the present period of time

Derived from SubAccount

*Current Support Accrual*

Sum of child support due for the present period of time

Derived from Accrual

*Data Match Agency*

An agency that accepts submissions of participants to be located.

Derived from Agency

*Data Match Submission*

A request to an external agency for the purpose of locating information about a participant.

Private Attributes: Participant UID, Agency UID, Submission Date, SSN, Name, Delete Date, Delete Reason, Reject Date, Reject Reason, Response Date, Consumer Dispute Ind

*Deposit*

The act of placing money in a financial account

Private Attributes: Deposit Date, Bank Account Number, Deposit Id

*Designation Instruction*

Directive on which debts to apply the child support collection.

Private Attributes: Case Id, Obligation

*Direct Payment*

A payment of child support from the non-custodial parent to the custodial party without payment to the State Disbursement Unit.

Private Attributes: Receipt Date, Amount, Payer Account Number

*Direct Payment Distribution Detail*

Information about what debts were paid as a result of a direct payment of child support.

Private Attributes: Direct Payment Id, Amount, Distribution Date, Effective Date, Account Number, Debt Type

*Disbursement Detail*

Specific information on the "paying out" of the child support collection.

Private Attributes: Disbursement Id, Batch Id, Collection Id

*Disbursement Register Item*

A register entry representing a discrete disbursement to a payee. May be an aggregation of multiple distributions to the payee's account.

Private Attributes: Disbursement Id, Instrument Number, Issue Date, Bank Account Number, Disbursement Method, Status, Status Date, Reissue Disbursement Id

*Distribution Detail*

A ledger entry reflecting the distribution of a Collection (or part of it) to satisfy a specific Account Receivable (subaccount). The distribution transfers the funds from the payer account to the payee account and reduces the Accounts Receivable for the payer.

Private Attributes: Batch Id, Collection Id, Amount, Distribution Date, Effective Date, Debt Type, Obligation Group Id, Obligation Type, Arrearage Type

*Distribution Hold*

An instruction to bypass automated processing of a Collection.

Private Attributes: Obligation Group key, Hold Date, Hold Reason, Release Date

*Document*

A form, letter, or correspondence.

Private Attributes: Case UID, Participant UID, Type, Date, Image

*EFT Instructions*

Instructions to produce a disbursement in the form of an Electronic Funds Transfer (EFT) drawn on the account used by DCSS. This Information includes the payee's bank and account and the amount to be transferred.

Private Attributes: Disbursement Id, Payee Bank Routing Number, Payee Bank Account Number

*Employer*

The business for which the participant works.

Derived from Business, Person

Private Attributes: FEIN

*Estimated Incentive Payments*

HHS estimates the total incentive payment that each State will receive for the upcoming fiscal year. Each State includes one-quarter of the estimated total payment in its quarterly collection report that will reduce the amount that would otherwise be paid to the Federal government. Following the end of the fiscal year, HHS calculates the actual incentive payment the State should have received. If adjustments to the estimated amount are necessary, an additional positive or negative title IV-D grant award is issued. (See OCSE AT-01-01)

Note: The instructions on the OCSE-34A require that the sum of the amounts entered in each quarterly report for a Federal fiscal year not exceed the HHS estimate. Therefore, it may be desirable (and is allowable) to store this data on a quarterly basis in order to allocate the estimated incentive based on collection trends for each quarter.

Private Attributes: Federal Fiscal Year, Estimated Incentive Amount

*FMAP Rate*

The Federal Medical Assistance Percentage Rate applicable to each State as defined in Section 1905(b) of the Social Security Act. This rate, not less than 50 percent, is based on the ratio of the per capita income in each State to that of the United States and is reassessed and published in the Federal Register annually. (See OCSE AT-00-02)

Private Attributes: Federal Fiscal Year, Rate

*Failed Service Attempt*

An attempt to serve process that was unsuccessful.

Private Attributes: Service of Process key, Date of Attempt, Place Served

*Federal Bankruptcy Court*

A United States Federal Court designated to hear bankruptcy cases.

Derived from Business

*Financial Account*

An account holding securities or cash equivalents. These assets may have a wide variety of liquidity, and additional restrictions.

Derived from Asset

Private Attributes: Account Number, Opened Date, Closed Date, Type

*Financial Institution*

An entity that conducts business in finances; i.e., bank, credit union, savings and loan, etc
Derived from Business

*Financial Obligation*

An amount of money to be paid by a non-custodial parent

Derived from Obligation

Private Attributes: Monthly Obligation Amount, Balance, Obligation Amount, Obligation Frequency

*Genetic Test Lab*

The lab to which the inherited factors (DNA) is sent to conduct the analysis to determine the legal father (paternity) of a child.

Derived from Business

*Genetic Test Result*

The result of an analysis of inherited factors (DNA) to determine the legal father (paternity) of a child.

Private Attributes: Paternity Group Id, Test Date, Result Date, Test Type, Percent Probability, Test Cost

*Good Cause*

A legal reason for which a Temporary Assistance to Needy Families (TANF) recipient is excused form cooperating with the child support enforcement process, such as past physical harm by the child's father, rape, incest or pending adoption.

Private Attributes: Participant UID, Case UID, Determination Date, Determination, Proceed Ind

*Guideline Deviation*

A child support amount that is different from an amount established by applying the support guideline.

Private Attributes: Obligation key, Deviation Type, Monthly Obligation Amount, Balance, Reason

*History Log Entry*

A record of an action taken, the date and result of the action.

Private Attributes: Date, Description, Type

*IV-A Agency*

The agency responsible for the administration of public assistance.

Derived from Agency

*IV-A Case*

A welfare case where the custodial party is receiving public assistance

Derived from Assistance Case

*IV-E Agency*

The agency responsible for foster care placements.

Derived from Agency

*IV-E Case*

A foster care case where the child(ren) are not in the parent's home, but are placed in foster care.

Derived from Assistance Case

*Inbound Document*

A document coming into the child support program.

Derived from Document

*Income*

An asset that produces money; i.e.; wages, rent, commission, interest

Derived from Verifiable

Private Attributes: Participant UID, FEIN, Start Date, Income Type, End Date, Self Employed Ind

*Initiator Info*

*Intercept Agency*

The agency that receives a request to forward money for payment of child support instead of to the participant

Derived from Agency

Private Attributes: Intercept Agency Id

*Interest Accrual*

The sum of the interest calculated for unpaid child support.

Derived from Accrual

*Interest SubAccount*

The amount of interest due.

Derived from SubAccount

*Interstate Referral*

A request for child support services from another State.

Private Attributes: Case UID, Date Received

*Judicial Officer*

A presiding official of a court

Private Attributes: Name

*Locate Request*

A request to an agency for a participant's location, demographics or assets.

Private Attributes: Participant UID, Request Date, Source Id, Response Due Date

*Locate Response*

A response from an agency to a request for locate of a participant's location, demographics or assets

Private Attributes: Participant UID, Response Date, Source Id, Response Status

*Locate Status*

The condition of a participant's identity, address, employer, and/or asset.

Private Attributes: Participant UID, Locate Status, Locate Status Date

*Location*

The place that an appointment will be conducted

Private Attributes: Address, Room / Area Number, Directions

*Location Booking Schedule*

The availability of the place in which to conduct an appointment.

*Medical Insurance Carrier*

The agency which provides the medical insurance policy to the participant, i.e. Blue Cross

Derived from Business

Private Attributes: Carrier Id, Carrier Name

*Medical Insurance Policy*

The medical insurance policy held by a participant obtained through a medical insurance carrier.

Private Attributes: Participant UID, Carrier Id, Policy Type, Policy Number, Start Date, End Date

*NCP*

Non-custodial parent; the parent who does not have primary care, custody or control of the child.

Derived from Participant Case Member

*Name*

The given name for a participant

*Non Cooperation*

An occurrence of a custodial parent's non-compliance with requests from the child support agency in identifying and locating the non-custodial parent, establishing paternity, and/or obtaining child support payments.

Private Attributes: Participant UID, Case UID, Start Date, Type, End Date, Result

*Non-Financial Obligation*

An obligation that is ordered by the court for which there is no monetary value; i.e. health insurance

Derived from Obligation

Private Attributes: Monitoring Frequency, Description, Type

*Obligation*

A financial or non-financial court ordered responsibility placed on a participant.

Private Attributes: Court Order key, Obligation Group Id, Support Type (Identifies the support type of the obligation: Examples: Child Support, Family Support, Spousal Support, Costs, Non-Financial.), Obligation Type (Identifies the type of obligation within a support type: Examples: Current Support, Arrears, Genetic Test Costs, Seek Work, Health Insurance), Start Date, End Date

*Obligation Group*

A group of participants associated with an obligation. An obligation group contains one payee (obligee), one payer (obligor) and one or more beneficiaries.

Within a CCS Case, all Obligation Groups will have the NCP as obligor.

Private Attributes: Obligation Group UID

*Obligation Group Member*

One of the participants in the obligation group. A member may be a payee or payer or beneficiary of the obligation

Private Attributes: Obligation Group key, Obligation Role (Obligor, Obligee, Beneficiary)

*Order Manager*

Private Attributes: Start Date, End Date

*Other Case Member*

A Case Member playing a role other than NCP, CP, or Child. May be a Non-Legally Responsible Relative or other interested party in the case.

Derived from Participant Case Member

*Other Property*

Property of a participant that is not defined as real property or personal property; i.e. business property

Derived from Asset

Private Attributes: Date Acquired, Date Sold, Description

*Other State CS Agency*

A child support agency in a State other than California

Derived from Agency

*Other State Case*

A child support case that is managed by a State other than California

Private Attributes: State Case UID, Initiating / Responding Ind, Case Type, Case Status

*Outbound Document*

A document going out from the child support program

Derived from Document

*Partial Service Request*

A request for partial child support services; i.e. locate only

Private Attributes: Case UID, Request Type, Request Date, Fee Amount, Date Paid

*Participant*

A person in the child support system

Derived from Person

Private Attributes: Participant UID, TIN, Violence Ind, Family Violence Ind, Special Circumstances, Sex, Race, Immigration Id, Primary Language, Translation Req'd, Suppress Billing Ind, Emancipation Age, Duplicate Participant Id

*Participant Case Member*

Derived from Case Member

Private Attributes: Family Relationship (Father, Alleged Father, Mother, Aunt, etc.)

*Participant Coverage*

The coverage that a participant has under a medical insurance policy.

Private Attributes: Start Date, End Date

*Participant DOB*

A participant's date of birth

Derived from Verifiable

Private Attributes: Participant UID, Date of Birth, DOB Type

*Participant Name*

A participant's first, middle, last name.

Derived from Verifiable

Private Attributes: Participant UID, Name Type, First Name, Last Name, Middle Name, Name Suffix, Name Start Date, Name Effective Date

*Participant SSN*

A participant's social security number.

Derived from Verifiable

Private Attributes: Participant UID, SSN, SSN Type

*Paternity Establishment Method*

The method by which Paternity was determined (e.g. Marital Presumption, Adjudication, Acknowledgement, etc)

Private Attributes: Paternity Group Id, Type (Marital Presumption, Adjudicated, POP, Birth Certificate, Stipulation)

*Paternity Evidence*

Facts documenting the relationship of a father to a child

Private Attributes: Paternity Group Id, Date of Marriage, Place of Marriage, Date of Divorce, Place of Divorce, Long Arm Ind, Conceptive Period Start, Conceptive Period End

*Paternity Group*

A group of participants with a paternity relationship to a child. A paternity group consists of a mother, child and a potential father.

Private Attributes: Paternity Group Id, Paternity Status, Paternity Status Date

*Paternity Group Member*

An individual participant of the paternity group.

Private Attributes: Case UID, Participant UID, Paternity Group Id, Role

*Payee Recoupment Detail*

A ledger entry reflecting the distribution of a Collection (or part of it) to satisfy a specific Account Receivable (subaccount). The satisfaction of a payee recoupment transfers the funds from the payee account to the State's account and reduces the Accounts Receivable for the payee.

Private Attributes: Batch Id, Collection Id, Amount, Recoupment Date, Recoupment Type, Account Number

*Payer Recoupment Detail*

A ledger entry reflecting the distribution of a Collection (or part of it) to satisfy a specific Account Receivable (subaccount). The satisfaction of a payer recoupment transfers the funds from the payer account to the State's account and reduces the Accounts Receivable for the payer.

Private Attributes: Batch Id, Collection Id, Amount, Recoupment Date, Recoupment Type, Account Number

*Payer Refund*

A child support collection that is returned to the child support payer.

Private Attributes: Batch Id, Collection Id, Amount, Refund Date, Effective Date

*Person*

*Personal Property*

Property belonging to a participant that is not defined as real estate; i.e. car, boat, etc.

Derived from Asset

Private Attributes: Type, Date Acquired, Description

*Photo Image*

A picture; i.e. the picture on a driver's license

Private Attributes: Participant UID, Image, Image UID, Source, Source Date, As Of Date

*Principal SubAccount*

An account receivable for past due support, arrears, costs or fees. A Principal SubAccount represents a fixed obligation that may increase as a result of the payer's failure to meet a current support obligation, but does not create additional accounts receivable from the payer. A Principal SubAccount may have periodic payment terms. A Principal SubAccount may accrue interest.

Derived from SubAccount

Private Attributes: Obligation Type, Interest Rate, Arrearage Type

*Property Lien*

An attachment on a participant's real or personal property.

Private Attributes: Filed Date, Book & Page Info, Recording Info, Hearing Info

*Real Property*

Property which is defined as real estate.

Derived from Asset

Private Attributes: Legal Description, Estimated Value, Estimated Value Date, Date Acquired, Date Sold

*Recording Agency*

The agency which has the responsibility for recording real property deeds, liens, etc.

Derived from Agency

*Recoupment SubAccount*

An account created to recover money previously disbursed, or fees charged by an intercept agency.

Derived from SubAccount

Private Attributes: Recoupment Type

*Referral Order*

Court order information contained in a case referral made by an external agency; i.e. IVA agency

Private Attributes: Internal UID, Order Number, Date Established, Support Amount, Payment Frequency, Payment Method, Date of Last Payment, Amount of Last Payment, Arrears, Payment Due Date

*Relationship*

A family relationship between two Participants.

*Returned Deposit Item*

A deposit returned from a financial institution

Private Attributes: Returned Date, Reason, Deposit Date

*Review*

The process of evaluating facts to determine if a payer's level of child support should be adjusted.

Private Attributes: CCS Case key, Request Date, Result, Result Date, No Review Date, No Review Reason, Appeal Date (The date that a valid appeal request is received from a party in the case.)

*Scheduled Event*

An appointment or hearing that has been recorded on the Calendar.

Private Attributes: Case UID, Date, Time, Type, Duration

*Service of Process*

The delivery of legal court documents to a participant to meet due process requirements.

Private Attributes: Case UID, Participant UID, Type, Date, Request Date, Method, Unsuccessful Reason, Cost, Disposition, Disposition Date, Serve By Date, Due Diligence Indicator

*SubAccount*

An Account Receivable owed by a payer; payable to the payee; on behalf on the beneficiary(ies).

Private Attributes: Payer Account Number, Obligation Group Id, Support Type, Monthly Obligation Amount, Remaining Amount Due, Balance, Amount, Frequency

*Summons & Complaint*

Legal documents filed with the court to initiate a court action.

Private Attributes: Case UID, Obligation Group UID, Date Filed, Response, Response Date Filed, Response Date Received

*Superior Court*

Judicial divisions within each county

Derived from Business

Private Attributes: Superior Court Id, Branch

*Surety Agent*

The agency that posts a bond for a participant.

Derived from Business

*Third Party Payee*

An alternate payee to whom the funds should be paid. Medical expense reimbursement may be payable directly to a hospital or doctor. Rather than create individual accounts for each possible payee, a single control account is used for the payee designation and a third party payee is used to disburse the funds to the appropriate entity.

*UAP SubAccount*

An account created for the reimbursement of public assistance.

Derived from SubAccount

Private Attributes: Assistance Type

*Unknown Payer Detail*

Information about a collection for which a participant cannot be identified.

Private Attributes: Case Number, First Name, Middle Name, Last Name, Suffix, SSN, Bank Name, Check Routing Number, Street 1, Street 2, City, State, Zip

*Verifiable*

Verification of information received from an outside source

Private Attributes: Source, Source Date, Verification Source, Verification Date

*Wage Assignment*

A notice to an employer to withhold money from a participants wages for the payment of child support.

Private Attributes: Employer UID, Participant UID, Court Case key, Date Sent, Amount to Withhold, Employer Delinquency

*Welfare Referral*

A referral made to child support by a welfare or foster care agency for child support enforcement services

Private Attributes: Case UID, Date Received

*Worker*

A person who performs child support services.

Private Attributes: Worker UID, First Name, Middle I, Last Name, Suffix

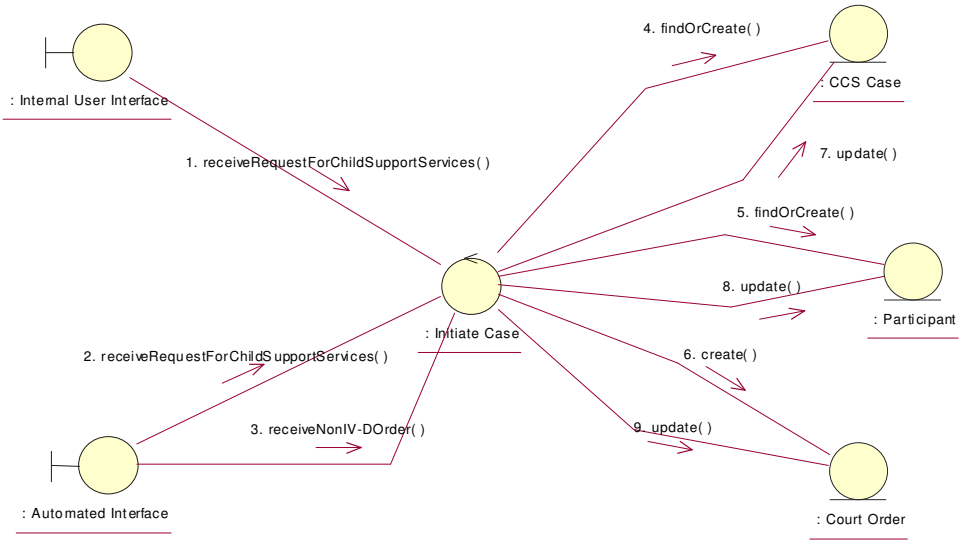
# 4A Appendix D.3 Computational Viewpoint

## 4A Appendix D.3.1 Case Initiation and Update

### 4A Appendix D.3.1.1 Initiate Case

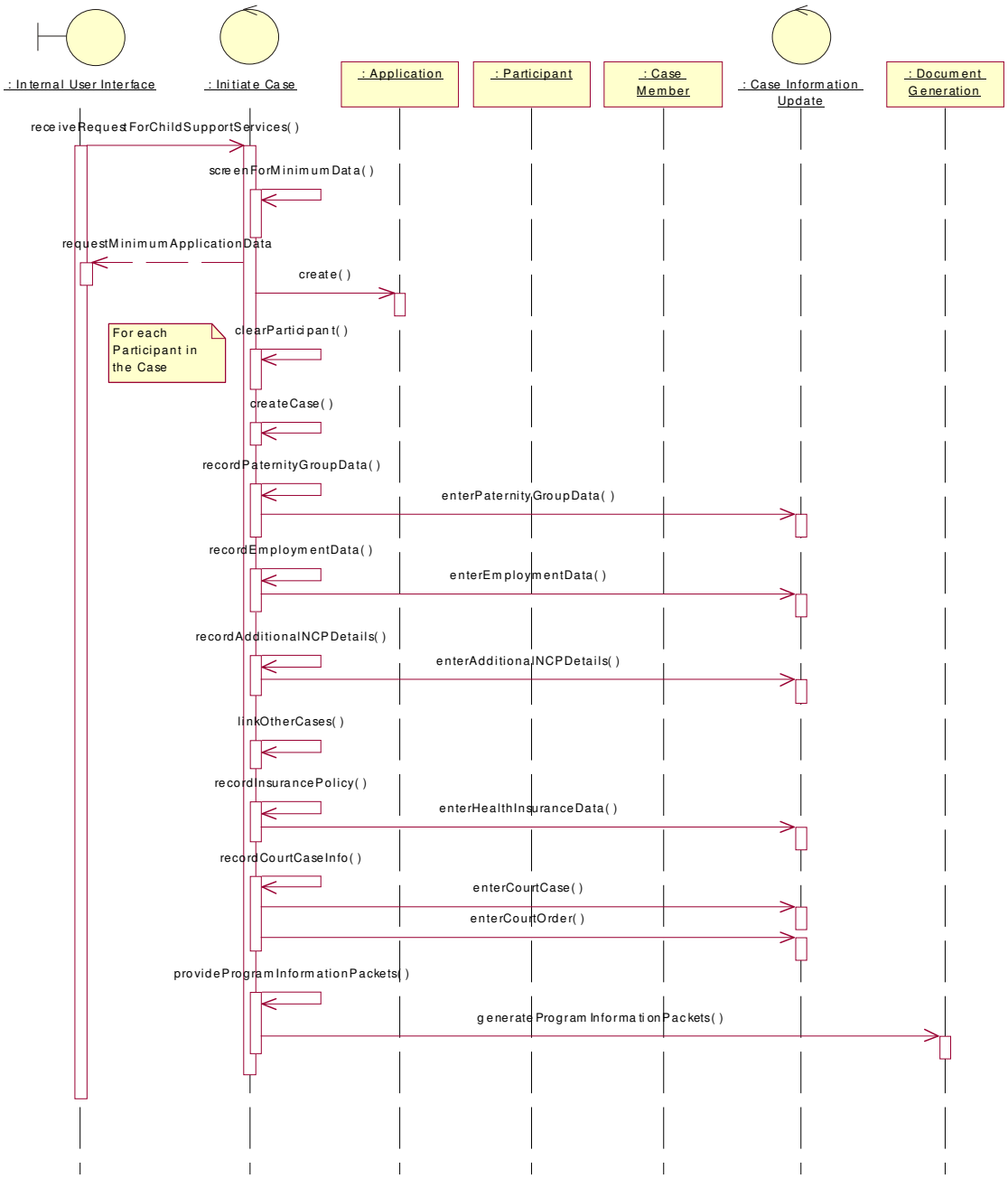
*Collaboration Diagrams*

**Figure 4A Appendix D-24 Initiate Case Collaboration Diagram**



*Sequence Diagrams*

**Figure 4A Appendix D-25 Initiate Case Sequence Diagram**



# 4A Appendix D.3.1.2 Information Update

## *Collaboration Diagrams*

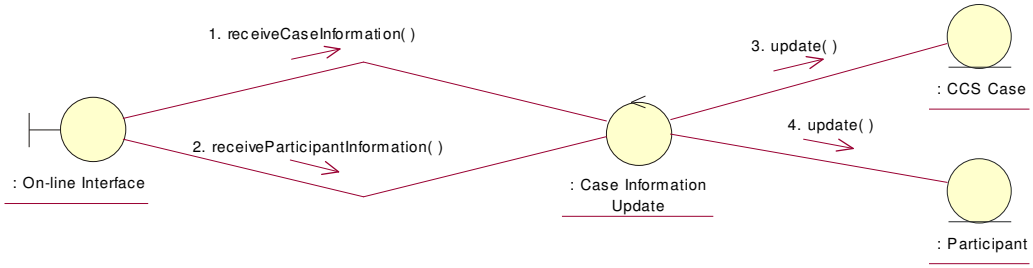
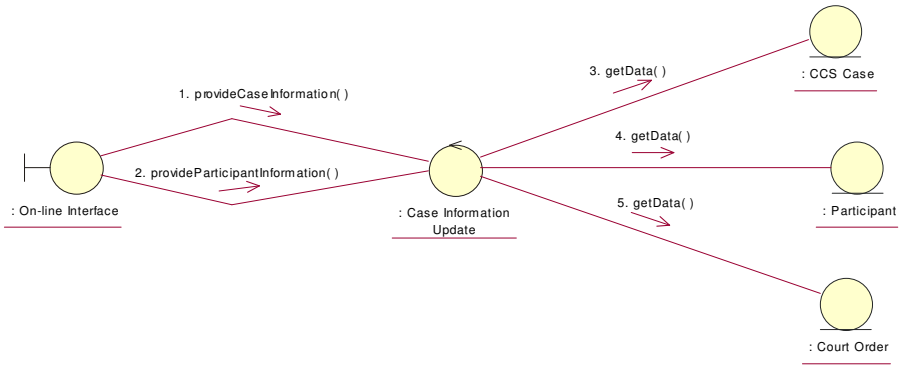



**Figure 4A Appendix D-26 Information Update Collaboration Diagram**

**Figure 4A Appendix D-27 Information Retrieval Collaboration Diagram**




## *Sequence Diagrams*

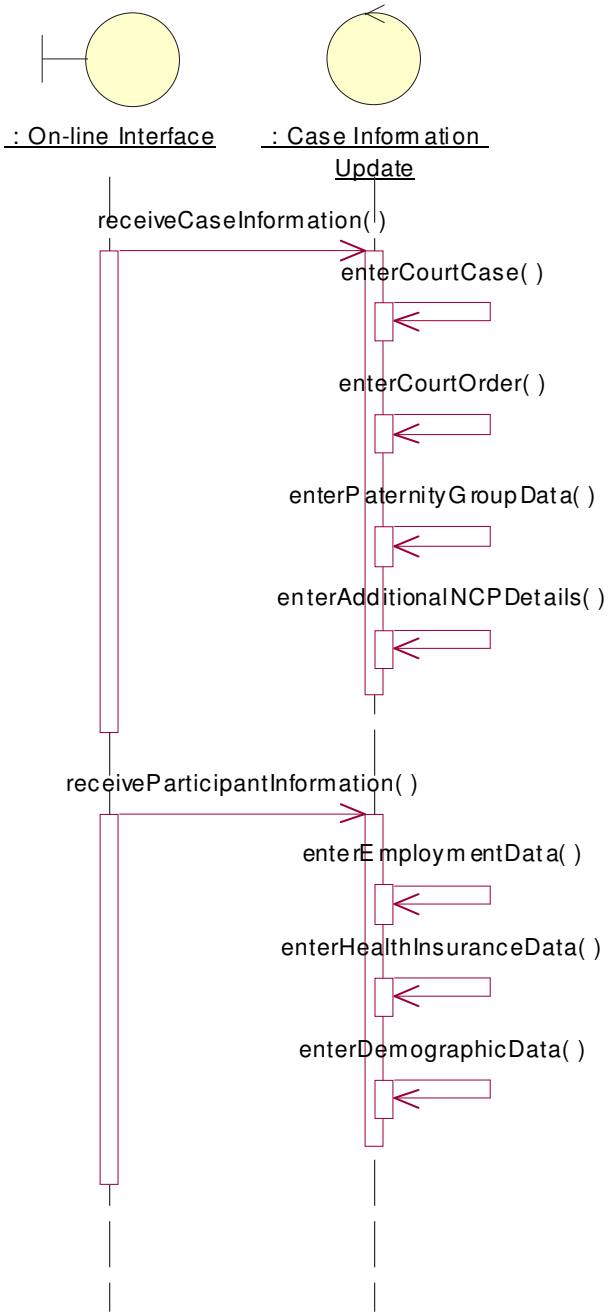



**Figure 4A Appendix D-28 Information Update Sequence Diagram**

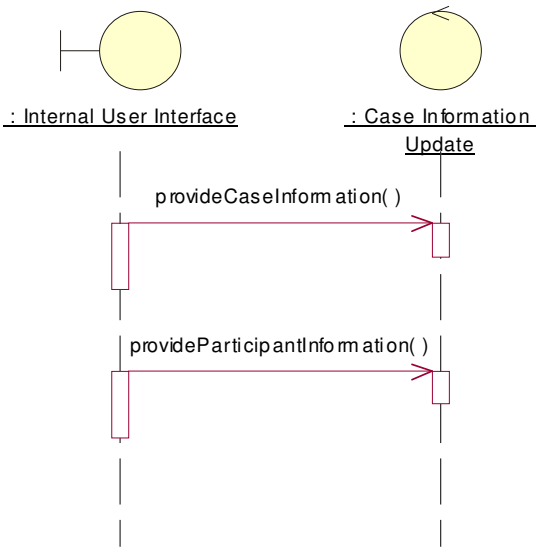



**Figure 4A Appendix D-29 Information Retrieval Sequence Diagram**

## 4A Appendix D.3.1.3 Close Case

*Collaboration Diagrams*

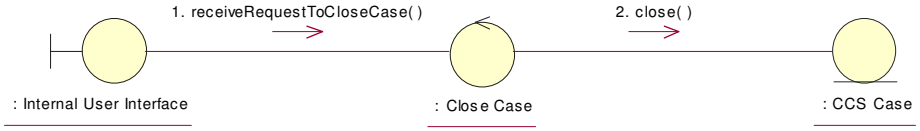



**Figure 4A Appendix D-30 Close Case Collaboration Diagram**

*Sequence Diagrams*

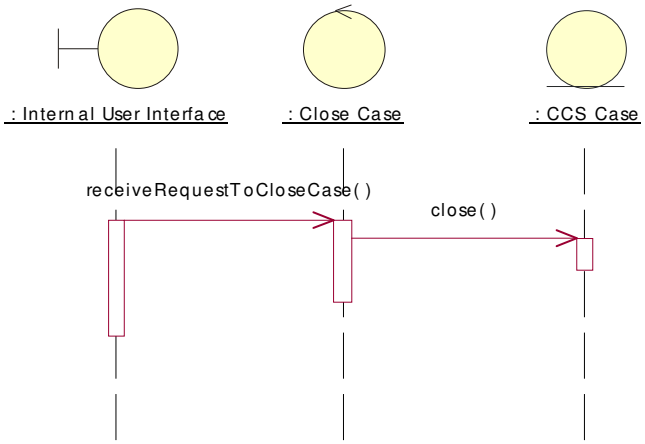



**Figure 4A Appendix D-31 Close Case Sequence Diagram**

# 4A Appendix D.3.2 Establishment

## 4A Appendix D.3.2.1 Establish Paternity

*Collaboration Diagrams*

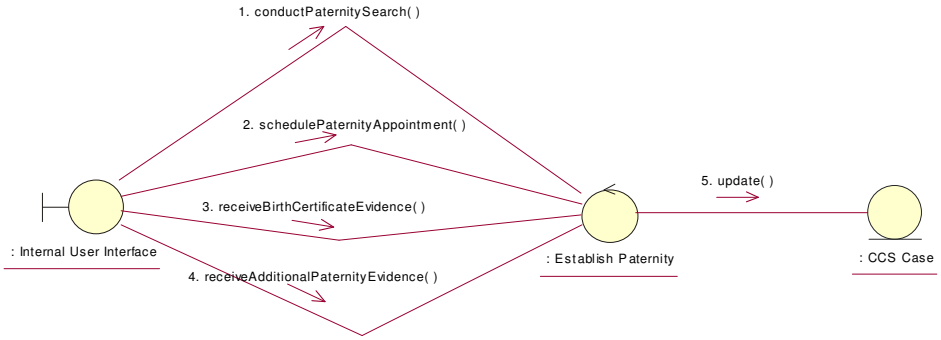



**Figure 4A Appendix D-32 Conduct Paternity Search Collaboration Diagram**

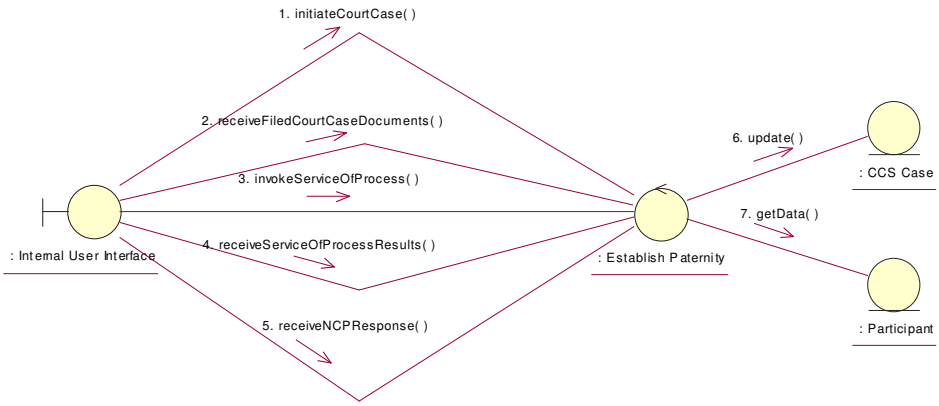



**Figure 4A Appendix D-33 Initiate a Court Case Collaboration Diagram**

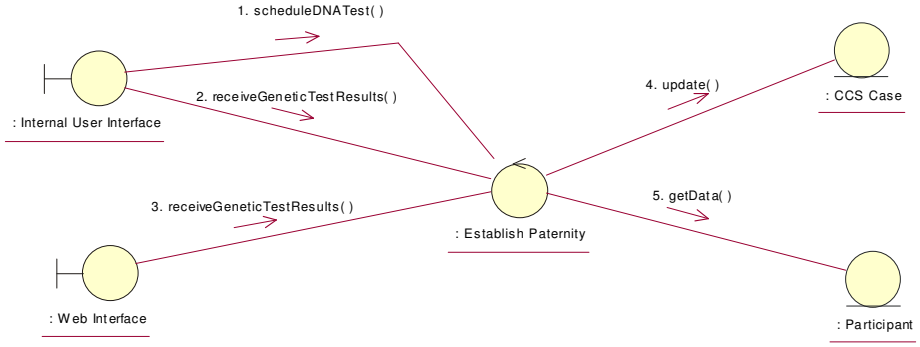



**Figure 4A Appendix D-34 Conduct DNA Test Collaboration Diagram**

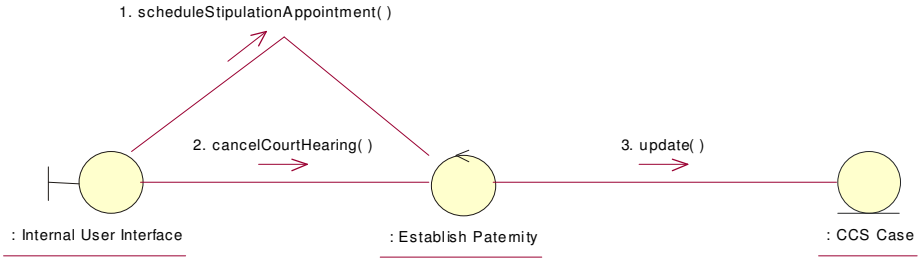



**Figure 4A Appendix D-35 Obtain Stipulation Collaboration Diagram**

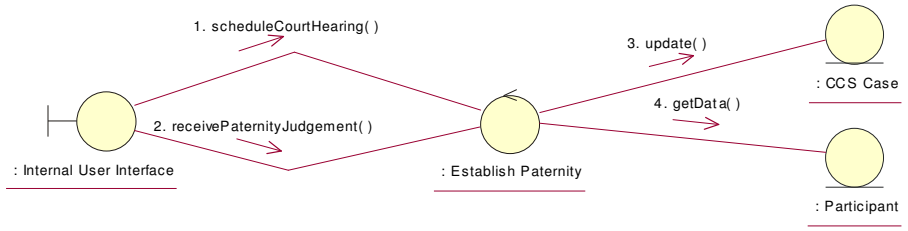



**Figure 4A Appendix D-36 Conduct Hearing Collaboration Diagram**

## *Sequence Diagrams*

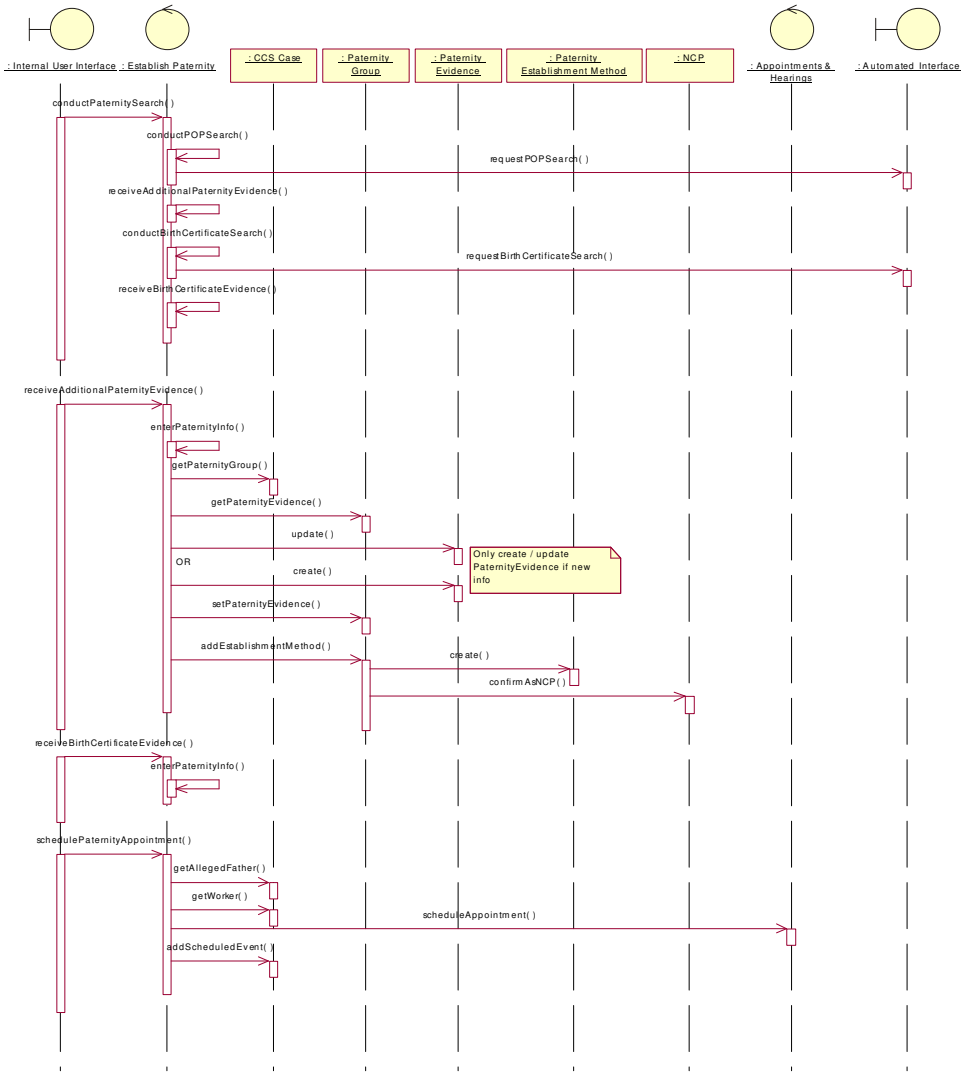



**Figure 4A Appendix D-37 Conduct Paternity Search Sequence Diagram**

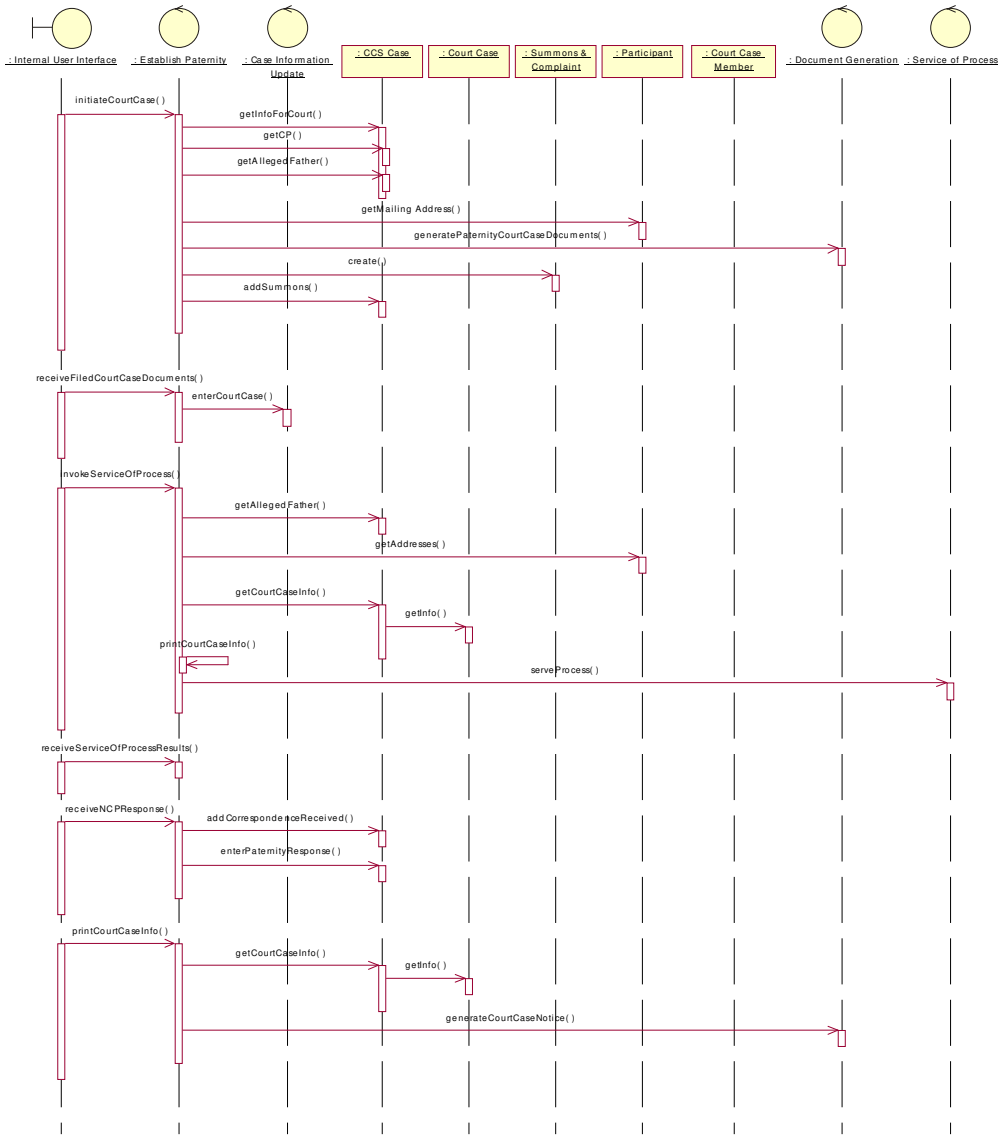



**Figure 4A Appendix D-38 Initiate a Court Case Sequence Diagram**

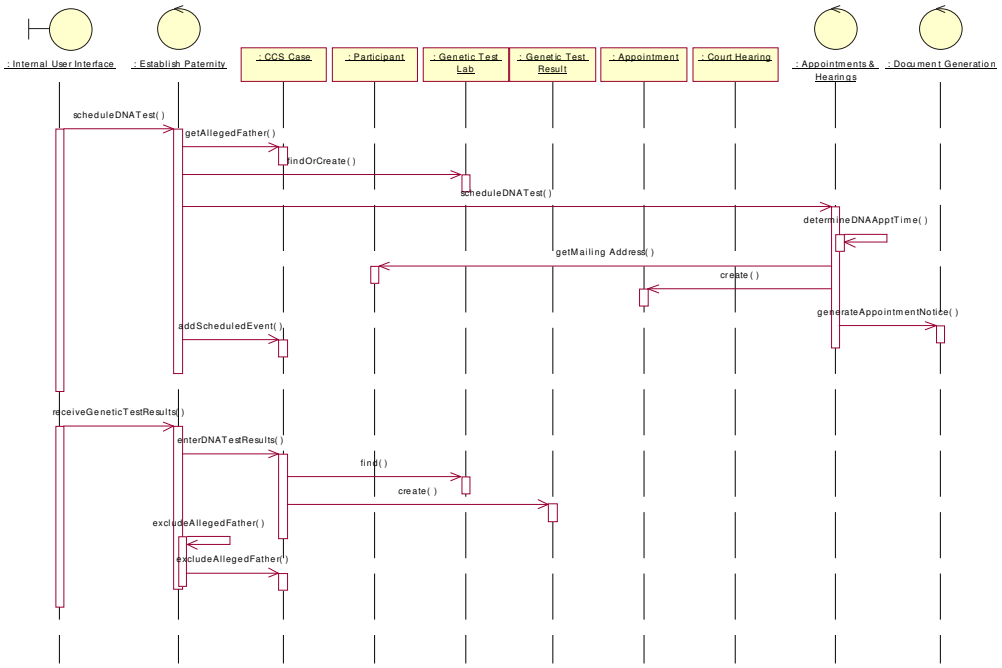



**Figure 4A Appendix D-39 Conduct DNA Test Sequence Diagram**

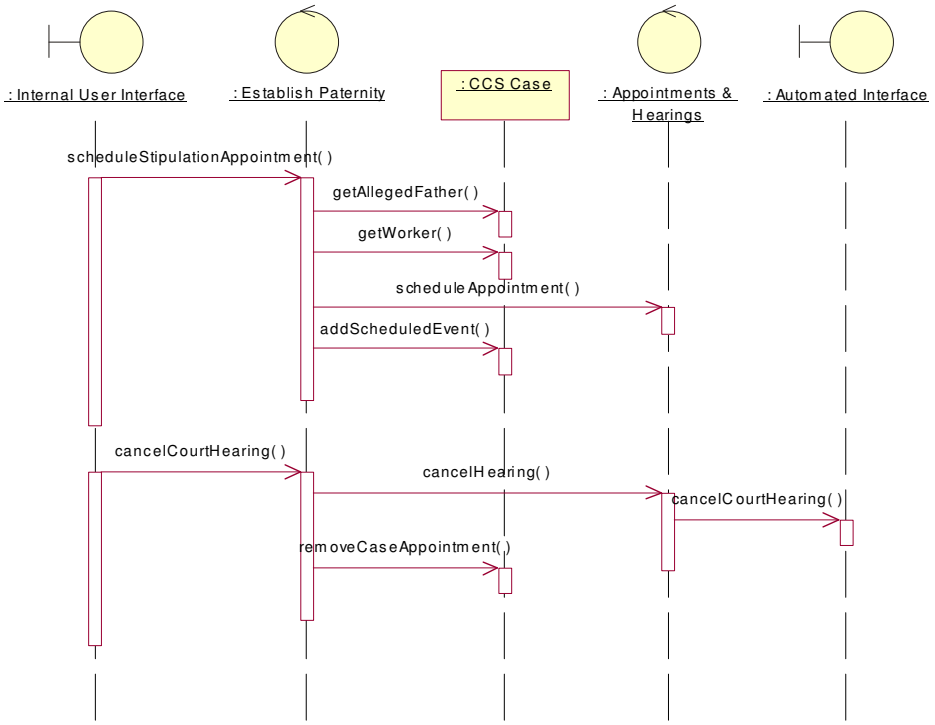



**Figure 4A Appendix D-40 Obtain Stipulation Sequence Diagram**

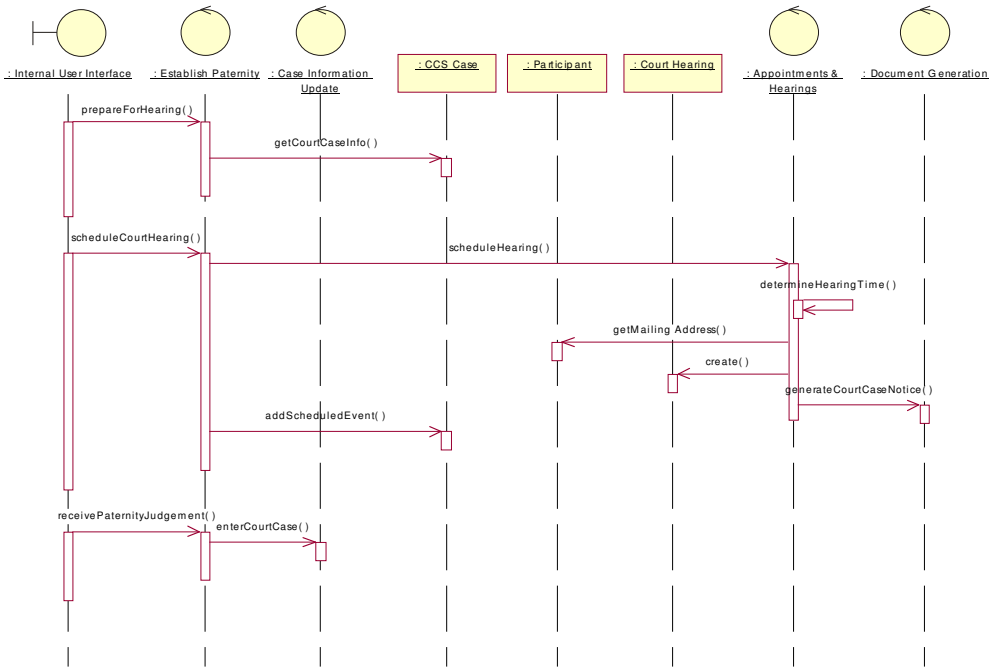



**Figure 4A Appendix D-41 Conduct Hearing Sequence Diagram**

## 4A Appendix D.3.2.2 Establish Support

*Collaboration Diagrams*

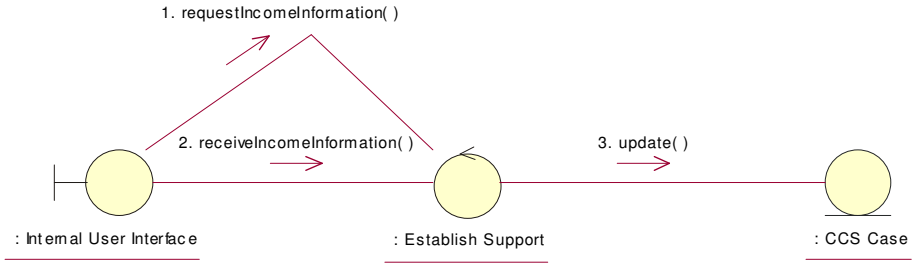



**Figure 4A Appendix D-42 Obtain Income and Asset Information Collaboration Diagram**

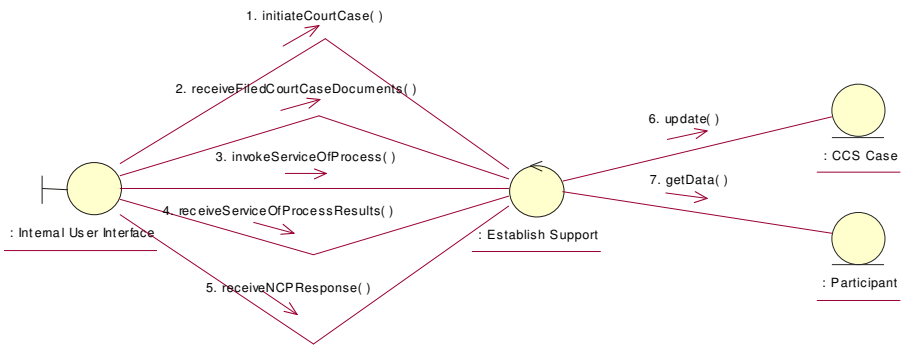



**Figure 4A Appendix D-43 Initiate a Court Case Collaboration Diagram**

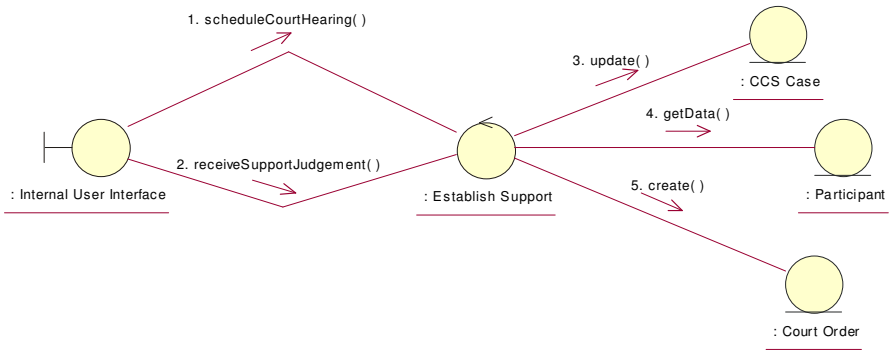



**Figure 4A Appendix D-44 Conduct Hearing Collaboration Diagram**

## *Sequence Diagrams*

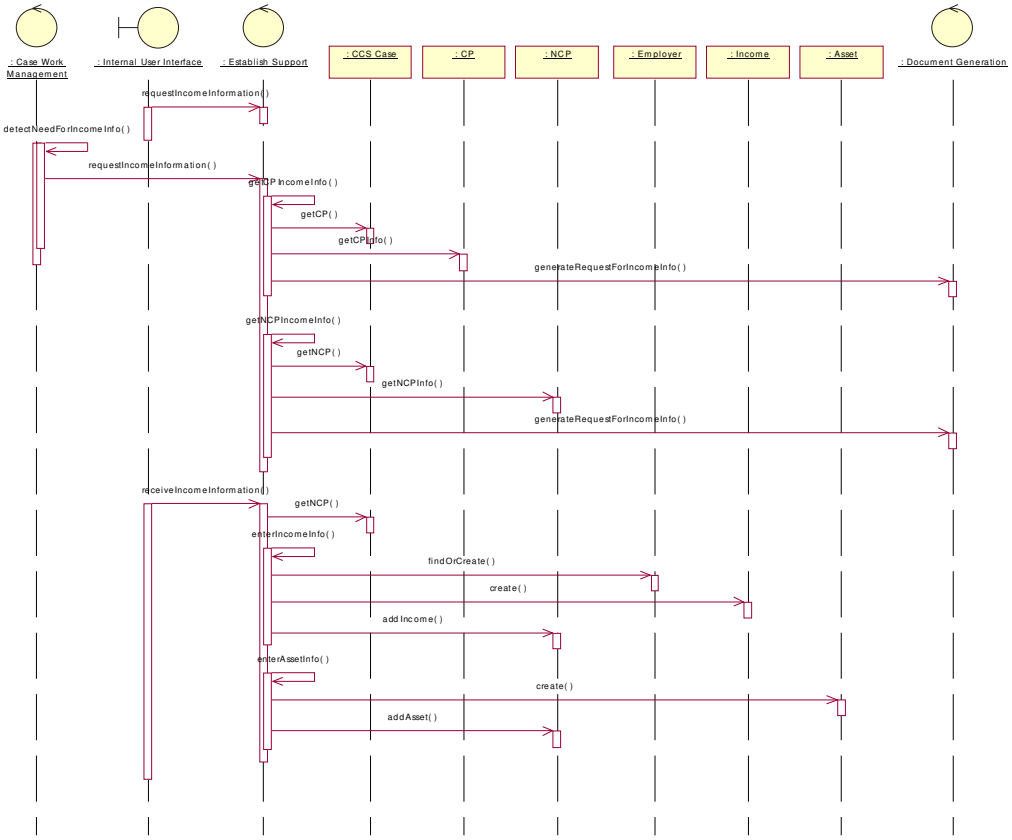



**Figure 4A Appendix D-45 Obtain Income and Asset Information Sequence Diagram**

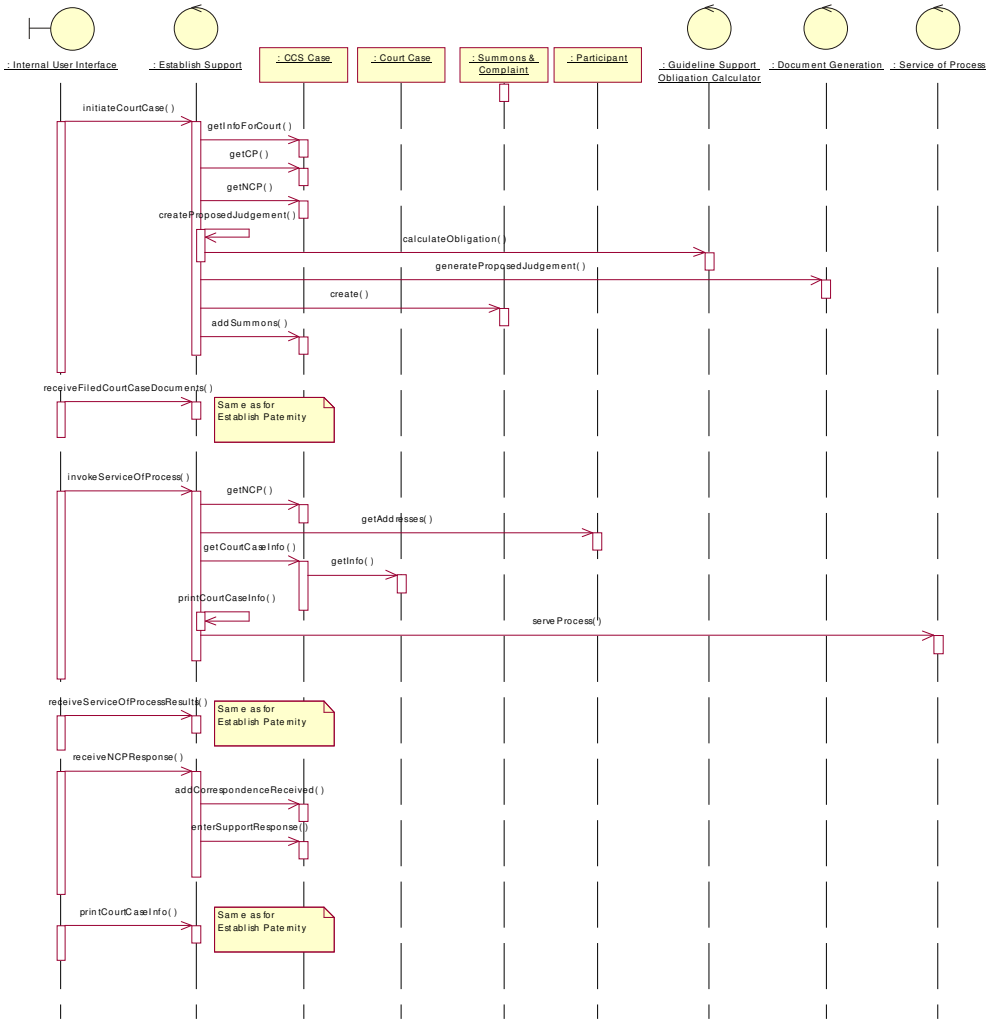



**Figure 4A Appendix D-46 Initiate a Court Case Sequence Diagram**

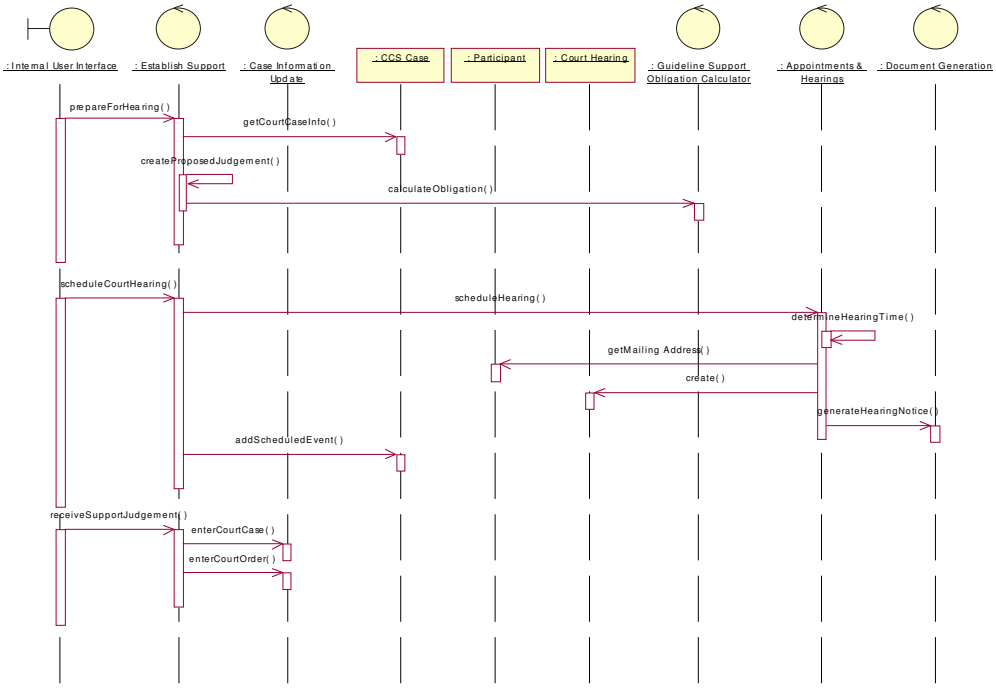



**Figure 4A Appendix D-47 Conduct Hearing Sequence Diagram**

## 4A Appendix D.3.2.3 Establish Health Insurance Support

*Collaboration Diagrams*

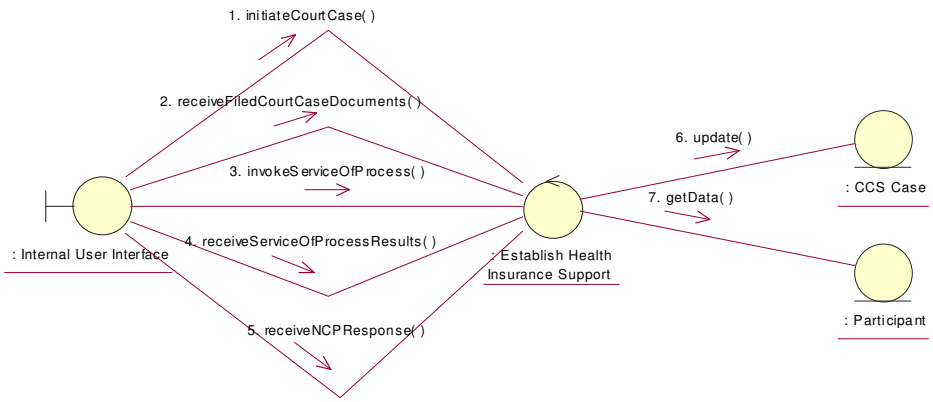



**Figure 4A Appendix D-48 Initiate a Court Case Collaboration Diagram**

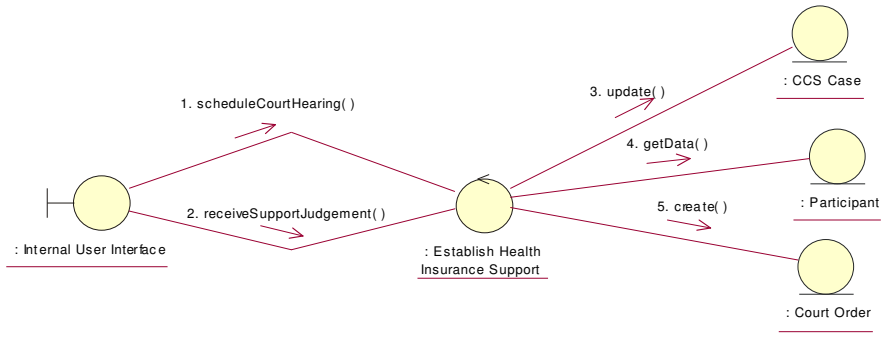



**Figure 4A Appendix D-49 Conduct Hearing Collaboration Diagram**

## *Sequence Diagrams*

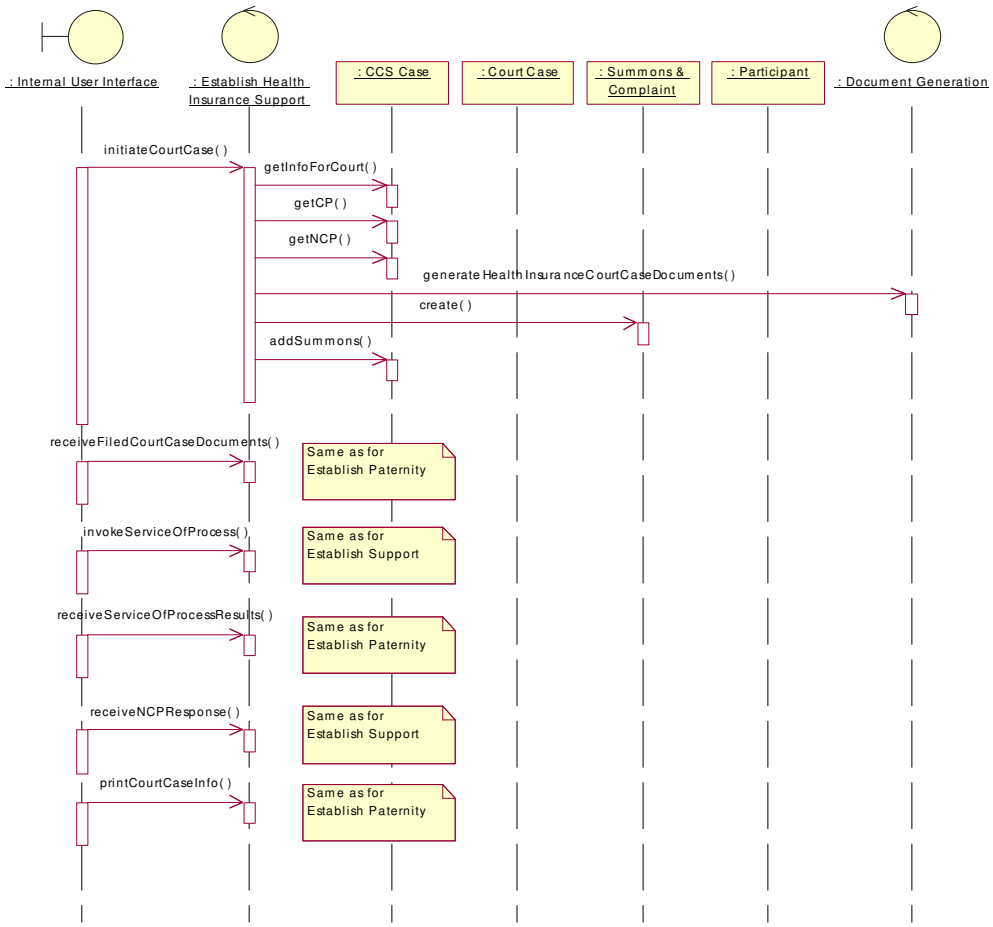



**Figure 4A Appendix D-50 Initiate a Court Case Sequence Diagram**

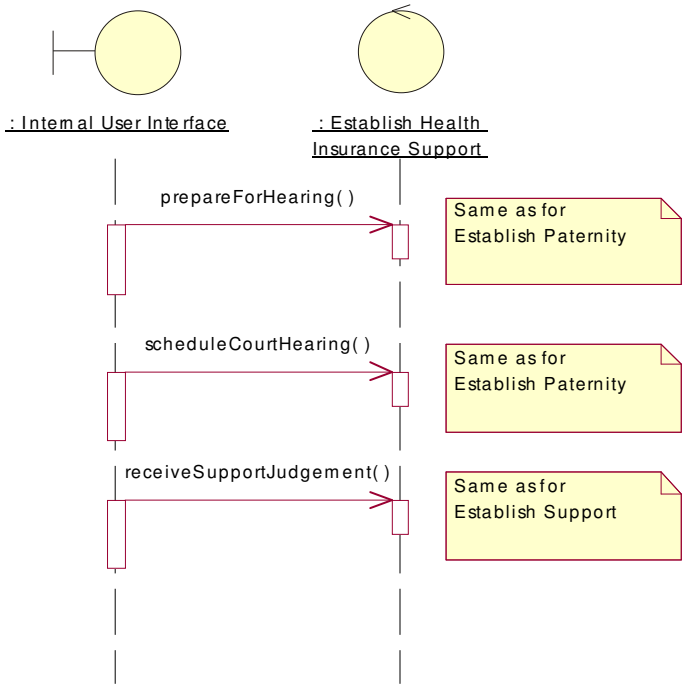



**Figure 4A Appendix D-51 Conduct Hearing Sequence Diagram**

# PART 2

## Business Requirements List

| DOORS Requirement Number | Requirement Text |
|---|---|
| **BR - 1** | For initiated withholding, the system must send a notice to the NCP which informs the NCP that: 1) That the withholding has commenced; 2) Of the amount of overdue support that is owed and the amount to be withheld; 3) That the provisions of withholding apply to any current or subsequent employer or period of employment; 4) Of the procedures available for contesting the withholding and that the only basis for contesting is a mistake of fact; and 5) Of the information contained in the employer's notice. |
| **BR - 2** | The system must not accept edits to system initiated actions and must adhere to Stated established time limits for editing records on manually initiated actions not to exceed one business day from the entry of the data. |
| **BR - 3** | The system must notify the appropriate agency of: 1) new cases or 2) significant increases to amounts previously referred for state tax offset. |
| **BR - 4** | The system must provide the capability for a supervisor to review worker transactions. |
| **BR - 5** | [For the system] the application software development must also include recovery and re-start capabilities for events such as operator errors, data errors and/or hardware/software failures. |
| **BR - 6** | (Within the system) all testing of programs must be accomplished using test data as opposed to “live (production) data.” |
| **BR - 7** | [Within the system] an audit trail of all operating system actions must be maintained either on the automatic console log or on the computer system’s job accounting file. |
| **BR - 8** | The system must generate a statistically valid case sample by local child support agency and statewide using the Master Case List. |
| **BR - 9** | The system must have the ability to apply the mandated Self Assessment Guidelines for performance review. |
| **BR - 10** | 1) The system must separately record charges and payments associated with the payment of fees for the costs of genetic tests. 2) A notation in the financial portion of the automated case record must indicate that a judgment has been obtained. 3) Once the judgment is paid in full, another notation must indicate that payment has been made. |
| **BR - 11** | The system must calculate and/or record in the case record fees for: Genetic testing, court costs, applications, locate work, non-IV-A federal and state tax refund intercept, wage withholding, FPLS, non-IV-A FPLS locate only, IRS Full Collection, and other fees. |

| DOORS Requirement Number | Requirement Text |
|---|---|
| **BR - 12** | The system must accept and process the following [TANF/CalWORKs] referral information: Custodial Parent: Name, address, social security number, IV-A case identification number, IV-A case status (open, closed, suspended), IV-A grant amount and approval date, if the IV-A agency is responsible for good cause, information on good cause (include whether a claim or final determination of good cause for non-cooperation was made); information on assignment of rights, and employer name and address. Non-custodial Parent: name, social security number, date of birth, last known address, and last known employer name and address. Children: name, date of birth, social security number, paternity established (Yes/No) and if the child is covered by the non-custodial parent's health/medical insurance, the name of the carrier and the policy number. Support Order: court/administrative order number, date support amount established, amount of support ordered, payment frequency (monthly, weekly), how payments are made: through court/SDU/IV-D agency, directly to recipient (if directly to recipient, whether money is retained by recipient or turned over to court/SDU/IV-D agency), date and amount of last payment/collection, amount of arrearage and payment due date. |
| **BR - 13** | The system must, within 20 calendar days of receipt of a [TANF/CalWORKs] referral: 1) Establish a case record; 2) Refer the case to the appropriate processing unit (e.g., locate or paternity establishment); and 3) Notify the caseworker of the case. |
| **BR - 14** | The system must automatically accept and process automated [foster care] referrals from the IV-E agency if the State IV-E system is automated. |
| **BR - 15** | The system must automatically initiate income withholding, in accordance with paragraph d below, for all support orders established or modified on or after November 1, 1990 (immediate withholding cases) unless the administrative/judicial order indicates that: 1) There is a demonstration of good cause for not withholding which is acceptable to the court or administrative authority; or 2) [In Non-IV-A cases] the parties have signed an agreement for an alternative arrangement. |
| **BR - 16** | The system must maintain information pertaining to the case ownership status of a case. |
| **BR - 19** | The system must provide the capability for multiple instances of key identifying information (name, social security number, and date of birth) per member and provide the capability to indicate which instance of the information should be considered primary. |
| **BR - 27** | The system must track/document the reason for voids of warrants. |
| **BR - 28** | The system must provide the capability to: 1) place collections on hold and 2) track the reasons for the hold. |
| **BR - 31** | The system shall within 2 [two] business days after receipt from employer or other source of periodic income, distribute [disburse] all payments [in Never Assistance or Former Assistance cases, except IRS tax intercept |

| DOORS Requirement Number | Requirement Text |
|---|---|
| | payments], if sufficient information identifying the payee is provided. |
| **BR - 32** | The system must create offsets against the custodial party, if they agree, for overpayments on warrants returned by the bank because of insufficient funds. |
| **BR - 34** | The system must retain: 1) payment records, 2) supporting documentation, 3) statistical and all other pertinent data for at least four years and four months in accordance with the maintenance of other financial records required pursuant to 45 CFR 74.53 |
| **BR - 35** | The system must automatically generate operational reports at the caseworker and unit level to facilitate their day-to-day work. As determined necessary by the IV-D agency, the on-line report/worklist must provide the following types of information: 1) Cases needing review per prioritization or case aging (e.g., program standards and timeframes) criteria; 2) Any required follow-up case reviews and/or actions triggered manually by the caseworker, unit or jurisdiction, or automatically by the system; 3) Cases to be automatically acted on by the system, e.g., wage withholding cases, which may require caseworker review and/or action; and 4) Cases newly assigned that require caseworker review and/or action. |
| **BR - 36** | The system or the state's accounts management system, must maintain all information required to complete the OCSE-157 report. |
| **BR - 37** | The system must provide the ability to view accounts by payee, a single absent parent, a single case, a single child, or an assistance (TANF/CalWORKs or Foster Care) case. |
| **BR - 38** | The system must maintain all information required to complete the OCSE-34-A report. |
| **BR - 39** | The system, or the state's accounts management system, must maintain all information required to complete the OCSE-396A report. |
| **BR - 40** | The system must disburse refunds of intercepted tax refunds to the payer within 15 working days once the decision has been made to refund. |
| **BR - 41** | The system or the state's accounts management system must maintain all information necessary to complete other reports defined as necessary, and for which instructions have been issued, by OCSE to complete its Annual Report to Congress. |
| **BR - 43** | The system must provide for different levels of security based upon a user's job. |
| **BR - 44** | The system must report log-in identifications that are unused for a specific period of time. |
| **BR - 45** | [Within the system], terminal, and password identifications must be: 1) controlled, 2) randomly selected, and must 3) uniquely identify the system user. |

| DOORS Requirement Number | Requirement Text |
|---|---|
| **BR - 46** | [Within the system] password security must extend to the functional screen level and limit the user's capability to view and/or update those screens. |
| **BR - 47** | The system must automatically require the system user to periodically change passwords. |
| **BR - 48** | 1) The system must provide security levels for access to records and files and 2) utilize automatic sign-off techniques. |
| **BR - 49** | The system must ensure that all data files are logged in and out to prevent release to unauthorized personnel. |
| **BR - 50** | The system must provide the capability to: 1) identify all sensitive files and 2) implement appropriate security in accordance with state policy. |
| **BR - 51** | The system must detect, record, and lock out [and report] unauthorized attempts to gain access to system software and data. |
| **BR - 52** | [Within the system] access to negotiable or sensitive forms must be restricted. |
| **BR - 53** | The system must maintain audit trails of all user access and worker ID numbers linked to changes in records and all transactions. |
| **BR - 54** | The system must provide the capability to assign employees to designated terminals. |
| **BR - 55** | IRS data acquired by the system must be protected from unauthorized inquiries and must be kept in a separate data file if necessary to ensure its security. |
| **BR - 56** | For security purposes, the system must be capable of maintaining information on all changes to critical records and/or data fields (e.g., Arrearage Balances, Monthly Court- Ordered Support Amounts, SSN, Name, Family Violence Indicator, etc.) including identification of the responsible system user/caseworker and date/time of the change. |
| **BR - 57** | The system must have the ability to assess, at least annually, each county's compliance with federal and state child support laws and regulations in effect for the time period reviewed, using a statistically valid sample of cases. |
| **BR - 58** | The system must retrieve archived information at worker's request within TBD minutes of a request. |
| **BR - 59** | The system must provide the capability to include a standardized message on all or a subset of all billing statements run during the regular monthly cycle. |
| **BR - 60** | For any persons requiring an FPLS locate, the system must automatically identify all cases appropriate for FPLS referral, including registration of case and order information in the Federal Case Registry if a new case. |
| **BR - 61** | The system must print written materials in the following languages as required by Federal Regulations and Departmental Regulations: English, |

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| | Spanish, Vietnamese, Cambodian, Hmong, Armenian, Cantonese, Korean, Lao, Russian and Farsi. |
| **BR - 62** | The system must automatically record, in the automated case record, the date the [foster care] referral is received. |
| **BR - 63** | The system must be able to link two non-custodial parents to a child(ren) in the custody of the IV-E [Foster Care] agency. |
| **BR - 64** | The system must automatically generate billing notices [statements] to non-custodial parents, including a statement of account containing the correct amount of current and past due support, and appropriate notices to clients. |
| **BR - 65** | The system must maintain identifying information about the non-custodial parent, including at a minimum: name (including aliases and maiden name), sex, race, social security number, home address, mailing address, date of birth, place of birth (city and state), employer information (name, address, federal employer identification number [FEIN]), third party medical insurance information, father's name, mother's name, IV-D participant number, military service information, and information on receipt of federal benefits. |
| **BR - 66** | The system must maintain identifying information about the custodial parent, including at a minimum: Name (including aliases and/or maiden name), home address, mailing address, social security number, date of birth, IV-D participant number, employer information (name, address, employer identification number [EIN]), and third party medical insurance information. |
| **BR - 67** | The system must maintain identifying information about the children, including at a minimum: Name, home address (unless the same as the custodial parent), mailing address (unless the same as the custodial parent), social security number, date of birth, location of birth, IV-D participant number, paternity information, and third party medical insurance information. |
| **BR - 68** | The system must accept and process the following [Foster Care] information: Foster Care Agency/Child Custodian: IV-E case identification, IV-E case status (open, closed, suspended), IV-E approval date, IV-E payment amount, if the IV-E agency is responsible for good cause, information on good cause (including whether a claim or final determination of good cause for non-cooperation has been made), and information on assignment of rights. Non-Custodial Parent(s): Names, social security numbers, dates of birth, last known addresses, and last known employer names and addresses. Child(ren): Name, date of birth, social security number, paternity established (Yes/No), and if the child is covered by the non-custodial parents' health/medical insurance, the name of the carriers and the policy numbers. Support Order: Court/Administrative order number, date support amount was established, amount of support ordered, payment frequency (monthly, weekly), how payments are made--through court/SDU/IV-D agency or directly to the foster care agency, date and amount of last payment/collection, amount of arrearage, and payment due |

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| | date. |
| **BR - 69** | The system must, within 20 calendar days of receipt of the [foster care] referral: 1) Establish a case record; 2) Refer the case to the appropriate processing unit; and 3) Notify the caseworker of the case. |
| **BR - 70** | The system must accept and process the following [Medicaid/Medi-Cal] referral information: Custodial Parent: Name, address, social security number, XIX case identification number, XIX case status (open, closed, suspended), XIX approval date, if the XIX agency is responsible for good cause, information on good cause (including whether a claim or final determination of good cause for non-cooperation has been made), information on assignment of rights, and employer name and address. Non-Custodial Parent: Name, social security number, date of birth, last known address, and last known employer name and address. Children: Name, date of birth, social security number, address, paternity established (Yes/No), and if the child is covered by the non-custodial parent's health/medical insurance, the name of the carrier and the policy number. Support Order: Court/administrative order number, date medical support established, amount and type of support ordered (insurance or dollar amount), amount of arrearage (i.e., medical payments made on behalf of the child prior to the support order), payment frequency (monthly, weekly), date and amount of last payment/collection, and how payments are made. |
| **BR - 71** | The system must track actions and dates to ensure that: 1) All new cases requiring locate services are referred to the location function (unit) within 20 calendar days of receipt of the referral or filing of an application for services; and 2) Incoming interstate cases are automatically referred to the State Parent Locator System (SPLS) or the appropriate processing function within 10 working days of receipt. |
| **BR - 72** | At the time of a change, the system must electronically transmit the following to provide the IV-E agency with updates to foster care related information: Child's name, child's social security number, child's IV-E foster care case number, non-custodial parents' names and addresses, paternity established (Yes/No), amount of monthly support ordered, and amount of last payment/collection. |
| **BR - 73** | The system must provide a means to include special instructions or comments with billing statements. |
| **BR - 74** | The system must display information such that the meaning can be clearly understood by the user without the use of auxiliary reference materials (e.g., acronym lists). |
| **BR - 75** | The system must include help text, edits, and built-in screen navigation paths. |
| **BR - 76** | The system must provide the capability for the user to navigate freely from screen to screen without requiring that the user navigate through built-in screen paths. |

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| **BR - 78** | The system must accept disbursement information from the SDU, including warrant number, to complete the audit trail for a payment. |
| **BR - 79** | The system must provide the capability to manually release held collections. |
| **BR - 83** | The system must hold intercept offset collections associated with requests for an administrative hearing. |
| **BR - 84** | The system must release held intercept offset collections associated with administrative hearings when the dispute has been resolved. |
| **BR - 86** | The system must accept notification from the SDU that warrants have been lost or destroyed and update the accounts. |
| **BR - 87** | The system must send to DHS requests for vital statistics information to assist with the establishment of paternity and support orders. |
| **BR - 88** | The system must accept and process data from the Department of Health Services Vital Statistics office. |
| **BR - 89** | The system must ensure that collections applied to conditionally assigned arrears from an IRS tax intercept collection in a former assistance case must be used to repay assistance. |
| **BR - 90** | The system must distribute reimbursement amounts only up to the amount of the unreimbursed assistance pool. |
| **BR - 91** | The system must identify in current and former assistance cases with mixed case statuses (e.g. maximum family grant and SSI children) which payments go through the welfare distribution process and which payments must be sent to the family. |
| **BR - 92** | Within 20 calendar days of the receipt of a [Medicaid/Medi-Cal] referral, the system must: 1) Establish a case record; 2) Refer the case to the appropriate processing unit (e.g., locate or paternity establishment); and 3) Notify the caseworker of the case. |
| **BR - 93** | If an incoming interstate case is received with inadequate documentation, the system must automatically or, if necessary, through caseworker intervention: forward the case to the appropriate function for any action that can be taken. |
| **BR - 94** | The automated case record must contain data elements to: 1) Identify a case as interstate, and 2) Identify the initiating state. |
| **BR - 95** | The system's automated case record must provide a comprehensive, chronological case history of all actions taken [in a case], whether manual or automated. |
| **BR - 97** | The system must provide capability to produce exact replicas of previously-produced reports upon demand. |
| **BR - 98** | The system must accept non-IV-D requests for state tax offset and submit them with IV-D intercept requests. |

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| **BR - 99** | The system must provide the capability for the reprinting of forms and letters, such that identical replicas can be produced. |
| **BR - 100** | At a minimum, the system must maintain one year's case history on-line. Previous history may be stored off-line, as long as it is maintained in an easily accessible, automated manner for program and audit purposes. |
| **BR - 101** | The [system's] automated case [and member] record[s] must include data to allow the system to effectively monitor program time standards. |
| **BR - 102** | The system must calculate and maintain information on unreimbursed public assistance [by aid code category and by county]. |
| **BR - 103** | The system must distribute futures held in current assistance cases on the date the current obligation becomes delinquent. |
| **BR - 104** | The system must notify the IV-A agency, as part of the IV-A/IV-D interface, when an absent parent makes a payment directly to the custodial party in a TANF/CalWORKs or foster care case. |
| **BR - 105** | The system must: 1) accept notification from the IV-A agency, as part of the IV-A/IV-D interface, that the custodial party received a direct payment from the absent parent and 2) update the appropriate accounts. |
| **BR - 109** | When a collection is received, the financial subsystem must: 1) automatically produce a monthly notice of assigned support collections for IV-A [TANF/CalWORKs] and former IV-A custodial parents who continue to receive IV-D services and have outstanding arrearages which have been assigned to the State. 2) The monthly notice must a) separately list payments collected from each non-custodial parent, if appropriate, and b) must indicate the amount of current support [collected], the amount of arrearage collected, and the amount of support which was disbursed to the family. |
| **BR - 110** | The system must accept updates to the mandatory data elements for non-IV-D cases and requests for deletion of non-IV-D orders on the state case registry. |
| **BR - 111** | The system must accept and process voluntary payments, after determining that there are no other court ordered obligations for the NCP. |
| **BR - 112** | The system must automatically: 1) track dates/time periods and 2) take required actions to re-initiate enforcement actions where previously actions were unsuccessful. |
| **BR - 113** | The system must record and monitor spousal support obligations when a spousal support order has been established [and] the spouse or former spouse is living with the child(ren), and the support order established for the child(ren) is being enforced under the IV-D state plan. |
| **BR - 114** | The system must initiate necessary enforcement actions [for spousal support orders] when a delinquency is identified. |
| **BR - 118** | The system must identify individuals [for the passport denial process] who owe $5,000 in arrearage. |

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| **BR - 119** | The system must, [for passport denial]: 1) generate notices to such individuals of determination and 2) provide opportunity to contest [generate withdrawal notices for emergency situations]. . |
| **BR - 120** | If caseworker action is required, the system must alert the caseworker of the needed action in sufficient time to allow the 75 day timeframe to be met. |
| **BR - 121** | The system must record, on a monthly basis, information on all locate sources accessed during the previous month. |
| **BR - 122** | The system must when necessary, alert the caseworker to verify responses received to ensure that sufficient information is available to allow the next appropriate action to be taken. |
| **BR - 123** | The system must forward cases to the next appropriate function when sufficient [locate] information is available. |
| **BR - 124** | The system must notify the IV-A agency of the determination of lack of cooperation with the Child Support Enforcement program by a recipient of TANF/CalWORKs or medically-needy only benefits. |
| **BR - 125** | The system must be capable of routinely monitoring the access to use of the automated system. |
| **BR - 126** | The system must provide complete and accurate internal audit trails of all financial management activities, e.g. billing, receipting and distribution, and support order changes. |
| **BR - 127** | Access to system utility programs must be limited to necessary individuals with specific designation. |
| **BR - 128** | [Within the system] all changes to master files must be authorized and initiated by persons independent of the data processing function. |
| **BR - 129** | [Within the system] override capability or bypassing of data validation on editing problems must be restricted to supervisory personnel. |
| **BR - 130** | All system generated overrides must be automatically logged by the application so that actions can be analyzed for appropriateness and correctness. |
| **BR - 131** | The system must generate record counts to validate the completeness of data processed. |
| **BR - 132** | [For the system,] all rejected data must: 1) be automatically written to a suspense file and 2) a record count made. |
| **BR - 133** | The system generated bill [billing statement] must provide for payment identification, e.g., return stubs or coupons, supporting various payment frequencies. |
| **BR - 134** | The system must [for the review and adjustment process] refer cases to the locate function, as needed, to locate the parents or the parents' assets. |

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| **BR - 135** | The system must generate all legal documents, forms, and letters necessary to complete the review and adjustment process. |
| **BR - 136** | At least quarterly, the system must automatically resubmit all cases in locate to the State Employment Security Agency and to all other automated locate sources, with the exception of FPLS. |
| **BR - 137** | If the State chooses to participate in the 1099 Project, the system must: Generate a locate person transaction for 1099 to the FCR, which includes required data as specified by OCSE Action Transmittals. |
| **BR - 138** | The system must monitor case activities to ensure that the following activities are completed within 90 calendar days of the location of the alleged father or non-custodial parent regardless of whether paternity has been established: 1) Complete service-of-process necessary to commence proceedings to establish a support order, and if necessary, paternity, 2) Establish an order for support which may be based on a voluntary acknowledgement of paternity, or 3) Document, in accordance with State procedures, unsuccessful attempts to serve process in accordance with the State's diligent effort guidelines. |
| **BR - 139** | The system must monitor and identify cases to support the State's review and modification procedures. |
| **BR - 140** | The system must: 1) automatically generate the required documents to establish an order of support or to serve process. 2) The date and type of documents generated must be automatically recorded in the case [or member] record. |
| **BR - 141** | 1) The system must initiate necessary actions to meet the State's guidelines for diligent efforts to serve process. 2) In particular, the system must periodically re-initiate service-of-process in cases where previous attempts have failed but adequate identifying information exists. |
| **BR - 142** | The system must: 1) initiate actions and 2) record and track the time from successful service-of-process to obligation establishment or other case disposition, regardless of whether paternity needs to be established, to ensure that the following expedited process timeframes are met: 75% in 6 months and 90% in 12 months. |
| **BR - 143** | The system must: 1) automatically record all system initiated actions and 2) accept entry of data regarding all actions taken outside the system. 3) the system must not accept edits to system initiated actions and 4) the State must establish time limits for editing records on manually initiated actions not to exceed one business day from the entry of data. [The system must not exceed state established time limits for editing manually initiated actions.] |
| **BR - 144** | If the court/administrative authority dismisses a support order petition without prejudice, 1) a code in the automated case record must indicate the reason for dismissal. 2) In such cases, the IV-D agency must determine a date when it would be appropriate to re-seek an order and enter this date into the case record. 3) The system must automatically re-initiate action to obtain a support order at that time. |

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| **BR - 145** | The system must have, or be supported by, an automated recovery and restore capability in case of system malfunction or failure. |
| **BR - 146** | All information technology hardware, software, and firmware products utilized by the statewide automated child support enforcement system shall be able to accurately process date/time data (including, but not limited to, calculating, comparing and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations to the extent that other information technology, used in combination with the information technology being acquired, properly exchanges date/time data with it. |
| **BR - 147** | For cases not subject to immediate withholding, the system must automatically, in accordance with paragraph d below, initiate withholding on the earliest of: 1) The date on which the non-custodial parent fails to make payments in an amount equal to the support payable for one month; 2) The date on which the non-custodial parent requests withholding begin; 3) The date on which the custodial parent requests withholding begin, if the State approves the request; or 4) Such earlier date in accordance with State law. |
| **BR - 148** | The system must automatically, in accordance with paragraph d below, initiate income withholding for support obligations issued or modified before October 1, 1996 if arrearages occur, without the need for a judicial or administrative hearing. |
| **BR - 149** | The system must have automated interfaces with Federal, State, interstate, and intrastate sources, when appropriate, feasible and cost effective, to facilitate obtaining and verifying case information. Interfaces should include, but not be limited to the following sources: Federal Parent Locator System (FPLS); National Directory of New Hires (NDNH); Federal Case Registry (FCR); Department of Motor Vehicles (driver's licenses and vehicle registration); State Employment Security Administration; Department of Natural Resources (fishing and hunting licenses); Department of Vital Statistics; Department of Corrections; Credit Bureaus; Postal Service; Local/State Tax Administration; State IV-A Agency; State IV-E Agency; State Title XIX Agency; State Directory of New Hires; State Disbursement Unit (SDU); Public Utilities; Financial Institutions; State licensing agencies; and State agencies with jurisdiction over real and personal property. |
| **BR - 150** | The system must automatically generate delinquency aging reports to monitor obligor and employer compliance with withholding orders. |
| **BR - 151** | The system must automatically: 1) Monitor and identify cases in which there is a failure to comply with the support obligation, and 2) Initiate appropriate enforcement action. |
| **BR - 152** | For immediate and initiated withholding cases the system must, within timeframes specified in 42 USC 653A(g)(1) for cases with information on newly hired employees and 42 USC 653A(g)(1)(A) for other cases with information from an income source (i.e. two business days), automatically generate a notice to the employer, which informs the employer: 1) Of the |

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| | amount to be withheld from the noncustodial parent's wages and a statement that the amount actually withheld for support purposes, including a fee, may not be in excess of the maximum amounts permitted under the Consumer Credit Protection Act; 2) That the employer must send the amount to the State Disbursement Unit (SDU) within 7 business days of the date the noncustodial parent (NCP) is paid and must report to the SDU the date on which the amount was withheld from the NCP's wages except when the State meets all Federal requirements for an SDU and elects to use the date of receipt by the SDU as the date of collection; 3) That the employer may deduct a fee established by the State for administrative costs incurred for each withholding, if the State permits a fee to be deducted; 4) That the employer is subject to a fine for discharging a NCP from employment, refusing to employ, or taking disciplinary action against the NCP because of the withholding; 5) That, if the employer fails to withhold income in accordance with the provisions of the notice, the employer is liable for the accumulated amount the employer should have withheld from the NCP's income; 6) That the withholding shall have priority over any other legal process under State law against the same income; 7) That the employer may combine withheld amounts from NCP's' income in a single payment to each State Disbursement Unit requesting withholding and separately identify the portion of the single payment which is attributable to each individual NCP; 8) That the employer must withhold from the noncustodial parent's income the amount specified in the notice and pay such amount to the SDU within 7 business days after the date the income would have been paid to the NCP; and 9) That the employer must notify the State promptly when the NCP terminates employment and provide the NCP's last known address and the name and address of the NCP's new employer, if known. |
| **BR - 154** | The system must maintain an automated history of all collection and disbursement activities to enable the IV-D agency to monitor State operations and enable OCSE auditors to assess program performance, including a State's ability to meet program standards. This capability must allow for the retention and review of all actions and activities that occur in or are processed by the system. |
| **BR - 156** | The system must provide the capability to produce forms locally and at state-level sites. |
| **BR - 157** | The system must only distribute disregard when current support payments are received for an assistance case during the month. |
| **BR - 158** | The system must allocate payments based on date of receipt for all sources of collections. |
| **BR - 159** | In States that place the responsibility for direct payment recovery with the IV-A agency, the system must allow adjustments to credit the non-custodial parent account for the amount of support recovered through the IV-A recovery method. In states that place the responsibility for direct payment recovery with the IV-D agency, the system must support recovery by: 1) |

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| | Documenting the dates and amounts of direct payments made to a IV-A recipient; 2) Generating advance notice to the IV-A recipient of the IV-D agency's intent to recover payments through repayment agreement; and 3) Receiving, identifying and totaling repayments from recipients. |
| **BR - 160** | The system must record the type of document generated [in support of the review and adjustment process], the addressee, and the date sent, in the automated case record. After sending any document requiring a response, the system must notify the caseworker if such response is significantly delayed, based on State experience, and generate a follow-up information request. |
| **BR - 161** | The system must automatically generate required notices and documents including an advance notice to the non-custodial parent that his/her past-due support will be referred to the IRS for collection [federal tax offset] that includes the information contained in 45 CFR 303.72(e)(1). If the state chooses, it can request that the notice be sent by OCSE. |
| **BR - 162** | The system must automatically identify and maintain information on cases for which it would be appropriate, under state guidelines, to use a lien or secure a bond. |
| **BR - 163** | The system must automatically generate documents required to impose a lien or secure a bond. When the IV-D agency is attempting to secure a bond, the system must produce an advance notice that informs the non-custodial parent of: 1) The delinquency of the support payment and the requirement of posting security, bond or guarantee; and 2) His/her rights and the methods available for contesting the impending action. |
| **BR - 164** | The system must have an automated interface with the agencies responsible for real and personal property titles in order to record liens. If an automated interface is not possible, the system must generate the documents required to record liens with these agencies. |
| **BR - 165** | The system must generate the documents required to record or serve a lien in another state. |
| **BR - 166** | The system must 1) automatically generate the required documentation and 2) notify the caseworker to offset the bond when the current support payment is not received. |
| **BR - 167** | The system must: 1) automatically generate the required documentation and 2) notify the caseworker to remove the lien and/or restore the bond when the past-due support is received. |
| **BR - 168** | The system must be capable of automatically identifying cases that meet the State's criteria for providing arrearage information to the credit reporting agencies. |
| **BR - 169** | The system must automatically generate a file (extract) of arrearage information for submission to credit reporting agencies. At a minimum, this information must include: 1) The name of the non-custodial parent who owes the delinquency/arrearage, 2) The amount of the delinquency/arrearage, [3) Non-custodial parent address, and 4) Non-custodial parent social security number.] |

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| **BR - 170** | Prior to releasing the information [to credit reporting agencies], the system must automatically generate an advance notice to the non-custodial parent to inform him/her of: 1) The proposed release of the information, and 2) The methods available for contesting the accuracy of the information. |
| **BR - 171** | The system must: 1) monitor whether the non-custodial parent responds to the advance notice (of submittal to credit reporting agencies), 2) record the date the response is received, and 3) automatically generate any further documentation required due to the response. |
| **BR - 172** | The system must individually identify and link multiple obligations (support orders). |
| **BR - 173** | The system must identify obligations as voluntary, administrative, or court ordered. |
| **BR - 174** | The system must, [for the review and adjustment process], collect income, asset, employment and health insurance information through automated interfaces. |
| **BR - 175** | The system must automatically generate workload management reports that provide information to an employee, office/unit and program level on: 1) Backlog identification; 2) Workload allocation, and 3) Caseload tracking and aging. |
| **BR - 176** | At the time of a change, the system must electronically transmit the following to provide the IV-A agency with updates to IV-A [TANF/CalWORKs] case-related information: Custodial Parent: Name, IV-A case identification number, information on good cause for non-cooperation when the IV-D agency makes that determination; information on non-cooperation decisions made by the IV-D agency, and change of address. Non-Custodial Parent: Name and living with recipient. Children: Paternity established (Yes/No), and child no longer resides with the recipient (Yes/No). Support Order: Amount of support ordered, payment frequency (monthly, weekly), information on how payments are made -- through court/SDU/IV-D agency or directly to recipient (if directly to recipient, whether money is retained by recipient or turned over to court/SDU/IV-D agency), amount of last payment/collection, date of last payment/collection, excess amount distributed to recipient; and date excess amount distributed to recipient. |
| **BR - 177** | 1) All information received [for review and adjustment] and actions taken must be recorded in the automated case [or member] record. 2) Data elements must indicate the amount of any adjustments [due to review], including the addition of health insurance to the order or the reason for no adjustment being pursued. |
| **BR - 178** | The system must accept and update automated case information received from various sources, e.g. county attorney, caseworker, locate staff, IV-A, IV-E, Title XIX, etc. |
| **BR - 179** | The system must perform initial edit/validation checks, including numeric and character checks and cross references, to ensure the accuracy and completeness of fields. |

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| **BR - 180** | The system must update common data elements in all linked case records. |
| **BR - 181** | The system must maintain in the automated case [and member] record[s]: 1) Documents generated, 2) critical data element changes, 3) all positive locate and asset interface actions, and 4) a monthly summary of all interface activities must be maintained in the automated case record. |
| **BR - 182** | The system must accept entry of information on actions taken outside the system by the caseworker. |
| **BR - 183** | The system must perform case monitoring to ensure that case actions are accomplished within required timeframes. The system must track dates to ensure that the timeframes for: 1) expedited process, 2) locate, 3) paternity establishment, 4) support order establishment, 5) review and adjustment, and 6) enforcement (including wage withholding) are met. |
| **BR - 184** | Whenever possible, the system must automatically initiate the next step in case processing without being prompted by the caseworker. The system must automatically: 1) Generate documents and notices; 2) Accept, edit, and verify information and data from various sources; 3) Refer cases to automated interfaces with location sources; 4) Identify and refer cases for FPLS and SPLS submittal; 5) Flag cases for enforcement action, e.g., including tax refund offset, wage withholding, and unemployment compensation intercept (UCI), and initiate these actions; 6) Refer arrearage amounts to credit bureaus; 7) Produce delinquency reports to monitor obligor and employer compliance with wage withholding orders; 8) Flag cases for potential review and adjustment of support obligations; 9) Periodically trigger the review of low-priority cases if the State has a prioritization system; 10) Process and distribute collections; 11) Direct cases to the next appropriate processing unit once action is completed in a unit; and 12) Take any other actions which the system can initiate automatically. |
| **BR - 185** | The system must provide a daily automated on-line report/worklist to each worker. Reports must contain at a minimum: 1) Those newly assigned cases requiring some caseworker review or action; 2) case actions that the caseworker must take; 3) significant, as defined by the IV-D agency, case actions automatically taken by the system that require caseworker review and/or approval; and 4) significant, as defined by the IV-D agency, case actions taken by supporting units that require caseworker review and/or approval. |
| **BR - 186** | If determined necessary by the IV-D agency, the system must notify the caseworker of any actions automatically initiated which involve: 1) Locate, including the recycling of unlocated cases immediately when new information is received or on a quarterly basis; 2) Establishment of paternity; 3) Establishment of obligations; 4) Review and adjustment of an obligation; 5) Enforcement, including wage withholding; and 6) Case closure. |

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| **BR - 187** | If the caseworker has multiple options for case action, the system must: 1) notify the caseworker of the action that is needed, and 2) identify any default action that will be taken by the system in the absence of caseworker action. |
| **BR - 188** | In instances where caseworker action is necessary, the system must include a tickler for every timeframe to remind the caseworker that action must be taken within the prescribed timeframe. The tickler must alert the caseworker sufficiently in advance so action can be taken before the time limit expires. |
| **BR - 189** | Whenever the IV-D agency is expecting a response from another party, e.g., a locate source or a responding State in an interstate case, and the response is significantly late, based on state experience, the system must initiate follow-up action, (such as automatic document generation or, if necessary, caseworker intervention), in order to encourage a response from the other party. |
| **BR - 190** | The system must be capable of identifying cases eligible for case closure. |
| **BR - 191** | For cases closed under criteria in 45 CFR 303.11(b)(1) through (6) and (10) through (12), the system must generate a notice to the service recipient, except that for paragraph (b)(12), the notice must be sent to the initiating State, regarding the intent to close at least 60 days prior to closure. |
| **BR - 192** | The system must: 1) provide for supervisory review of cases prior to closure and must 2) notify the caseworker of case closure actions. |
| **BR - 193** | Identifying information on closed cases, such as parent and child names, SSN'S and DOB, must be maintained on the system in an on-line index, with all case data maintained in an automated format that can be easily retrieved in an automated manner from the archived history file. |
| **BR - 194** | The entire history file of a closed case must be retained in an easily accessible manner, in automated or hard copy form, for at least 3 years [4 years and 4 months] after case closure or until resolved under any auditable action. If any litigation, claim negotiation, or other action has started prior to the expiration of the 3-year period, the records must be maintained until final disposition or the end of the 3-year period, whichever is later. |
| **BR - 195** | The system must insure that interstate cases receive the same services as intrastate cases, but with special provisions to meet interstate requirements. |
| **BR - 196** | The system must identify a case as interstate and identify the other State and its FIPS. |
| **BR - 197** | The system must, within 18 months of certification of the statewide system, interface with public and private retirement systems as legislated in order to intercept retirement funds to satisfy delinquent child support. |
| **BR - 198** | The system must provide the capability to implement civil or criminal contempt proceedings as an enforcement remedy. |

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| **BR - 199** | The system must provide the capability to implement wage withholding orders as an enforcement remedy. |
| **BR - 200** | The system must provide the capability to implement Orders of Examination of Judgment Debtor and Debtor's Creditors as an enforcement remedy. |
| **BR - 201** | 1) The system must record and maintain information on positive responses received from locate sources. 2) A minimum of three verified addresses, in addition to the home and mailing addresses, must be maintained on line, if they are available. |
| **BR - 202** | The system must provide the capability to implement writs of execution or levy as an enforcement remedy. |
| **BR - 203** | The system must produce lien documents on matches with the Worker's Compensation Appeals Board. |
| **BR - 204** | The system must automatically receive UC [UIB/SDI, Unemployment Insurance Benefit/State Disability Insurance] information from the State Employment Security Agency (SESA) [State Employment Development Department [EDD]]. If the SESA (EDD) system is not automated, the IV-D agency must arrange for the exchange of information by manual methods. |
| **BR - 205** | The system must automatically screen information provided by the State Employment Security Agency (SESA) [EDD] to determine: 1) which individuals applying for or receiving unemployment compensation owe [unpaid] support obligations being enforced by the IV-D agency, and 2) which cases meet the State's criteria for pursuing UCI [Unemployment Compensation Intercept] [UIB/SDI]. |
| **BR - 206** | The system must automatically generate all documents required to enforce UCI [Unemployment Compensation Intercept] either through a voluntary agreement or, in cases that meet selection criteria, through legal processes pursuant to State law. |
| **BR - 207** | The system: 1) must generate an automated file containing all cases eligible for UCI [Unemployment Compensation Intercept] [UIB/SDI, Unemployment Insurance Benefit/State Disability Insurance] and 2) must transfer this file to the SESA [State Employment Security Agency] [EDD] using an electronic interface. 3) If the SESA [State Employment Security Agency] [EDD] is not automated this file must be transmitted to the SESA [EDD] manually. |
| **BR - 208** | If requested and not provided through other means, the system must automatically generate receipts (at least annually) for individuals who request a receipt for the support paid through UCI [Unemployment Compensation Intercept]. |
| **BR - 209** | The system must provide the capability to implement the attachment of real and/or personal property as an enforcement remedy. |
| **BR - 210** | The system must provide the capability to implement the Application to Utilize U.S. District Courts as an enforcement remedy. |

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| **BR - 211** | The system must, [for federal tax intercept], automatically identify IV-A [TANF/CalWORKs] and Foster Care cases where the amount of past-due support owed is not less than $150, and the support has been delinquent for three months or longer. |
| **BR - 212** | The system must, [for federal tax intercept], automatically identify any other cases where support is owed to or is on behalf of a minor child; the amount of support owed is not less than $500; the support is owed on behalf of a spouse and when the custodial parent is living with the child and child and spousal support are included in the same order; the support is owed on behalf of a disabled adult with a current support order who is deemed disabled, as a minor, under Title II or XVI of the Social Security Act (SSA); or at state option the amount has accrued since the IV-D agency began to enforce the support order and the state has checked to determine if a IV-A [TANF/CalWORKs] or Foster Care maintenance assigned arrearage exists with respect to the non-IV-A individual or family. |
| **BR - 213** | The system must provide for an automated interface [FMS] (Connect:Direct) to electronically transmit the following case information, [for federal tax intercept]: 1) The name and social security number of the taxpayer who owes the past-due support; 2) the amount of past-due support certified as owed; 3) the State's FIPS and 4) case type indicator. |
| **BR - 214** | The system must generate automated files [for federal tax intercept] to notify OCSE of: 1) deletions to amounts previously referred for offset or 2) significant decreases, as defined by State guidelines. |
| **BR - 215** | Prior to submittal [for federal tax intercept and administrative offsets], the system must have automatically verified the non-custodial parent's name, SSN, and amount referred for offset, using automated interfaces (where applicable) with State agencies and other sources. |
| **BR - 216** | All [federal tax] offset submittal information, actions, and results must be entered in the automated case history [i.e. case or member record], including: that an [federal tax] offset has been initiated; the date submitted; the year the tax return to be offset was filed; the year the [federal] tax refund offset is processed; the administrative review State; and whether the offset is a joint tax return. |
| **BR - 217** | The system must automatically identify those cases in which: 1) a court or administrative order for support has been issued; 2) the amount to be collected under the support order is at least $750 in arrears; 3) at least six months has elapsed since the last request for referral to the Secretary of the Treasury; 4) the State requesting the referral has an assignment of support rights under 45 CFR 301.1, or an application or referral under 45 CFR 302.33; 5) and reasonable efforts to collect support through the State's own collection mechanisms have been made by the IV-D agency, client, or client's representative. |
| **BR - 218** | The system must maintain information necessary to submit a request for IRS full collection services, including: the NCP name, SSN, address, and place of employment; amount owed under support orders; amounts previously referred to IRS for collection; dates of previous referrals to IRS for collection; previous enforcement actions taken in the case and the |

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| | reasons for failure; information about the NCP's income and assets, including their nature and location if known; source of information, and date information was verified. |
| **BR - 219** | The system must, [for IRS full collection services], support the notification to the appropriate ACF Regional Office of changes to the amount of support due, the nature or location of assets, or address of the debtor. |
| **BR - 220** | The system must electronically interface with the State Title XIX system to automatically exchange information required to enforce medical support provisions of the order. |
| **BR - 221** | The system must automatically generate documents needed to enforce medical support provisions [including but not limited to the Health Insurance Coverage Assignment (HICA)]. |
| **BR - 222** | The system 1) must alert the case worker when information required to fulfill a medical support order has not been received, and 2) must automatically generate required documents to secure the information. |
| **BR - 223** | The system must automatically monitor employer and non-custodial parent compliance with ordered medical support provisions and prompt needed caseworker action where there is a failure to comply with such orders. |
| **BR - 224** | The system must periodically exchange data electronically with the State Title XIX agency to determine if there have been lapses in health insurance coverage. |
| **BR - 225** | The system must, at least once, request employers and other groups offering health insurance coverage to notify the IV-D agency of changes and/or lapses in health insurance coverage. |
| **BR - 226** | The system must automatically identify cases which the State has determined are appropriate for State tax refund offset. |
| **BR - 227** | Prior to submittal [for State tax intercept], the system must automatically verify the non-custodial parent's name, SSN, amount of past-due support, and amount referred for offset using automated interfaces (where applicable). |
| **BR - 228** | The system must, [for state tax intercept], notify the appropriate State agency or office of: 1) deletions or 2) significant decreases to amounts previously referred for offset. |
| **BR - 229** | If the agency that processes State tax refund offsets is automated, the system must automatically submit identified cases annually. |
| **BR - 230** | All [state tax] offset submittal information, actions, and results must be entered in the automated client record [i.e. case or member record] including: the date submitted; the year the tax return to be offset was filed; the year the (state) tax refund offset is processed; the tax year the offset is processed against; the administrative review State; and whether the [state tax] offset is against a joint tax return. |
| **BR - 231** | The system must initiate actions for the establishment of paternity, including administrative establishment of paternity, for all cases in which paternity has not yet been established. |

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| **BR - 233** | The system must generate a monthly notice of support collected and disbursed to each IV-D payee. |
| **BR - 234** | The system must automatically identify IV-A [TANF/CalWORKs], Foster Care and Non-IV-A Title XIX-Only [medically-needy only] cases requiring medical support services to determine those cases in which: the CP, in cases other than Title IV-E Foster Care [and non-federal foster care], and child(ren) do not have satisfactory health insurance other than Title XIX [Medicaid/Medi-Cal]; and health insurance is available to the NCP at a reasonable cost. |
| **BR - 235** | The system must automatically identify additional cases based on State criteria where there is a high potential for obtaining medical support based on: evidence that health insurance may be available to the NCP at reasonable cost, and facts, as defined by the State, are sufficient to warrant modification of the support order to include health insurance. |
| **BR - 236** | The system must automatically generate the documents required to petition for the inclusion of medical support provisions in new or modified orders (usually contained in the same documents necessary to petition for obligations). |
| **BR - 237** | The system must maintain an automated member history of all member processing activities to enable the IV-D agency to monitor State operations and enable OCSE auditors to assess program performance, including a State's ability to meet program standards. This capability must allow for the retention and review of all member actions and activities that occur in or are processed by the system. |
| **BR - 238** | The system must automatically generate notices to custodial parents [CPs] providing information about health insurance policies secured for dependent children. |
| **BR - 239** | The system must interface electronically with the State's Title XIX system for the transfer of medical support information, including notifying the Title XIX agency whenever a medical support provision is included in an order. |
| **BR - 240** | The system must summarize a payer's obligations into a single billing statement on a monthly and /or demand basis. |
| **BR - 241** | The system must generate billing statements off-cycle for newly established orders. |
| **BR - 242** | The system produced billing statements must contain, at a minimum, the following information: current amount due for the month by case, court-ordered fees, amount overdue by case, due dates, payments applied last month by source (e.g. cash, check, UI, DI, wage withholding ), amount, date of payment, case ID, payer ID, billing date, payee name and accumulated interest. |
| **BR - 243** | The billing statement must provide for entry of an address correction to be returned with the payment. |
| **BR - 244** | The billing statement must NOT have an indicator which reflects that the custodial party or child(ren) is a TANF/CalWORKS or Foster Care recipient. |

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| **BR - 245** | The system generated bill [billing statement] must support varied payment/collection cycles, e.g., weekly, semi-monthly, etc. |
| **BR - 246** | The system must provide the capability for voluntary payments in a case with no court order to be credited to an obligation should that be appropriate at a later time. |
| **BR - 247** | The system must provide for supervisory-authorized billing [statement] suppression and adjustments. |
| **BR - 248** | The system must have both automatic and manual billing statement suppression for a case or set of cases (e.g., cases when another state is collecting the support payments.) |
| **BR - 249** | The system must calculate and maintain arrearage information. |
| **BR - 250** | The system data architecture must support an accounting system by providing the capability to track information by participant and by participants in association with each other through time. |
| **BR - 251** | The system must track actions (for federal tax intercepts) to ensure that the following timeframes are met : dates specified by OCSE for deletions/decreases [and increases] in amounts previously referred for offset. |
| **BR - 252** | The system must provide the capability for: a) a multiple number of debt types per case, b) multiple payees per order, and c) multiple orders per case. |
| **BR - 254** | For each case, the system must maintain a payment history containing the following information on each payment: amount of the payment; date of collection, method of payment; [source of payment]; date initially received in the State; and date of disbursement. |
| **BR - 255** | The system must record and track collections associated with a posted bond. |
| **BR - 256** | The system must be able to identify the following case types: 1) IV-A: IV-A [TANF/CalWORKs] cases receiving or referred for IV-D services. 2) Foster Care: IV-E cases receiving or referred for IV-D services. 3) Non-IV-A: Applicants or recipients of IV-D services who are not IV-A, Foster Care or Non-TANF Title XIX [medically-needy only] recipients. 4) Non-IV-A Title XIX: Cases involving Title XIX [medically-needy only] recipients who are not IV-A or Foster Care recipients. 5) IV-A Arrears Only: Former IV-A cases on which arrears are assigned to the state. 6) Foster Care Arrears Only: Former Foster Care cases on which arrears are assigned to the state. 7) Non-IV-D: Cases maintained on the system which are not recipients of IV-D services. |
| **BR - 257** | The system must: 1) identify interstate cases, and must also 2) identify non-IV-D cases requesting “FPLS-only” services (such as parental kidnapping cases) if such cases are maintained on the system. |
| **BR - 258** | For non-IV-A Title XIX [medically-needy only] cases, a code must indicate if the individual only wants services related to securing medical support. (In |

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| | cases where the code is present, the system should only initiate medical support services. In cases where the code is not present, the system should initiate all appropriate IV-D services.) |
| **BR - 259** | The system must separately record and maintain charges and payments associated with the payment of fees for FPLS. |
| **BR - 260** | The system must distribute support collections for single status former assistance cases, IRS tax intercept, according to State regulation. |
| **BR - 261** | When an order is established, the following information must be recorded in the case record: Type of obligation (child [family], spousal, medical, arrearage only,); date of order; date adjusted (if adjusted); amount of order; payment frequency; arrearage (if any); [monthly installment amount on the arrearage, [if any]]; method of payment, payment due date, issuing state of order, and interest or late payment penalties and fees. |
| **BR - 262** | The system must maintain a history of all previously established orders. |
| **BR - 263** | Payments in excess of current support, arrearages and fees owed must be held by the system as futures in current assistance cases and treated as if such payments were collected in future months. |
| **BR - 264** | For federal and non-federal foster care cases, the system must use the following distribution sequence: (a) Current support, up to the amount of the Foster Care assistance payment, made during the month is retained by the State. (b) Any current support amount in excess of the Foster Care payment, up to the amount of the child support obligation, is paid to the IV-A agency (on behalf of the IV-E agency) for the benefit of the child in federal foster care cases only. (c) Any arrearage collection up to the amount of unreimbursed Foster Care maintenance or assistance payments, is retained by the State as reimbursement for former assistance payments. (d) Collections that exceed the total unreimbursed assistance pool (UAP) must be paid to the IV-E agency for the benefit of the child. In non-federal foster care cases, the current support collection in excess of the current aid payment must be used as recoupment. For federal foster care cases, only the payments identified in (a) and (c) above reduce the UAP. |
| **BR - 267** | The system must distribute support collections for never assistance cases, IRS tax intercept collections, according to State regulation. |
| **BR - 268** | The system must distribute support collections for single status former assistance cases, regular collections, according to State regulation. |
| **BR - 269** | The system must distribute support collections for single status never assistance cases, regular collections, according to State regulation. |
| **BR - 270** | The system must distribute support collections for mixed status cases, regular collections, according to State regulation. |

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| **BR - 271** | The system must distribute assistance-related collections as follows: 1) Collections applied against permanently assigned arrearages in former assistance cases must go through the welfare distribution process. 2) Collections applied to conditionally assigned arrears that are not IRS tax intercept collections must be paid to the family and cannot be applied against the unreimbursed assistance pool (UAP). 3) Collections applied to conditionally assigned arrearages in former assistance cases from an IRS tax intercept collection must go through the welfare distribution process. |
| **BR - 272** | The system must distribute support collections for mixed status cases, IRS tax intercept collections, according to State regulation. |
| **BR - 273** | The system must distribute support collections for single status current assistance cases (regular collections) according to State regulation. |
| **BR - 274** | The system must distribute support collections for single status current assistance cases, IRS tax intercept, according to State regulation. |
| **BR - 275** | Each time distribution and disbursement takes place, the system must record the amount, date of distribution, date of disbursement, and the recipient (family, IV-E agency, IV-A agency, Title XIX agency, taxpayer whose refund was offset or another State). |
| **BR - 276** | The system must process undeliverable payments in accordance with Family Code Sec. 17502 after reasonable efforts for a six month period to locate the custodial party have failed. |
| **BR - 277** | The system must recompute the distribution of all collections when payments are made in the month when due but are received in a later month by the IV-D agency responsible for final distribution, or information is received on unidentified payments in a later month. If, however, the state has a state disbursement unit which meets all federal requirements for both IV-D and non-IV-D cases, the state may use the date of receipt as the date of collection for collections made through income withholding. If the state uses the date of receipt for all collections, the system is only required to recompute distribution with respect to unidentified payments when identifying information is received in a later month. |
| **BR - 278** | The system must: 1) ensure the validity of data entered into the (CCSA) system and 2) generate error/edit reports. |
| **BR - 279** | The system must, at a minimum, automatically generate reports pertaining to the following financial activities: 1) collections, 2) escrowed collectibles, 3) adjustments, 4) fees collected, 5) future and arrearage payments, 6) interstate collections, 7) checks and check registers, 8) summary of distribution of child support, 9) summary of receipts by collecting agency, and 10) interest collected. |
| **BR - 280** | The system must provide a means to automatically: 1) generate applications for IV-D services and 2) provide the Information Notice required by 45 CFR 303.2(a)(2).. |
| **BR - 281** | The system must record and maintain the date the non-custodial parent fails to make payments in an amount equal to the support payable for one |

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| | month or an earlier date in accordance with State Law. |
| **BR - 282** | The system must notify each caseworker on an NCP's multiple obligations, at the time part of the obligation is paid, to determine if all counties and/or states agree to removing the NCP's name from the passport denial process. |
| **BR - 283** | The system must include a way to redistribute a caseworker's caseload to another worker, which allows a redistribution of all cases, a subset thereof, or an individual case to another caseworker. |
| **BR - 284** | The system must disburse collections for unassigned medical support payments to the family within two (2) business days of receipt. |
| **BR - 285** | The system must accept assistance paid information from the IV-A agency. |
| **BR - 286** | The system must, [for the state tax offset process], automatically generate all required documents, including an advance notice to the custodial parent receiving service under 45 CFR 302.33 informing him/her that amounts collected which represent specific dollar amounts designated in the support order for medical purposes will be distributed under 45 CFR Sec. 302.51(c) and whether amounts collected will be applied first to satisfy any past-due support which is assigned to the State under Section 408(a)(3) of the Act. |
| **BR - 287** | 1) The system must automatically record the receipt of fees, including interest or late payment penalties and fees, and the recovery of costs in the automated case record and in the State's accounting subsystem, whether or not the state practices cost recovery or imposes fees. 2) (When fees are waived/paid by the State, a notation must be made in the automated case record reflecting the payment of the fee by the State.) |
| **BR - 288** | 1) If costs/fees are imposed on the non-custodial parent, the system must ensure that the monthly support obligation and any arrearage is satisfied prior to retaining the cost/fee. 2) If costs/fees are being imposed on the custodial parent, the system must deduct the costs/fees from support collected on behalf of the family. 3) In either case, the non-custodial parent's account must be credited for the full amount of the support collection. 4) In an interstate case, both the initiating and responding state [systems] must meet this requirement. |
| **BR - 289** | The system, or an auxiliary financial management system, must maintain data on: 1) the costs of genetic testing and 2) information on attempts to obtain reimbursement of costs. |
| **BR - 290** | The system must calculate interest retroactive to the first delinquent payment, unless one of the following has occurred: 1) There has been a previous renewal of judgment; 2) A satisfaction of judgment has been given. If judgment was only partially satisfied, interest is calculated for any amount remaining unsatisfied; 3) The amount of arrears owed was judicially determined at a hearing where the issue of arrears owed was heard before the court, or the parties have agreed to an arrears settlement. |

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| **BR - 291** | The system must calculate interest to end on the date the payment is received for most payment sources, with the following exceptions: 1) Wage Assignment payments -- on the date withheld by employer. 2) Direct payments -- on the date the CP receives the payment (if the CP does not give specifics, interest is not calculated). 3) Real property liens -- on the date escrow closes. 4) Writs -- When judgment is satisfied in full; lump sum payments -- on date of levy; date proceeds sold are received by levy officer. 5) PC270 -- such orders do not have the status of a permanent judgment; interest is subject to the order's provisions. 6) Intercept collections -- date received at SDU. |
| **BR - 292** | The system must, when a IV-D case is closed, automatically change the case type to non-IV-D if the order is still in effect. |
| **BR - 293** | The system must automatically allocate amounts received by withholding, when there is more than one notice for withholding against the non-custodial parent and served on the same employer, among obligations subject to withholding with priority given to current support. |
| **BR - 298** | The system, or an auxiliary financial system, must maintain data on the efficiency and effectiveness of political subdivisions' [local child support agency] operations. |
| **BR - 299** | The system must submit any delinquent obligor with arrears of $5,000 or more to the Federal Management System (FMS) for denial of a United States passport. |
| **BR - 300** | The system must reduce the unreimbursed assistance pool for an assistance case by any disregard amount authorized. |
| **BR - 301** | The system must distribute any current support amount less than $50 in a CalWORKs case as a disregard, depending on the payment source.. |
| **BR - 302** | The system must establish a cross-reference of cases to members and members to cases. |
| **BR - 303** | When verifying new or updated address information, the system must send only one postal verification letter regardless of the number of cases in which the NCP may be a member. |
| **BR - 304** | When verifying new or updated employment information, the system must send only one employer verification letter regardless of the number of cases in which the NCP may be a member. |
| **BR - 305** | The system must compile multiple non-custodial parents' support payments for distribution to that assistance case which aids their children. |
| **BR - 306** | The system must provide the capability to furnish to any member, upon request, timely information on the current status of: 1) locate, 2) establishment of paternity and support orders, 3) enforcement, 4) collections, 5) support payments under an order requiring payments to be made by or to the parent, 6) distribution and 7) disbursement |
| **BR - 307** | The system must provide an automated method to distribute cases to caseworkers based on TBD criteria. |

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| **BR - 308** | The system must redistribute caseloads based on user-entered parameters that follow the automated case assignment functionality. |
| **BR - 309** | The system must provide the capability for multiple instances of address information for a member. Address information includes, but is not limited to, mailing and physical address, end date corresponding to address no longer valid and confirmation source indicating the source of the information. |
| **BR - 310** | The system shall track all payments from NCPs associated with an assistance case and distribute only one disregard payment for a given month to the family. |
| **BR - 311** | The system must not reduce the unreimbursed assistance pool with any pass-on payment in a federal foster care case. |
| **BR - 312** | The system must distribute any collection which represents payment on arrears to reimburse past aid payments made to the family. |
| **BR - 313** | The system must distribute any arrearage collections to the family or the Welfare Department which remain after application to the UAP in CalWORKs or foster care cases as an excess payment. |
| **BR - 314** | The system must distribute against the total aid paid any payments applied to permanently or temporarily assigned child/family and spousal support arrears. |
| **BR - 315** | The system must maintain case data on: 1) the application of the guidelines and 2) deviations from the guidelines for the required four-year guideline review. |
| **BR - 316** | The system must: 1) automatically generate completed administrative or judicial documents which are required to establish paternity. 2) The date and type of documents generated must be automatically entered in the case record. |
| **BR - 317** | The system must initiate actions to establish paternity, i.e. initiating service of process, where the child is under age 18, including cases where prior actions for paternity establishment were dismissed because of a former statute of limitations. |
| **BR - 318** | The system must periodically re-initiate service-of-process for those cases where previous attempts have failed, but adequate information exists to attempt service-of-process [for paternity establishment]. |
| **BR - 319** | The system must automatically generate the required documents to: 1) Notify case participants to submit to genetic testing in contested paternity cases; 2) If above is barred by State law, petition the court or administrative authority to require case participants to submit to genetic testing; 3) Obtain a judgment for genetic testing costs from the party who denied paternity, when such paternity is later established. |
| **BR - 320** | If the State has long-arm paternity establishment, the system must: 1) generate all documents needed to initiate such action if it is determined to be appropriate for a particular case. 2) The system must maintain an automated case record for all cases worked using the long-arm statute, including actions taken and information received from the other state. |

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| **BR - 321** | The system must maintain data and status on IV-D cases where paternity establishment is handled outside the IV-D agency. |
| **BR - 322** | The system must track responses from each automated locate source, including verified address information. |
| **BR - 323** | The system must automatically follow up when information is solicited and no response is received within a reasonable amount of time, based on State experience. The system must: 1) Re-access the source using an automated interface, if available. 2) Automatically generate the documents necessary to encourage a response if an automated interface is not available or notify the caseworker as appropriate. |
| **BR - 324** | In establishing the order, the system must use the State's approved child support guidelines to automatically calculate the support obligation amount. |
| **BR - 325** | The system must recalculate interest and arrears when an adjustment is made to a payment. |
| **BR - 329** | 1) The system must continue to automatically monitor compliance with the support order provisions after enforcement action has been initiated. 2) If monitoring reveals that the enforcement action is not effective, the system must initiate additional action when appropriate, e.g., liens and bonds. |
| **BR - 330** | The system must produce any form or letter on demand within TBD seconds of a user request. |
| **BR - 331** | The system must provide the capability to retain information on other parties (e.g. attorneys, member relatives) and link these other parties to members and cases. |
| **BR - 332** | The system must maintain the legacy system's case and member identification numbers as a cross-reference to the system's unique identifiers. |
| **BR - 333** | The system must disburse assigned medical support in current assistance cases to the Department of Health Services according to state regulations. |
| **BR - 334** | The system must provide the capability to identify the following IV-D case types: 1) Current Assistance 2) Former Assistance 3) Never Assistance (both single and multiple statuses) 4) Never Assistance Medically Needy Only |
| **BR - 335** | The system must accrue interest on Ordered on Arrearages (OOA) court orders which establish an installment amount to be paid each month, with the following exceptions: 1) Those OOA orders which require interest to accrue on the entire balance if the NCP misses the installment due date. 2) Those OOA orders which require interest to accrue only on the installment amount ordered against the arrears balance. 3) Those OOA orders which require an acceleration clause that accrues interest on the entire arrears balance from the point in time a payment is missed. 4) Those OOA orders which have language which reserves the right for interest to accrue each month on the total arrears remaining unpaid. |

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| **BR - 336** | The system must store previously produced forms/letters for later retrieval. |
| **BR - 337** | The system must provide to the Child Welfare Services/Case Management System(CWS/CMS), bi-annually, a report on whether or not either non-custodial parent in the CWS/CMS system has paid any child support for the child or children. |
| **BR - 338** | The system must provide the capability to manually close cases, with supervisory approval. |
| **BR - 339** | The system must disburse within 15 calendar days from the end of the collection month to the county welfare department any pass-on and/or excess payments made on behalf of a foster care case. |
| **BR - 340** | All database transactions, regardless of location, are at all times atomic with respect to recovery. That is to say: either the execution result is completely successful, or it has no effect on any database system structure or its data. |
| **BR - 341** | The system must have the ability to support the creation and maintenance of trust accounts for tracking support related collections. |
| **BR - 342** | The system must utilize automatic sign-off techniques. |
| **BR - 343** | The system and network must include the ability to require a user or user class to change their passwords based on a configurable period of time. |
| **BR - 344** | The system must have informational and consistent error messages that are polite, concise, and constructive (provide information on how to recover from the situation). |
| **BR - 345** | The system must allow for multiple levels of edits to ensure clean and accurate information is entered into the system (e.g., field, form and case level edits). |
| **BR - 346** | The system must provide the capability to convert hard copy documents such as court orders, applications for services, attestations, verifications, and paternity acknowledgements to electronic media (e.g., image files, scanning). |
| **BR - 347** | The system must have the ability to selectively generate documentation for employers to use when submitting payments. |
| **BR - 348** | The system must process activities pursuant to the hearing process requirements as stated in State regulations which implement Family Code Sections 17800, 17801, 17802, 17803 and 17804. |
| **BR - 349** | The system must allow the capability, at the user's option, to preview any form, notice, billing or statement online as to be printed. |
| **BR - 350** | If a non-custodial parent contests withholding, the system must automatically generate the documents required to inform a non-custodial parent of: 1) The State decision; and 2) If withholding is modified, the amount to be withheld and the effective date of the change. |

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| **BR - 351** | The system must automatically generate the data to populate the data elements and print a copy of the Standardized Income withholding form (OCSE AT-98-03) to the non-custodial parent's employer to initiate withholding within 2 business days after the case becomes subject to withholding. |
| **BR - 352** | The system must automatically generate all notices and letters needed to support income withholding activities, including enforcement forms and letters when employers are not in compliance. |
| **BR - 353** | The system must maintain information in the automated case record on the documents generated in support of income withholding, including: 1) The type of document; 2) The recipient of the document; and 3) The date the document was sent. |
| **BR - 354** | The system must provide the capability to accept and process non-IV-D requests for FPLS locate only services. |
| **BR - 355** | The system must communicate with the FCR via the network provided by the FPLS for this purpose. File transfer protocols are required on the network provided by the FPLS. |
| **BR - 356** | The system must distribute all IV-D support collections. |
| **BR - 357** | The system must maintain an auditable record of all additions, updates, changes and deletions to all data in the system including identification of the responsible system user/caseworker and date/time of the change. |
| **BR - 358** | Upon receipt of a signed application for non-IV-A services, the system must maintain the following information: 1) The date the application was requested; 2) The date the application and program information describing services, fees, rights and responsibilities, and cost recovery and distribution policies was sent to the applicant; 3) The date the signed application and fee were received. |
| **BR - 359** | Within 20 calendar days of receipt of a signed application for non-IV-A services, the system must: 1) Establish a case record; 2) Refer the case to the appropriate processing unit (e.g., locate or paternity establishment); and 3) Notify the case worker of the case. |
| **BR - 360** | The system must automatically accept automated [TANF/CalWORKs] referrals from the IV-A agency. |
| **BR - 361** | The system must automatically record, in the automated case record, the date the [TANF/CalWORKs] referral was received. |
| **BR - 362** | 1) Program information describing services and fees, rights and responsibilities, and cost recovery and distribution policies must be provided to IV-A [TANF/CalWORKs] recipients [within 5 working days of referral]; and 2) the date the information was provided recorded in the comprehensive, chronological case history. |
| **BR - 363** | The system must automatically accept and process automated [Medicaid/Medi-Cal] case referrals from the State Title XIX agency for non IV-A Title XIX [medically-needy only] cases if the State Title XIX system is |

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| | automated. |
| **BR - 364** | The system must automatically record, in the automated case record, the date the [Medicaid/Medi-Cal] referral is received |
| **BR - 365** | 1) Program information describing services and fees, rights and responsibilities, and cost recovery distribution policies must be provided to Title XIX [Medicaid/Medi-Cal] recipients [within 5 working days of referral] and 2) the date the information was provided recorded in the comprehensive, chronological case history [i.e. case record]. |
| **BR - 366** | The system must receive information related to interstate referrals through CSENet using CSENet Standard Transactions. Interstate transactions must be automatically generated by the system and transmitted through the CSENet processor, or in the case of interstate forms requiring notarized signatures or raised seal, the system should, where appropriate, extract data from the automated system and generate the interstate forms. |
| **BR - 367** | Within 10 working days of the receipt of an incoming interstate case, the system must: 1) Notify the caseworker to take required action to verify the completeness of the received documentation; 2) Generate a response to the initiating IV-D agency through CSENet acknowledging receipt of the case and providing information on where the case was sent for action. |
| **BR - 368** | If an automated interface cannot be established for a specific Locate Source: 1) the system must automatically prepare the documents required to submit the case to the information source, and 2) the system must provide an easily accessible means to enter into the automated case [or member] record all manual attempts to obtain information and their results. |
| **BR - 369** | The system must support the tracking of information from manual locate sources. |
| **BR - 370** | The system must send the following referral information to the FCR to register cases and participants: 1) Case -- State Case Identification number; Case Type (IV-D, Non-IV-D); order indicator; FIPS code (State Code). 2) Participant -- Participant type; Family Violence indicator; Name; Sex,; SSN; Date of Birth. |
| **BR - 371** | The system must notify the FCR of additional changes or deletions to the information provided to the FCR within five business days of receipt from the IV-D agency of new or changed information. |
| **BR - 372** | The system must transmit and register to the Federal Case Registry,: 1) all new cases (IV-D) and orders (non-IV-D) and 2) all participants associated with those cases and orders. |
| **BR - 373** | The system must comply with the requirements for sending and receiving CSENet transactions as outlined in the CSENet Interface Guidance Document. |
| **BR - 374** | The system must perform statewide allocation of non-IV-D payments when there is a wage assignment payment. |

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| **BR - 378** | The system must submit a specific request and specify the data sources to be searched beyond those automatically provided by FCR. Such data sources may include, but are not limited to the following: the National Directory of New Hires, Social Security Administration, Internal Revenue Service, Internal Revenue Service (1099), Department of Defense, Federal Bureau of Investigation and Department of Veterans Affairs. |
| **BR - 379** | The system must accept and process all administrative information received from the FCR (e.g., rejections, warnings, SSN verification or identification results). |
| **BR - 380** | The system must accept unsolicited locate information from the FPLS as proactive matches occur between State participants registered through the FCR and as State FCR participants are matched to New Hire, Quarterly Wage and Unemployment Insurance claim records on the National Directory of New Hire. |
| **BR - 381** | The system must automatically establish unique numbers (i.e., case numbers and participant identification numbers [for both IV-D and non-IV-D cases]) that allow for case identification and the linking of cases to multiple non-custodial parents and obligations. |
| **BR - 382** | The system must interface with the Department of Health Services to request medical insurance information in order to obtain data to assist with the establishment of an order for support. |
| **BR - 384** | All program, financial, statistical and other data maintained by the system must be readily accessible to auditors. |
| **BR - 386** | The system must track any non-IV-D payments other than wage withholding (such as state tax intercepts) for purposes of allocating administrative costs associated with processing of such payments. |
| **BR - 387** | The system must provide the capability to establish and maintain an employer account when a delinquency caused by an employer's failure to honor a wage assignment(s) has been identified. |
| **BR - 388** | The system must provide the capability to retain all data for configurable lengths of time in order to provide an audit trail for governmental, legal and public inquiries, formal audits or court inquests. |
| **BR - 389** | The delinquent obligors' data provided by the system to the various intercept agencies must meet the intercept criteria for each agency. |
| **BR - 391** | The system must maintain an automated case history of all case processing activities to enable the IV-D agency to monitor State operations and enable OCSE auditors to assess program performance, including a State's ability to meet program standards. This capability must allow for the retention and review of all case actions and activities that occur in or are processed by the system. |
| **BR - 392** | The system must create disbursement instructions based on the outcome of distribution. |
| **BR - 393** | The system must provide the capability for multiple instances of employer information for a member. Employer information includes, but is not limited to, employer address, end date corresponding to employment no longer |

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| | valid and confirmation source indicating the source of the information. |
| **BR - 394** | The system must generate an automated case history for each case that includes: 1) all actions taken, 2) the date of the actions, and, if appropriate, 3) the results of these actions. |
| **BR - 395** | The system must maintain a complete and accurate case history file on-line. However, after one year, the state may move historical information off-line, as long as it is maintained in as easily accessible, automated manner for program and audit purposes. |
| **BR - 397** | The system must disburse disregard payments to current assistance TANF/CalWORKs families within two (2) business days of receipt by the SDU. |
| **BR - 398** | The system must be capable of providing child support enforcement services to individuals who reside in a foreign country with whom California has a reciprocal agreement, and who apply directly to the State for paternity or support enforcement services. |
| **BR - 399** | The system must provide the capability to set a Family Violence indicator for each member in a IV-A case for whom good cause is being claimed. |
| **BR - 400** | The system must: 1) accept rejected transactions from all external enforcement agencies, 2) correct the transactions, and 3) resubmit them to the appropriate agency. |
| **BR - 402** | The system must transmit and receive information on interstate cases through the Child Support Enforcement Network (CSENet). |
| **BR - 403** | The system must generate forms of letter quality which are professional in appearance. "Professional appearance" is defined as: 1) Letters must accommodate a letterhead, have an inside address, date, signature block and allow for digitized signatures. 2) Letters must have consistent margins and fonts, not smaller than 10 point. 3) Letters must allow for blocks of free-form text. 4) The free-form text must integrate into the rest of the letter with the same font and margins. 5) There must be sufficient space for the free-form text and space between paragraphs in free-form text must be allowed. 6) Any data elements inserted into the letter must match the font style, with no gaps around the elements and in upper and lower case as appropriate. 7) The data elements must be aligned with template text, and there must be no data overlapping text, no missing data, and no truncated data. |
| **BR - 404** | The system screen design must, where appropriate, order data elements on the screen in the same order they appear on the form using the same data labels. |
| **BR - 405** | The system must provide the capability for forms upgrades to be released individually and independently of application upgrades. |
| **BR - 406** | The system must accept and process data from the Department of Health Services medical insurance office to assist with the establishment of an order for support. |

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| **BR - 407** | The system must track and record dates to ensure that the following timeframes are met: Within 10 working days of the receipt of a request for service, the system must generate a response to the initiating IV-D agency through CSENet and notify the agency of the need for additional information and/or corrections if unable to proceed with the case because of inadequate documentation. |
| **BR - 408** | The system must automatically forward the interstate case to the appropriate processing unit within the State. |
| **BR - 409** | The system must: 1) accept rejected transactions from DHS, 2) correct the transactions and 3) resubmit them for processing. |
| **BR - 410** | The system must accrue interest on an employer account when the employer has failed to submit wage assignment payments on behalf of an obligor(s). |
| **BR - 411** | [The system must identify cases for administrative offset where] the support has been delinquent for 30 days or longer. |
| **BR - 412** | (The system must, for administrative offset, comply with) any other information prescribed by ACF in instructions which are issued periodically in the form of an Action Transmittal (i.e., OCSE AT 98-17). |
| **BR - 413** | 1) The date additional information was requested from the initiating State and the type of information requested must be entered in the automated case record. 2) The system must notify the caseworker if the request is not received within a time period that allows compliance with applicable program standards. |
| **BR - 414** | 1) The system must provide the initiating State, via CSENet , advance notice of hearings that may result in either paternity establishment, or establishment/ adjustment of an order. 2) Data elements must indicate the dates of upcoming hearings. |
| **BR - 415** | The system must periodically provide case status updates to initiating States via CSENet. |
| **BR - 416** | All actions, including the transfer of the cases to another State/ jurisdiction if the non-custodial parent is located there, must be automatically noted in the automated case [or member] record. |
| **BR - 417** | When a case is closed by the responding State, the reason and date of closure and the date must be entered in the automated case record. |
| **BR - 418** | Within 10 working days of receiving new case information, the system must use CSENet to automatically: 1) transmit such information to the responding State and 2) notify the responsible caseworker of the action. |
| **BR - 419** | Within 5 working days of receiving a notice concerning review and adjustment of an order from a responding State, the system must generate a notice to the parent in the initiating State. |
| **BR - 420** | The system must track and control dates to ensure that the following timeframes are met (for any interstate case): Within 20 calendar days [10 working days] of determining the non-custodial parent is in another state/jurisdiction and, if appropriate, the receipt of any information needed |

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| | to process the case, the system must refer the case to that state using CSENet. |
| **BR - 421** | All activities of the State's central registry must be integrated and supported by the automated statewide system. |
| **BR - 422** | When an order, which requires medical support, is established or at the time of a subsequent change, the system must electronically transmit the following to provide the Title XIX agency with updates to Title XIX [Medicaid/Medi-Cal] related information: IV-A case number, IV-E case number, Title XIX case number, non-custodial parent's name, non-custodial parent's social security number, non-custodial parent's home address, non-custodial parent employer's name and address, custodial parent's name, custodial parent's social security number, custodial parent's home address, custodial parent employer's name and address, name and social security number of child(ren), if a health insurance policy exists, the policy name, number, and names of the persons covered; upon discovery that medical support payments are being, or have been, retained by a non-IV-A Title XIX [medically-needy only] recipient; and if the IV-D agency makes a non-cooperation determination because a Title XIX recipient fails to cooperate in establishing paternity or securing support. |
| **BR - 423** | The system must track the review and adjustment process in order to ensure that the following timeframes are met: 1) Within 180 calendar days of determining that a review should be conducted or locating the non-requesting parent, whichever occurs later, complete the review and adjustment process; and 2) Within 14 days after issuance of any order modifying a child support obligation or a determination of no change in the amount of child support, the system must: alert the caseworker to provide each party with a copy of the order; or, in the case of a petition for modification, the system must generate a notice of determination that there should be no change in the amount of the child support award. |
| **BR - 424** | The system must impose no constraints on the amount of case and member information retained. |
| **BR - 425** | The system must generate, at least once every three years, [in support of the review and adjustment process], a notice to each parent of the right to request a review, and appropriate plan and means in which request should be made, if such information is not provided to the parent from another source. |
| **BR - 426** | The system must identify cases in which the order does not include health care coverage. |
| **BR - 427** | For cases in which either parent requests a review, the system must determine if a review is appropriate based on the age of the order or other criteria selected by the state. |
| **BR - 428** | Upon case initiation, the system must: 1) automatically direct the case to the appropriate function, e.g., locate, paternity establishment, and 2) initiate the appropriate case action. |

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| **BR - 429** | After each function is completed, the system must: 1) automatically direct the case to the next appropriate function and 2) initiate the appropriate case action. |
| **BR - 430** | To allow the tracking of compliance with program performance standards, the system must record in the automated case record: 1) The date a case is moved into a specific function; 2) the dates and actions taken within the function; 3) the results of such actions including appropriate dates; and 4) the date of referral to the next appropriate function. |
| **BR - 433** | The system must automatically generate required notices and documents including an advance notice to the non-custodial parent that his/her past-due support will be referred to the IRS [FMS] for collection [administrative offset] that includes the information contained in 45 CFR 303.72(e)(1). If the state chooses, it can request that the notice be sent by OCSE. |
| **BR - 434** | This requirement is deferred -- the paragraph is reserved for a future requirement for the use of 7 digit FIPS address information in the Interstate Referral Guide. |
| **BR - 435** | The system shall record and maintain charges associated with interest or late payment penalties and fees. |
| **BR - 437** | The system must: 1) Maintain the requisite data on state performance with respect to paternity establishment and child support enforcement in the State to calculate the paternity establishment percentage for the state for each fiscal year; 2) Have in place system controls to ensure the completeness and reliability of, and ready access to, the paternity establishment data and calculations of paternity establishment percentage. |
| **BR - 438** | The system must prevent disclosure of information on persons designated as subject to family violence. |
| **BR - 439** | If State law provides authority for the administrative establishment of support, the system must support administrative establishment of support orders, including the generation of appropriate documents. |
| **BR - 440** | The system must generate a notice to the CP and NCP of all proceedings in which support obligations might be established or modified. |
| **BR - 441** | The system must provide the capability to produce required forms. |
| **BR - 442** | The system must populate forms using the data elements stored in the database. |
| **BR - 443** | The CSES [Child Support Enforcement System] or alternative system must identify (flag) delinquent obligors for the Multi-State-FIDM process on the Administrative Offset file. |
| **BR - 444** | The system must distribute non-IV-D collections against the obligation and monthly installment as specified in the wage assignment and send any excess collections to the family. |
| **BR - 445** | The system must include a State Case Registry which contains records for each case for which services are being provided by: 1) the State IV-D agency, and 2) for all non-IV-D orders established or modified on or after |

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| | October 1, 1998. |
| **BR - 446** | The system must provide IV-D caseworkers with on-line access to automated sources of non-custodial parent employer and wage information maintained by the State, by either establishing an electronic link or by obtaining an extract of the database and placing it on-line. |
| **BR - 447** | The CSES [Child Support Enforcement System] or alternative system must, using standard FIDM formats, have the capability to: 1. Produce an electronic file of delinquent obligors (in the standard FIDM Inquiry File format) to be transmitted to financial institutions (FI) electing Method Two (Matched Accounts Method). |
| **BR - 448** | The CSES [Child Support Enforcement System] or the alternative system must automatically update the case [or member] record when a match occurs to include, at a minimum, the financial institution and the record address of the non-custodial parent. |
| **BR - 449** | The CSES [Child Support Enforcement System] or the alternative system must have the capability to produce a hard copy report (or form such as a subpoena) for use with those financial institutions not participating in an automated match. |
| **BR - 450** | The CSES [Child Support Enforcement System] or the alternative system must: 1) automatically produce all documents necessary to attach an asset held by a financial institution or, at a minimum, 2) prompt the caseworker to take the action. |
| **BR - 451** | The system must: 1) periodically identify individuals who meet the state's license suspension criteria and 2) automatically produce initial notices to individuals selected. |
| **BR - 452** | The system must: 1) automatically produce all other documents to support license suspension, or 2) prompt the caseworker to take actions through the system. |
| **BR - 453** | The system must match licensed individuals with those owing arrearages. |
| **BR - 454** | The system must, when locate action is required, be able to: Automatically submit the case to all appropriate locate sources (whether automated or not), including the transfer of appropriate cases to the FPLS within 75 calendar days of determining that locate action is required. |
| **BR - 455** | The system must automatically generate employee and office/unit performance reports that provide information on: 1) Caseload statistics (e.g., age of cases, breakdown by category including interstate and status); 2) Collections; 3) Obligations; 4) Cases for which orders could not be established or enforced (indicating the numbers and reasons for failures); and 5) Employee activity and accomplishments. |
| **BR - 456** | The system must have a reporting capability to provide management the flexibility to obtain information on an as-needed basis and to satisfy new information needs. |

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| **BR - 457** | Submissions to FPLS for Locate must include: 1) Name of person to be located; 2) Person's SSN, if known; and 3) any other information prescribed by ACF in instructions which are issued periodically in the form of an Action Transmittal. |
| **BR - 458** | Whenever key locate data elements are added or changed due to the receipt of new information, the system must immediately resubmit the case to all appropriate automated and manual locate sources, with the exception of FPLS. |
| **BR - 459** | The system must accept and store information from the State's non-IV-D database in the State Case Registry. |
| **BR - 460** | The system must automatically generate a notice to: 1) the non-custodial parent and 2) in non-IV-A cases, the custodial parent, of the time and place of an administrative review of a complaint regarding the [federal tax] offset. |
| **BR - 461** | The system must, [in support of the review and adjustment process]: 1) generate notices to inform parents of proposed actions and their right to challenge such actions and 2) generate any documents necessary to seek an adjustment or handle an appeal of such action. |
| **BR - 462** | The system must provide all information and calculations to the caseworker for determination of whether an adjustment should be pursued. |
| **BR - 463** | The system must, [for the review and adjustment process], perform all necessary guideline calculations. |
| **BR - 464** | The system must, [for the review and adjustment process], provide a means for entry and edit of data received (including the input of manually obtained financial information), both from interfaces and financial affidavits received from other sources. |
| **BR - 465** | The system must automatically generate documents and notices for the [federal tax] post-offset appeal process, if required by State law. |
| **BR - 466** | The system must generate an advance notice informing the non-custodial parent that his/her past-due support will be referred for [state tax] offset and of the opportunity to contest the referral. |
| **BR - 467** | The system automatically must generate documents needed to refund excess amounts [from federal tax intercept] to parents. |
| **BR - 468** | The system must automatically annotate the automated case [or member] record with the referral [to FPLS]. |
| **BR - 469** | The system must automatically generate an advance notice to non-IV-A custodial parents regarding the distribution of [federal tax] offset amounts. |
| **BR - 470** | The system must, within 75 calendar days of receipt of an interstate referral via CSENet, 1) automatically provide locate services if necessary, and 2) process the case to the extent possible pending receipt of additional or corrected information. |

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| **BR - 471** | The system must notify the caseworker to initiate follow-up action if no response is received within a reasonable amount of time. |
| **BR - 472** | The system must automatically notify the caseworker of the results [of an FPLS referral]. |
| **BR - 473** | The system must automatically: 1) receive automated information back from FPLS and 2) record the results of the match in the automated case [or member] record. |
| **BR - 474** | The system must automatically generate a notice referring the non-custodial parent to the IRS [FMS] in cases where a complaint has been received concerning a joint [federal tax] refund which has been offset. |
| **BR - 475** | The system must conform to any other instructions [regarding the 1099 Project] established by OCSE. |
| **BR - 476** | The system must store all 1099 data received in accordance with IRS procedures. |
| **BR - 478** | The system must generate a notice to: 1) the non-custodial parent and, 2) in non-IV-A cases, the custodial parent of the time and place of an administrative review of a complaint regarding the [state tax] offset. |
| **BR - 479** | Notices to employers must contain information regarding the procedures and format to be used in submitting withholdings, if the employer chooses to use EFT. |
| **BR - 480** | The system must generate documents needed to refund excess [state tax refunds] amounts. |
| **BR - 482** | The system must interface with the Board of Equalization to provide a file of names of delinquent obligors against which the intercept of sales tax refunds may be matched. |
| **BR - 483** | The system must interface with the State Franchise Tax Board to provide a file of names of delinquent obligors against which the intercept lottery winnings may be matched. |
| **BR - 486** | The system must provide an indicator that identifies a member as self-employed and must maintain information on the member's tax payer identification number. |
| **BR - 488** | The CSES [Child Support Enforcement System] or alternative system must accept files (in the standard FIDM Account File format) from financial institutions electing Method One (All Accounts Method). |
| **BR - 489** | The system must electronically transmit administrative offset requests via Connect:Direct with the Federal Tax offset requests. The required data elements include: The name, SSN of the individual who owes the past-due support; the amount of past-due support certified as owed; the State's FIPS; the case indicator type. |
| **BR - 490** | The system must interface with the Public Employees Retirement System to provide a file of names of delinquent obligors against which the intercept of retirement benefits may be matched. |

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| **BR - 491** | The system must automatically generate [transmit] a CSENet notice to the initiating State of a request for an administrative review. |
| **BR - 492** | The system must generate documents required to notify the initiating state of the results of an administrative review in cases where an [state tax] offset has been made. |
| **BR - 493** | The system must automatically generate [transmit] a CSENet notice to the responding State when the [federal tax] offset is received. |
| **BR - 494** | The system must automatically generate [transmit] a CSENet notice to the responding State of the results of an administrative review in cases where an [federal tax] offset has already been made. |
| **BR - 495** | The system must, within 30 days of receipt of a request for additional information, either: 1) provide the requested information or 2) the date the information will be provided, using CSENet. |
| **BR - 496** | The system must automatically prepare a FCR locate person transaction containing the necessary identifying information for referral. |
| **BR - 497** | The system must, within 10 working days of the receipt of new information, use CSENet to notify the initiating State of the new information. |
| **BR - 498** | The system must, within 10 working days of locating the non-custodial parent in a different State/jurisdiction, use CSENet to notify the initiating State or the State/jurisdiction where the non-custodial parent has been located. |
| **BR - 499** | The system must solicit additional or corrected information from the initiating State through CSENet. |
| **BR - 500** | The CSES [Child Support Enforcement System] or alternative system must, using standard FIDM formats, perform matches for financial institutions electing Method One (All Accounts Method). |
| **BR - 501** | The system must [for state tax intercept] accept from the responsible State office information pertaining to the non-custodial parents' home address and social security number(s). |
| **BR - 502** | The system must accommodate international addressing formats. |
| **BR - 503** | The system must track actions [for federal tax intercept and administrative offset] to ensure that the following timeframes are met: dates of submittal specified by OCSE. |
| **BR - 504** | The system must track actions [for federal tax intercept] to ensure that the following timeframes are met: Within 10 days of the non-custodial parent's request for an administrative review [for federal tax offset] in the State with the order, the submitting State [system] must provide the State with the order and all necessary information. |
| **BR - 505** | The system must track actions [for federal tax intercept] to ensure that the following timeframes are met: Within 45 days of receipt of the information from the submitting State, the system of the State with the order must generate a notice to: 1) the non-custodial parent and, 2) in non-IV-A cases, |

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| | to the custodial parent indicating the time and place of the administrative review, and track the date of the review and decision. |
| **BR - 507** | The system must submit obligor information (including arrearages) to the State Licensing Match System. |
| **BR - 510** | The system must accept the following information on non-IV-D orders established or modified in the State on or after October 1, 1998, for inclusion with IV-D cases in the State Case Registry for transmission to Federal Case Registry: 1) The system must maintain the following minimum information on the CP, NCP and Child participants (Name, SSN, DOB, Sex, Participant ID); 2) The system must accept the transmission of a family violence indicator for non-IV-D court orders; 3) Additional mandatory data elements for non-IV-D cases include: State Code, State case identification number, other uniform identification number, issuing state of order, case type (i.e., non-IV-D) and Participant Type (CP, NCP, Child), and any other information that the Secretary may require as specified in an Action Transmittal. |
| **BR - 511** | 1) In interstate cases, the responding state's financial subsystem must provide for disbursement, to the initiating state, within two (2) business days of receipt. 2) Both the responding and initiating state's systems must be capable of handling such disbursement using electronic funds transfer/electronic data interchange (EFT/EDI). 3) All transfers must be recorded in or linked to the automated client record. 4) Data to the initiating state [system] must include: identifying case numbers; payment amount; date of collection or indication that payments were made through state income tax refund offset; non-custodial parent's name and social security number; medical support indicator; and the responding state's FIPS code or Worldwide Geographic Location Code. |
| **BR - 512** | The system must print address information for delivery through the U.S. Postal Service in compliance with U.S. Postal Service standards that provide for the lowest cost for delivery (e.g. use of ZIP+4 +2, OCR readable print, bar-coding and presorting). |
| **BR - 513** | Using the IV-A/IV-D interface, the IV-D agency must 1) provide the IV-A agency information on the amount of monthly support collections received for each IV-A [TANF/CalWORKs] case. 2) The information must be provided within 10 working days of the end of the month in which those collections were received by the IV-D agency responsible for final distribution. 3) The information must include the amount, case number, and date of collection for each payment. 4) For purposes of tracking the 10-day timeframe, a data element in the IV-D system must record the date the IV-D agency gives the required information to the IV-A agency. |
| **BR - 514** | If unable to identify the payor the system must put the payment on hold (in suspense) and notify the SDU. |
| **BR - 516** | The system must be capable of adjusting, with supervisory approval, previously processed payments. |

| DOORS Requirement Number | Requirement Text |
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| **BR - 517** | The system must provide the capability to maintain identifying information on an unborn child. |
| **BR - 518** | The system must track payments from one NCP on behalf of multiple assistance cases and distribute a disregard payment for each assistance unit. |
| **BR - 519** | The system shall only distribute disregard payments for TANF/CalWORKs cases. |
| **BR - 520** | The system must accept and process voluntary paternity acknowledgments, allowing for both key entry and imaging of POP information. |
| **BR - 521** | The system must: 1) update the case or member record and 2) maintain submittal history for each member submitted for the FIDM intercept, including but not limited to, date submitted, and intercept. |
| **BR - 522** | The system must provide the capability to suppress submission of any number of cases or all cases belonging to a NCP to any or all enforcement agencies (e.g., FTB,FMS, SLMS, FIDM). |
| **BR - 523** | The system must provide the capability to re-open cases and/or re-activate case members using the same unique IDs originally assigned. |
| **BR - 524** | The system must maintain, for each member submitted to the intercept process, a submittal history, including but not limited to, dates of submittal, to which intercepting agency submitted, total amount submitted, and amount by case submitted. |
| **BR - 527** | The system must submit a list of delinquent obligors to the Department of Industrial Relations for a match with Worker's Compensation Appeals Board awards. |
| **BR - 528** | The system must have the capability to submit revocations and to correct and resubmit transactions to SLMS. |
| **BR - 529** | The system must provide the capability to accept rejected transactions from CRS and resubmit corrected transactions to CRS. |
| **BR - 530** | The system must: 1) accept rejected CSENet transactions, 2) correct and 3) resubmit them. |
| **BR - 534** | The system must submit a list of delinquent obligors to the FTB Child Support Collection Program, in accordance with FTB interface requirements |
| **BR - 535** | The system must accept and process from the FTB, status updates on individuals submitted for state tax offset, including any information about protests filed by the obligor. |
| **BR - 536** | The system must disburse all non-IV-D wage assignment payments to the court ordered payees within two (2) business days of the date of receipt. |
| **BR - 538** | The system must: 1) identify the original receipt for the NSF payment and 2) correlate it to any logical receipt(s) connected to the original physical receipt, and 3) cancel any physical receipts and all logical receipts. |

| DOORS Requirement Number | Requirement Text |
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| **BR - 540** | The system must accept and process spousal support only case referrals from other states. |
| **BR - 541** | The system must provide the capability to open a new case specifying an unborn child as a dependent. Case construct rules must be met before the case is opened. |
| **BR - 542** | The system must adjust all account balances, interest and arrears, when an adjustment is made to a payment. |
| **BR - 543** | The system must allocate payments in accordance with the rules and formulas specified by the State. |
| **BR - 544** | The system must maintain case and member information necessary to accurately allocate payments to IV-D cases and non-IV-D orders. |
| **BR - 545** | The system must validate all interstate transactions for format and content before sending to other states via CSENet. |
| **BR - 546** | While maintaining the original receipt number and audit trail, the system must provide the capability to reallocate receipts. |
| **BR - 547** | The system must maintain up-to-date allocation rules and formulas. |
| **BR - 549** | The system must verify that the State definition of a IV-D case has been met before accepting the case and assigning a unique State Case Identification number. |
| **BR - 550** | The system must provide the capability to send user-specified correspondence to a mailing list determined by an ad hoc query. |
| **BR - 551** | The system shall not distribute more than one disregard for an assistance unit in a collection month, unless the disregard amount was less than $50. |
| **BR - 552** | The system must maintain information that indicates whether a participant is subject to family violence as determined by State policy. |
| **BR - 553** | The CSES [Child Support Enforcement System] or alternative system must accept matched files (in the standard FIDM Match File format) received from financial institutions electing Method Two (Matched Accounts Method) and from Multi-State FIDM (MS-FIDM). |
| **BR - 554** | If the state chooses to participate in the administrative offset program, the system must: automatically identify cases where the amount of support owed is not less than $25.00. |
| **BR - 555** | The system must comply with the specifications for a Federal Case Registry interface as outlined in the FCR Interface Guidance Document. |
| **BR - 556** | The system must disburse excess payments made on behalf of TANF/CalWORKs cases to the family within 15 calendar days from the end of the collection month. |

| DOORS Requirement Number | Requirement Text |
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| **BR - 557** | The system must apply other states' interest rates in interstate cases as appropriate. |
| **BR - 558** | The system must track information relative to controlling orders in interstate cases in which there are multiple orders. |
| **BR - 559** | The system must provide the capability for a user to delete an NCP from any or all intercept processes. |
| **BR - 560** | The system must automatically delete from an intercept process any NCP who no longer meets submission criteria. |
| **BR - 561** | The system must generate documents to request entry of the order/judgment 30 days after service unless a hearing is requested or an amended proposed judgment has been filed. |
| **BR - 562** | The system must provide the capability for a worker to generate a manual locate request to any external locate source available to the system. |
| **BR - 563** | The system must maintain, at a member level, an automated, comprehensive, chronological history of all actions taken for a member, whether automated or manual. |
| **BR - 564** | The system must track certain types of administrative costs which have been pre-approved and maintain the approved rates and amounts for reporting purposes. |
| **BR - 565** | The system must disburse payments on behalf of a foster care case to the IV-A agency. |
| **BR - 566** | The system must disburse within two (2) business days of receipt any collections to former or never assistance families which are applied against current support obligations, unassigned pre-assistance, unassigned during assistance and never assigned arrears. |
| **BR - 567** | The system must disburse to the former assistance family, within two business days of receipt, collections which are applied against the conditionally assigned child, family, medical and spousal support arrears interest and principal for any payment source except IRS tax intercept.. |
| **BR - 568** | The system must disburse to the Department of Health Services, in former assistance and never assistance cases where there is an assignment for medical support, collections which are applied to permanently assigned medical support arrearages interest and principal and conditionally assigned medical support arrears interest and principal from an IRS tax intercept collection. |
| **BR - 569** | The system must disburse to the Department of Health Services, in current, former and never assistance cases where there is an assignment for medical support, collections which are applied to permanently assigned arrearages, interest and principal and conditionally assigned medical support arrears interest and principal from an IRS tax intercept collection.. |
| **BR - 570** | The system must complete the monthly welfare distribution process within 13 calendar days from the end of the collection month. |

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| **BR - 571** | The system must disburse to the local child support agency any collections which are applied to the interest and principal on fees and costs. |
| **BR - 572** | The system must accept fees and costs collected as an abatement on the administrative claim submitted by the local child support agency. |
| **BR - 573** | The system must compile the balances due for all cases for the delinquent obligor and submit a total amount to applicable intercept agencies. |
| **BR - 574** | The system must not apply intercept collections to a case which has been suppressed from the associated intercept process. |
| **BR - 575** | The system must generate an advance notice to non-assistance custodial parents regarding the distribution of (federal administrative ) offset amounts. |
| **BR - 576** | The system must generate a notice to: 1) the non-custodial parent, and 2) in non-assistance cases, the custodial parent, of the time and place of an administrative review of a complaint regarding the (federal administrative) offset . |
| **BR - 577** | The system must generate a notice referring the non-custodial parent to the FMS in cases where a complaint has been received concerning a federal administrative payment which has been offset. |
| **BR - 578** | The system must produce documents and notices for the (federal administrative) post-offset appeal process, if required by State law. |
| **BR - 579** | Within 10 days of the non-custodial parent's request for an administrative review in the State with the order, the submitting State system must provide the State with the order and all necessary information (for federal administrative offsets). |
| **BR - 580** | The system must generate automated files to notify OCSE of: 1) Increases for federal tax and administrative intercepts as defined by State guidelines; 2) The addition of new cases for federal tax and administrative intercepts as defined by State guidelines. |
| **BR - 581** | The system must generate process documents to be served upon each parent subject to a child support order, within 30 calendar days of the commencement of a review of the court order. |
| **BR - 582** | The system must, following any review of a court order, notify each parent subject to the child support order of: 1) A proposed adjustment or a determination there should be no adjustment in the order; and 2) Each parent's right to initiate proceedings to challenge the proposed adjustment or other determination, not less than 30 calendar days after the notice. |
| **BR - 583** | The system must suspend the review and adjustment process when the NCP cannot be located. Once the NCP is located, the system must resume the review and adjustment process. |
| **BR - 584** | The system must notify the employer when withholding ceases on an active wage assignment and notification of termination has not been received from the employer. |

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| **BR - 585** | The system must, upon notification that an obligor's wage assignment delinquency has been caused by the employer's failure to send the payment, suppress any interest on that payment until the payment has been reimbursed by the employer. |
| **BR - 586** | For obligor delinquencies due to an employer's failure to send a wage assignment payment, the system must suppress the delinquent amount(s) from the following: 1) Credit Reporting System 2) State Licensing Match System 3) Franchise Tax Board 4) Federal Management System (IRS and federal administrative offsets) 5) Employment Development Department 6) FTB Child Support Collection Program 7) Any other intercept program which attaches payments for intercept. |
| **BR - 587** | The system shall consist of a separate State Disbursement Unit electronically connected to a child support enforcement system which includes a State Case Registry of IV-D cases and non-IV-D orders. |
| **BR - 589** | The system must provide the capability for SDU staff to query the CSE system. |
| **BR - 591** | The system must accept and process payment information from the SDU to support the identification of payments to obligors, the statewide allocation of payments to cases and the IV-D distribution of payments to member accounts. |
| **BR - 593** | The system must accept and process updated payment information from the SDU, such as notification of insufficient funds, so that member accounts can be adjusted. |
| **BR - 594** | The system must provide disbursement instructions to the SDU to support the creation of warrants and other disbursement instruments such as EFT transactions. |
| **BR - 601** | The system must automatically default case statuses when the following conditions exist: 1) The IV-D case type must default to Current Assistance when at least one child or custodial parent is on assistance and the other is former or never assistance. 2) The IV-D case type must default to Former Assistance when at least one child or custodial parent has been on assistance in the past. 3) The IV-D case status in an interstate case must default to Never Assistance when the other state does not provide the case type. |
| **BR - 602** | The system must temporarily assign unpaid support obligations when a child or family receives TANF/CalWORKs or Foster Care assistance. |
| **BR - 603** | The system must permanently assign support after October 1, 1998, which accrues while the family is receiving TANF/CalWORKs or Foster Care assistance. |
| **BR - 604** | The system must convert the temporarily assigned interest and principal arrearages up to the total amount of the unreimbursed assistance pool, to conditionally assigned interest and arrearages when the family or child no longer receives assistance. |
| **BR - 605** | The system must compare permanently assigned arrearages with the UAP to compute the unassigned during assistance arrearage amounts first, and then compare the conditionally assigned arrearages with the remaining |

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| | UAP to compute the unassigned pre-assistance arrearages. |
| **BR - 606** | The system must distribute up to the first $50 of a collection as a disregard payment in a current assistance CalWORKs case. |
| **BR - 607** | The system must, in current CalWORKs and non-federal foster care cases, apply any current support remaining after reimbursement of aid for the current month to reimbursement of past aid payments which have not otherwise been reimbursed.. |
| **BR - 608** | The system must recoup support in the recoupment priority order specified by the State when the family or children have been in different assistance programs through the local child support agency. |
| **BR - 609** | The system must provide the capability for support obligations (i.e., family support, spousal support, child support and medical support) to be set up based on the specific court-ordered provisions. |
| **BR - 610** | The system data architecture must support compliance, distribution, and accounting rules by providing the capability to track support obligation and arrearages by type and by participant and participants in association with each other through time. |
| **BR - 611** | The system must disburse, within 30 calendar days from the date of receipt, any payments to families or to the IV-A agency on behalf of a foster care child resulting from IRS tax refund intercept collections. |
| **BR - 612** | The system data architecture must support the distribution and payment for obligations of all types by tracking information by participant and by participants in association with each other through time. |
| **BR - 614** | The system must provide the capability to link each member receiving assistance with an aid category, such as CalWORKs, Foster Care, Medically Needy Only, etc. |
| **BR - 615** | The system must produce forms required to request the following types of bonds: 1) Bond established under Family Code Sec. 4560. 2) Bond established under Family Code Sec. 4012. 3) Bond established under Family Code Sec. 4610. |
| **BR - 616** | The system must provide the capability to produce required reports. |
| **BR - 617** | The system must ensure that collections in current assistance cases which are applied to current child/family and spousal support obligations, permanently and temporarily assigned child/family and spousal support arrears interest and principal, must go through the welfare distribution process. |
| **BR - 618** | The system must provide a means to flag case and member records to alert the worker that special circumstances exist. |
| **BR - 619** | The system must provide the capability to modify child support guidelines as the result of changes in law or policy. |

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| **BR - 620** | The system must distribute interstate assistance-related collections as though they were non-assistance and still track for statistical purposes that the collection is assistance-related. |
| **BR - 621** | The system must distribute previously unidentified collections based on date of receipt. |
| **BR - 627** | The system must provide a mechanism to unmistakably identify those members who have a history of violent/abusive behavior. This mechanism must be present each time case or member records for that member are reviewed. |
| **BR - 628** | The system must maintain information about employer names and federal identification numbers in suspense until verified. |
| **BR - 629** | The system must provide the capability for any user to query the statewide employer database. |
| **BR - 632** | The system must maintain a single statewide database of employer names and federal identification numbers. |
| **BR - 635** | The financial processes implemented by the system must comply with Generally Accepted Accounting Principles (GAAP). |
| **BR - 637** | The system must report every IRS offset refunded to the NCP to the Financial Management Services system. |
| **BR - 638** | The system must distribute Franchise Tax Board tax intercept and Financial Management Services Offset collections as a regular payment in the distribution priority, except that any excess must be refunded to the obligor or sent to the family. |
| **BR - 639** | The system must maintain individual accounts for each type of fee. |
| **BR - 640** | The system must provide the capability to balance the totals for each fee type deposited in the state accounts with the current balance for all fees by fee type. |
| **BR - 641** | The system must provide, for both intrastate and interstate cases, the capability to record and maintain information regarding multiple liens on real or personal property. |
| **BR - 642** | The system must track undelivered IV-D payments to ensure the obligor is not charged interest on payments during the six months the family is being located, provided the obligor makes full payment for all past due child support amounts when the family is found. |
| **BR - 643** | The system must maintain any IRS-related collection data for seven years. |
| **BR - 644** | The system must adjust account balances, interest and arrears, should there be any future or retroactive changes in obligation amounts. |

| DOORS Requirement Number | Requirement Text |
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| **BR - 645** | The system must provide the capability to read barcodes provided on correspondence and automatically display the appropriate case or member record.. |
| **BR - 646** | The system must provide the capability to print barcodes on forms and letters. |
| **BR - 647** | The system must provide the capability to view data by case identifier or member identifier. |
| **BR - 648** | The system must provide the capability to select print preview with the data fields populated for all forms/letters. |
| **BR - 649** | The system must provide the capability to preview blank forms. |
| **BR - 650** | The system must provide the capability to perform duplex printing. |
| **BR - 651** | The system must provide the capability to group individual forms into standard sets. |
| **BR - 652** | The system must provide the capability to specify the number of copies of each form in a set. |
| **BR - 653** | The system must provide the capability to specify the order in which the forms in each formset are printed. |
| **BR - 654** | The system must provide the capability for a user to specify to which printer each formset is printed. |
| **BR - 655** | The system must provide the capability for any text to be stored, retrieved and printed in upper and lower case letters. |
| **BR - 656** | The system must have an on-line index of forms/letters sorted by child support topic. |
| **BR - 657** | The system must have an on-line index of forms/letters sorted alphabetically by form name. |
| **BR - 658** | The system must have an on-line index of forms sorted by form number. |
| **BR - 659** | The system must provide the capability to store, retrieve and print digitized signatures on forms/letters. |
| **BR - 660** | The system must provide override control on the use of digitized signatures. |
| **BR - 661** | The system must provide the capability to add, modify or delete forms/letters. |

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| **BR - 662** | The system must provide the capability to produce forms with free-form text. |
| **BR - 663** | The system must provide the capability to store, retrieve and print local addresses and letterheads. |
| **BR - 664** | The system must produce forms not required immediately by 6 a.m. local time of the next working day. |
| **BR - 665** | The system must provide the capability to save print files on TBD media for printing outside the system. |
| **BR - 666** | The system must provide the capability to generate forms/letters where content may vary based on previously occurring text and/or case status. |
| **BR - 667** | The system must retrieve previously produced forms/letters within TBD seconds of a user request. |
| **BR - 668** | The system must return IV-D collections to the obligor which were undeliverable to the family after a six-month period to locate the family has passed. |
| **BR - 669** | For warrants voided because they are uncashed or neither the obligor nor the family could be located, the system must wait for a period of two years after the warrant has been voided and revert the funds to the State General Fund. |
| **BR - 670** | The system must provide the capability to override, with supervisory approval, the automated distribution process. |
| **BR - 671** | The system must provide the capability to override, with supervisory approval, the automated disbursement instructions being transmitted to the SDU. |
| **BR - 672** | The system must notify the IV-A agency of adjustments to the assistance-related accounts as a result of adjustments to a payment. |
| **BR - 673** | The system must provide a means to audit all receipt adjustments back to the original receipt. |
| **BR - 677** | The system must distribute any current support collected to current aid paid in a federal foster care case. |
| **BR - 678** | The system must distribute as pass-on in a federal foster care case any current child support remaining after application to current aid paid. |
| **BR - 679** | The system must determine the if one or more of the following conditions have been satisfied before refunding futures to the obligor: 1) All current and past due assigned support obligations have been satisfied. 2) A future obligation does not exist and is not expected to exist. 3) The custodial parent cannot be located in a six-month period and amounts remain in the payer's account. |

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| **BR - 680** | The system must identify any payment to the family as child support and not as an assistance payment, e.g., disregard and excess |
| **BR - 681** | The system must notify all caseworkers associated with cases involving a particular NCP when TBD information concerning that NCP is updated. |
| **BR - 682** | The system must provide the capability for each local child support agency to suppress notification of updated NCP information. |
| **BR - 683** | The system must provide the capability to maintain financial reference data to include, but not limited to, County Incentive rates, Payment Type codes (cash, check, money order, etc.), Payment Sources, California State Tax rates, Recoupment rates, Debt Description, Distribution Priorities, Debt Types and Disbursement Types. |
| **BR - 684** | The system must provide the capability to maintain reference data to include, but not limited to, IV-A Aid Categories, Foster Care Agency data, Postal Standard Zip Codes, Performance Review Criteria & Requirements, Federal Information Processing Standards (FIPS) Codes, the Federal Interstate Referral Guide Roster, and Unique Identifiers for Other Party members. |
| **BR - 685** | The system must, when a case is opened or members are added, assign unique case and member identifiers in real time. |
| **BR - 686** | The system must provide the capability to select print preview with the data fields populated for any predefined or ad hoc reports. |
| **BR - 687** | The system must provide the capability to perform statistical calculations, such as determining the bottom quartile of a sample, on the database as a whole or a subset of the database obtained through a query. |
| **BR - 688** | The system must produce all required reports in the format and frequency identified in the Reports Database. |
| **BR - 689** | The system must have the capability to perform probability samplings to support program reviews and audits. |
| **BR - 691** | If, during the process of assigning unique identifiers, the system identifies possible pre-existing members, the system must suspend assignment of an identifier for that member and notify the user of potential matches. |
| **BR - 692** | The system must provide the capability to “intelligently merge” member records based on a user’s determination that the members are the same person. |
| **BR - 693** | Upon notifying the user of potential member matches during the assignment of unique identifiers, the system must provide the capability for the user to select an existing member identifier or to request a new identifier be assigned and then assign an identifier for that member based upon the user's selection. |
| **BR - 694** | The system must: 1) Provide the capability to perform ad hoc queries and produce ad hoc reports. 2) Store the ad hoc queries and ad hoc reports for later retrieval. |

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| **BR - 696** | The system security must provide the capability to restrict access to data for the purpose of producing ad hoc queries or reports. |
| **BR - 697** | The system must [for review and adjustment purposes] generate a notice to each parent of all proceedings in which support obligations might be modified. |
| **BR - 698** | The system-generated notice must contain the information required by regulation to allow the employer to initiate income withholding and submit such withholdings to the State's Disbursement Unit. |
| **BR - 699** | The system must have the capability to utilize collection strategies necessary to ensure cases are worked efficiently and effectively, including evaluating cases to determine what activities are necessary to maximize collectibility. |
| **BR - 700** | The system must provide the capability for State Child Support Program staff to analyze (e.g., compile, sort, edit, compare, report) data to support consistent best practices in statewide operations. |
| **BR - 701** | The system must provide authorized State Child Support Program staff the ability to perform longitudinal studies to support evaluation of improvements or focused areas of examination. |
| **BR - 702** | The system must provide the capability to generate notification of Child Support Program changes to non IV-D participants. |
| **BR - 703** | The system must provide authorized Child Support Program staff the ability to assess and test the impact of proposed federal or state mandates (using simulation or modeling). |
| **BR - 704** | The system must alert a supervisor when an action is overdue on a case. |
| **BR - 705** | The system must prevent transmission of sensitive data (e.g., family violence) without affirmative authorization. |
| **BR - 706** | The system must provide the capability to easily accommodate changes to the frequency and schedule of third party interfaces. |
| **BR - 707** | The system must provide the capability to electronically generate all necessary lien documentation (e.g., lien releases, etc.). |
| **BR - 708** | The system must provide the capability to combine all levies on an individual into a single request to the financial institutions. |
| **BR - 709** | The system must have the capability to verify the accuracy and completeness of information exchanged with financial institutions (e.g., non-custodial parent identifiers, account balances, levies, etc.). |
| **BR - 710** | The system must provide the capability to assign cases, both manually and automatically, to caseworkers based on defined caseload standards and criteria. |
| **BR - 711** | When data is received from a third party, the system must positively identify entities within the system utilizing pre-defined matching criteria for each third party source. |

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| **BR - 712** | The system must provide the capability to generate program production management and forecasting reports. |
| **BR - 713** | The system must support the management and tracking of cases when reassigned or transferred from one jurisdiction to another. |
| **BR - 714** | The system must accept and verify interjurisdictional case/account processing information (e.g., FIPS codes, addresses, interest rates, recovery costs and age of majority) based on information contained in the Interstate Referral Guide. |
| **BR - 716** | The system must provide a self-service, electronic capability for individuals to complete and submit an application form requesting IV-D services. |
| **BR - 717** | The system must provide self-service, electronic capability for individuals to obtain application forms and information for IV-D services. |
| **BR - 718** | The system must provide the ability to identify discrepancies between member data and third party exchanges and alert the Child Support Program staff, if appropriate, in order to reconcile the child support enforcement database. |
| **BR - 719** | The system must have the capability to generate employer instructions on how to submit employee information. |
| **BR - 720** | The system must provide the capability to assist employers in updating information about employees and/or themselves. |
| **BR - 721** | The system must provide the capability to track and report complaints submitted by case members. |
| **BR - 722** | The system must provide the capability for the caseworker to interview and collect data from a participant at various offsite locations including the IV-A office and other child support enforcement locations. |
| **BR - 723** | The system must provide the capability to access context-searchable common issues (e.g., frequently asked questions). |
| **BR - 724** | The system must provide self-service capabilities for CPs and NCPs or their designated representatives (with authorization) to electronically communicate problems and/or complaints. |
| **BR - 725** | The system must provide the capability to generate notifications, both centrally and locally, to CPs and NCPs about program services availability or changes in service options (e.g., office hours, location, etc.). |
| **BR - 726** | The system must provide the capability for educational mass mailings to case members. |
| **BR - 727** | The system must provide for on-line, context-sensitive field level help features for Child Support Program staff. |
| **BR - 728** | The system must provide the capability to inform employers of Child Support Program changes. |

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|---|---|
| **BR - 729** | The system must provide the capability for financial institutions to access instructions and answers to frequently asked questions. |
| **BR - 730** | The system must provide self-service, electronic capabilities for case members with the right security access to review the status of their own account and payments anytime, anywhere. |
| **BR - 731** | The system must have user-friendly, intelligent search capabilities for case and account information within a case or between cases. |
| **BR - 732** | The system must provide tools for authorized Child Support Program staff to support child support program decision-making and program performance monitoring. |
| **BR - 733** | The system must provide authorized CSP staff with the capability to support comparative analysis of data in the system. |
| **BR - 734** | The system must include a configurable intrusion detection system that has the ability to detect, report and block an intruder breaking into the system or a legitimate user misusing system resources. |
| **BR - 735** | The system must include real time monitoring and intrusion detection of misuse of internal network resources and external network attacks. |
| **BR - 736** | The system must include automatic responses to security threats. Responses may include alarms and termination of connection. |
| **BR - 737** | The system must provide the capability, where appropriate, to file, archive, and delete electronic files according to document retention rules. |
| **BR - 738** | The system must produce application processing statistics for all processes. |
| **BR - 739** | Batch programs must be designed to have configurable parameters or controls to control the volume of transactions processed. |
| **BR - 740** | The system must be able to deploy upgrades or patches to the system which are configurable for automated delivery. |
| **BR - 741** | The system must prevent both passive and active misuse by system administrators, staff and operators by integrating identification, authentication and application security requirements. |
| **BR - 742** | The system must provide user accessed based on the minimum system resources required by the user's class. |
| **BR - 743** | The system must allow only authenticated users to access system resources. |
| **BR - 744** | The system must perform authentication at various system levels including computer-to-computer authentication, database authentication and data transport authentication. |
| **BR - 745** | The system and network must have the capability to require passwords which include a mixture of numbers, capital letters, small letters and punctuation. |

| DOORS Requirement Number | Requirement Text |
|---|---|
| **BR - 746** | The system and network must include a configurable password length that can be set based on user class. |
| **BR - 747** | The system's application and database processes must not exceed 65 percent of system capacity at final production implementation, specifically, CPU utilization, memory and storage space. |
| **BR - 748** | The system must provide the capability to accept and match all accounts from financial institutions to obligors. |
| **BR - 749** | The system must ensure that confidential data transported over public communication lines is encrypted to prevent unauthorized access and disclosure. |
| **BR - 750** | The system must include 24x7x365 intrusion detection. |
| **BR - 751** | The system must provide the capability to define and control access to sensitive data. |
| **BR - 752** | The sytem must provide dynamic recovery and restart capabilities for the application with no more than 15 minutes of processing time loss. |
| **BR - 753** | The system batch jobs must be designed such that they can be run concurrently where technical dependencies do not exist. |
| **BR - 754** | The system must have the same user interface on both local and remote access. |
| **BR - 755** | The system must be intuitive, streamline system navigation, and maximize system flow between functions for users to easily follow and operate. |
| **BR - 756** | The system must support application of upgrades, patches, or other necessary improvements, such that these upgrades resulting minimal interruption of the CSE system availability. |
| **BR - 757** | The system must be flexible to allow for variable parameter driven testing (e.g. overriding system dates, county information, case information.) |
| **BR - 758** | The system must trap technical errors at the point the program encounters the problem and provide user-friendly error messages. |
| **BR - 759** | The system must provide a statistical analysis tool that provides the following features or characteristics: Financial analysis and numerical modeling; Use of user-defined formulas and functions; Interface to system data used for data warehousing; Statistical and mathematical analysis, including but not limited to, analysis of variance, regression, categorical data analysis, multivariate analysis, cluster analysis, etc. |
| **BR - 760** | The system must sort forms, notices, billings and statements without zip codes or with foreign addresses separated to the top of the regular mail output. |
| **BR - 761** | The system must identify potential duplicate data exchanged with third parties. |

| DOORS Requirement Number | Requirement Text |
|---|---|
| **BR - 764** | The system must have the capability to redirect payments that were disbursed in error with permission from the CP. |
| **BR - 765** | The system must provide the capability to record an event into the case chronology when a form is produced. |
| **BR - 766** | The system must allow CSP staff access to standard operating procedures necessary for problem identification and resolution. |
| **BR - 767** | The system is required to populate screens with information already existing in the case or account. |
| **BR - 768** | The system must provide the capability to generate on-demand, daily, weekly, or monthly reconciliation reports for collections, disbursements and trust funds. |
| **BR - 769** | The system must include controls that ensure that data passes from its source to its destination without undetected alteration. |
| **BR - 770** | The system must populate forms, templates, chronologies with data available in the system. |
| **BR - 771** | The system must permit authorized remote access to systems, services and user classes. |
| **BR - 772** | The system must be capable, without restriction, of executing batch processes on system application processes 24 x 7 x 365. |
| **BR - 773** | The system must be available 99.5 percent 24 x 7 x 365, excluding planned downtime. |
| **BR - 774** | The system must have redundant communications lines running between the data center and each program site. |
| **BR - 775** | The system must accommodate a minimum of five million cases and 10,000 concurrent users. |
| **BR - 776** | The system must be configurable to facilitate remote system management and support. |
| **BR - 777** | The system must be built with an open interface to allow for integrated scheduling tools to support the scheduling of jobs. |
| **BR - 778** | The system must protect source code from unauthorized access. |
| **BR - 779** | The system must produce all CSE system reports using independent metadata such that structural changes to operational data store(s) are reflected to any existing report(s) without change to the reporting system software, i.e., reports are metadata driven (e.g., XML). |
| **BR - 780** | The Extract, Transform and Load tool selected and used should: Be able to determine data change from source database log(s); Support loading destination data via data insert, update, delete/insert statements; Provide |

| DOORS Requirement Number | Requirement Text |
|---|---|
| | facilities for handling of remote signaling to enable and disable service features. |
| **BR - 781** | The system must use consistent edit rules for like data introduced through on-line and batch. |
| **BR - 782** | The system must have backup, restore and restart provisions to handle operator errors, data errors, hardware/software failures, and environmental problems. |
| **BR - 783** | The system must include multiple levels of data encryption, which can be utilized based on the sensitivity of the data. |
| **BR - 784** | The system must report processing errors in a standardized format. |
| **BR - 785** | The system shall maintain database transaction information to allow analysis and reporting of Create, Read, Update and Delete activity at the table level. |
| **BR - 786** | The system shall support transaction management and data consistency to the row level. |
| **BR - 787** | The size of batch transactions must be configurable. |
| **BR - 788** | The system must provide the capability to efficiently administer access rights. |
| **BR - 789** | The system must include a password history file that can be configured to prevent the reuse of a specific number of passwords previously utilized by the user. |
| **BR - 790** | The system must sort, batch, bundle and print forms, notices, billings or statements. |
| **BR - 791** | Within the system, the time between when the user initiates a web database transaction inquiry until the user receives confirmation that the transaction has completed must be less than three seconds at peak processing times. |
| **BR - 792** | The system must be capable of performing online processes 24 x 7 x 365. |
| **BR - 793** | Within the system, the time between the user initiating a mainframe database update and the user receiving confirmation that the transaction is complete, must be at peak processing time less than one second for 90 percent and 1.5 seconds for 98 percent of the transactions. |
| **BR - 794** | At peak processing time, the system must provide the interval between when a network station seeks access to a transmission channel and when access is granted or received is not greater than 50 milliseconds. |
| **BR - 795** | The system hardware components must provide alerts for system failures. |

| DOORS Requirement Number | Requirement Text |
|---|---|
| **BR - 796** | The system must maintain a history of all billing statements prepared for the payer. |
| **BR - 797** | The system must provide the capability to electronically send non-financial data from the system to employers, e.g., employment verification, wage and health insurance information, etc. |
| **BR - 798** | The system must support the referral of cases to the U.S. Attorney Intervention process as an enforcement remedy. |
| **BR - 799** | The system must utilize non-proprietary network protocols. |
| **BR - 806** | The system must provide the capability to accept, either manually or electronically, updated employee information from employers. |
| **BR - 808** | They system batch stream must provide alerts for system failures. |
| **BR - 809** | The system must alert a supervisor when an action is overdue on an account. |
| **BR - 810** | The system must provide the capability for authorized staff to enter and store budget information, administrative expense claim information and other appropriate data in order to generate the OCSE 396A report. |
| **BR - 811** | The system must support a network bandwidth connection of one gigabit per second. |
| **BR - 812** | The system must provide the capability to retain the entire history file of a closed case for a configurable period of time, but at least five years after case closure or until resolved under any auditable action. If any litigation, claim negotiation, or other action has started prior to the expiration of the specified period, whichever is later. |
| **BR - 813** | The system must provide individuals with disabilities comparable access to electronic and information technology as those without disabilities. |
| **BR - 814** | The system must provide a repository of frequently asked questions searchable by context to facilitate complaint resolution for case members. |
| **BR - 815** | The system must have the capability to stay enforcement action and automatically perform the following functions: 1) monitor and identify any number of cases or all cases belonging to the NCP in which there is a bankruptcy; 2) stay the establishment of new orders; 3) stay the modification of existing orders; 4) generate any required documentation. |
| **BR - 817** | Within 60 calendar days from the date the applicant provides the local child support agency with valid information regarding the putative father's/NCP's residence address or employer information, the system must generate the appropriate forms for a service packet if service of process is required. |
| **BR - 818** | The system must provide the capability to access and assess all necessary information to select the appropriate date, time, location and interviewer when scheduling interviews with participants. |

| DOORS Requirement Number | Requirement Text |
|---|---|
| **BR - 819** | The system must trigger generation of the appointment notice to appropriate members, store the appointment on the system, write to the CSP user's calendar and notify the CSP user prior to the appointment. |
| **BR - 820** | The system must have the ability to integrate and include all types of events, including appointments, court hearings, genetic test drawings and caseworker schedules. |
| **BR - 821** | The system must provide the capability for the CSP to interface with the courts' calendars in order to perform scheduling |
| **BR - 822** | The system must provide the capability for CSP staff to access specific genetic testing labs' calendars, where available, for the purpose of scheduling genetic testing appointments. |
| **BR - 823** | The system must provide the capability of utilizing different methods for assigning cases, regardless of the functional organization of the office. |
| **BR - 824** | The system must be able to generate a pre-service notification (at the time the Summons & Complaint is filed) to the NCP 15 days prior to the Summons and Complaint being sent to the process server. |
| **BR - 825** | The system must provide the capability to process direct deposit payment requests and information with financial institutions. |
| **BR - 826** | The system must provide the capability to automatically interface with process servers, where available. |
| **BR - 827** | The system must provide the capability to indicate the NCP preference to override the standard priority for method of service of process. |
| **BR - 828** | The system must capture, store and produce the medical insurance information required by the Department of Health Services and automatically forward such information to the Department of Health Services. |
| **BR - 830** | The system must have the capability to request, receive and store photographs from the Department of Motor Vehicles and associate the photograph with a member record. |
| **BR - 831** | The system must provide the capability for users to review their calendar in multiple periods (e.g., daily, weekly, monthly). |
| **BR - 832** | The system must provide the capability for users to enter periodically (daily, weekly, monthly, annually) recurring events into their calendar (e.g., schedule meetings for every second Thursday for one year). |
| **BR - 833** | The system must provide various views of the calendar(s) that include activity, member, case, caseworker, unit, primary language, location and date. |
| **BR - 834** | The system must provide the user with the ability to schedule or override appointments as needed. |
| **BR - 835** | The system must provide the capability for a caseworker (e.g., supervisor) to view another caseworker's calendar when the appropriate security level is met. |

| DOORS Requirement Number | Requirement Text |
|---|---|
| **BR - 836** | The system must maintain information on the quarterly federal IV-D grant awards and information regarding any adjustments to such grant awards. |
| **BR - 837** | When appropriate, the system must calculate Federal, State, and local collection shares. |
| **BR - 838** | The system, or an auxiliary financial system, must provide documentation needed: 1) to obtain and verify claims for Federal financial participation (FFP) and 2) to facilitate the payment, receipt, and distribution of incentive payments. |
| **BR - 839** | The system must provide the capability to offset the federal (and state) share of local child support program administrative expenditures from recoupment. |
| **BR - 840** | The system must prepare incentive payment and administrative expenditure advances to counties through the State Controller's Office. |
| **BR - 841** | The system, or an auxiliary financial system, must maintain data on collections and administrative costs. |
| **BR - 842** | The system, or an auxiliary financial system, must maintain information on the receipt of incentive payments. |
| **BR - 843** | The system, or an auxiliary financial system, must perform calculations needed to determine Title IV-D's share of administrative costs. |
| **BR - 844** | The system must perform incentive calculations using the State's methodology for passing through incentives to political subdivisions (local child support agencies). |
| **BR - 845** | The system, or an auxiliary financial system, must distribute and maintain information on incentive payments to political subdivisions (local child support agencies). |
| **BR - 846** | The system must maintain information regarding federal incentive amounts paid on assistance and non-assistance cases. |
| **BR - 847** | The system must calculate excess incentives for each local child support agency using the formula of revenues minus net expenditures equals excess incentives. |
| **BR - 848** | The system must track a separate excess incentive special fund account for all local child support agencies to ensure excess incentives are expended within a two year time limit. |
| **BR - 849** | The system must track and maintain information pertaining to cost control plans for each local child support agency. |
| **BR - 850** | The system must support a regional concept in which any number of counties can be assigned to a region. |
| **BR - 851** | The system must support the aggregation of data by region for management and reporting purposes. |

| DOORS Requirement Number | Requirement Text |
|---|---|
| **BR - 852** | The system must provide the capability to generate summarized wage assignment order information from a central location. |
| **BR - 854** | The system must be capable of issuing receipts regardless of the acceptance of walk-in payments. |
| **BR - 855** | The system must provide query/report building tool(s) that provide data filtering, selectable output formats, graphical user interface (GUI) and/or web interfaces, the ability to reuse archived queries and/or reports, and process scheduling. |
| **BR - 856** | The system must print a minimum of 2.5 million monthly statements. |
| **BR - 857** | The system must be capable of printing a minimum of 35 million multiple-page forms per year. |
| **BR - 858** | The system must print a minimum of 1.1 million monthly billings for NCP's with current obligation and/or arrearage. The average monthly bill is no less than 4 pages printed duplex on letter size (8 1/2 x 11) paper. |
| **BR - 860** | The system must provide disbursement information to the SDU for return to the obligor of any non-IV-D collections which are undeliverable to the family, with a written notification that this does not relieve the obligor of the support order. |
| **BR - 861** | The system must provide the ability to open a case naming the most likely alleged father when paternity is at issue, and if that alleged father is excluded, change the case record to reflect the next most likey alledged father. |
| **BR - 862** | The system must provide the capability to suspend Title IV-D services for an open case upon recipient's claim for Good Cause, and subsequently resume these services if Good Cause is denied. |

# PART 3

## State Guiding Principles for Customer Service Support Center and Level of Effort Budget

- The State envisions a call center approach that provides the ability for the State to respond to the majority of customer case inquiries through a statewide CSE customer service center which includes an interactive website, IVR, and regional call centers.

- The CSE system is the system of record for all purposes including customer service.
- The majority of calls into the call center will be handled by the CCSAS CSE call center, including all non-IV-D cases, utilizing information from the CSE Statewide system with more complex case inquiries being transferred to appropriate local child support agencies.
- The call center(s) will be staffed by local child support agency staff with customer service center implementation and management oversight by the Business Partner. The Business Patner will provide for knowledge transfer to State oversight staff in order to provide a continuity of management and oversight for the customer service center (s).
- The call center solution will have regional call centers with call routing technologies and infrastructure that provides a unified and seamless statewide call center.
- The call center approach will consider any early call center strategy piloted by DCSS and leverage existing call center infrastructure.
- The Business Partner will implement an IVR that provides a single point of telephonic access and a seamless interface for all CSE program customers. Automated call routing from the IVR to local child support agencies (LCSAs) will be provided for those LCSAs who have not yet converted to CCSAS.
- Call center (s) will provide for access in multiple languages.
- The contractor's Customer Service Support Center Assessment (CDL TM 072) will include analysis of the potential customer service sites and approaches that considers regionalized call centers and takes into considerations: economic factors (such as EZA,TACPA, LAMBRA, etc.), toll costs, bilingual employees, current LCSA call center employee base, and other socioeconomic factors that utilizes the optimal number of regional call centers.
- The contractor shall devise a training approach that provides a base of knowledge for call center staff in customer service principles and basic child support program information so that call center staff can provide a high level of service (similar to Level 1.5 from SRA's report). The training shall include the use of the CSE Statewide System.

## Customer Service Support Center Level of Effort

| | Price |
|---|---|
| Set up CCSAS Customer Service Support Center<br>▪ Create Customer Support Center Assessment<br>▪ Create Customer Support Center Plan<br>▪ Implement Customer Support Center Plan | $3,463,593 |
| Staff Customer Support Center<br>▪ Manage Customer Support Center Staff/Operations<br>▪ Staff Customer Support Center | $12,543,233 |

| | |
|---|---|
| ▪ Customer Support Center Training<br>▪ Customer Support Center Technical Support<br>▪ Customer Support Center Internal Help Desk | |
| Miscellaneous Labor<br>▪ Create Customer Service Support Learning<br>▪ HW/SW Installation | $142,323 |
| Facilities<br>▪ Facilities (Lease, Infrastructure, Maintenance)<br>▪ Utilities<br>▪ Furniture / Supplies / Office Equipment<br>▪ PBX / Communications<br>▪ Personal Property Tax / Insurance / Fixed Asset Carrying Charge<br>▪ Miscellaneous | $8,809,526 |
| HW / SW<br>▪ IBM Hardware & Maintenance<br>▪ IBM Software & Maintenance<br>▪ OEM Hardware & Maintenance<br>▪ OEM Software & Maintenance | $2,670,612 |
| Total CSSC | $27,629,287 |

# PART 4

## Acronyms and Glossary

**Table 1- Acronyms**

| Acronym | Translation |
|---|---|
| 3DES | Triple Data Encryption Standard |
| ACDD | Automated Conversion Data Dictionary |
| ACF | Administration for Child and Family |
| ACID | Atomicity, Consistency, Isolation, Durability |
| ACO | Automated Console Operations |
| ACS | Automated Conversion System |
| ADCT | Automated Data Cleansing Tool |
| ADD | Automated Data Dictionary |
| ADP | Automated Data Processing |
| AM | Asset Management |
| ANO | Automated Network Operations |
| ANSI | American National Standards Institute |
| APD | Advance Planning Document |
| ARCS | Accounts Receivable Collection System |
| ARS | Access Replacement System (one of six Consortia Systems) |
| AT | Action Transmittal |
| ATM | Asynchronous Transfer Mode |
| BEST | Best Enforcement Support Technology (one of six Consortia Systems) |
| BETS | Business Entities Tax System |
| BI | Business Intelligence |
| BP | Business Partner |
| BRD | Business Requirement Document |
| BRL | Business Requirements List |
| BSR | Business Solution Response |
| CASES | Computer Assisted Support Enforcement System (one of six Consortia Systems) |
| CBT | Computer Based Training |
| CCR | California Central Registry |
| CCS | California Child Support |
| CCSA | California Child Support Automation |
| CCSAS | California Child Support Automation System |
| CDAP | Contract Deliverable List Item Acceptance Process |
| CDL | Contract Deliverable List |
| CHASER | Computer Has All Support Expertise Required (one of six Consortia Systems) |
| CHHS | California Health and Human Services |
| CI | Configuration Item |
| CMAT | Conversion Methodology and Toolset |
| CMM | Capability Maturity Model |

| Acronym | Translation |
|---|---|
| CMP | Container-Managed Persistence |
| CORBA | Common Object Request Broker Architecture |
| COTS | Commercial Off-The-Shelf |
| CP | Custodial Party |
| CPLS | California Parent Locator Service |
| CRM | Customer Relationship Management |
| CRS | Credit Reporting System |
| CRT | Client Response Time |
| CSE | Child Support Enforcement |
| CSENet | Child Support Enforcement Network |
| CSP | Child Support Program |
| CWM | Common Warehouse Metamodel |
| CWS/CMS | Child Welfare Services/Case Management System |
| DBA | DataBase Administrator |
| DBDD | DataBase Design Description |
| DCSS | Department of Child Support Services |
| DDL | Database Definition Language |
| DES | Data Encryption Standard |
| DHCP | Dynamic Host Configuration Protocol |
| DHHS/ACF | Department of Health and Human Services/Administration for Children and Families |
| DM | Development Manager |
| DMT | Data Mapping Tool |
| DMV | Department of Motor Vehicles |
| DNS | Domain Name Server |
| DOORS | Dynamic Object Orientated Requirements System |
| DWM | Data Warehouse Management |
| eAI | Enterprise Application Integration |
| EAIA | External Agency Interface Agreement |
| eBHC | e-business Hosting Center |
| EC | Engineering Changes |
| EFT | Electronic Funds Transfer |
| EIN | Employer Identification Number |
| EJB | Enterprise Java Bean |
| ER | Entity Relationships |
| ESC | Executive Steering Committee |
| ETL | Extract/Transform/Load |
| FAIT | Fabrication, Assembly, Integration and Test |
| FAQ | Frequently Asked Questions |
| FCR | Federal Case Registry |
| FIDM | Financial Institution Data Match |
| FMAP | Federal Medical Assistance Percentage |
| FMS | Financial Management Services |
| FPLS | Federal Parent Locator Service |
| FSA 88 | Family Support Act of 1988 |
| FTB | Franchise Tax Board |
| FTP | File Transfer Protocol |

| Acronym | Translation |
|---|---|
| GUI | Graphical User Interface |
| HACMP | High-Availability Cluster Multiprocessing |
| HHS | Health and Human Services |
| HHSDC | Health and Human Services Data Center |
| HR | Human Resource |
| HTML | Hyper Text Markup Language |
| HTTP | Hyper Text Transfer Protocol |
| I/A | Inter-agency Agreement |
| I/O | Input/Output |
| IA | Issue Assignee |
| IC | Issue Coordinator |
| ICT | Issue Coordination Team |
| IDB | Integrated Data Base |
| IDD | Interface Design Description |
| IDE | Integrated Development Environment |
| IEEE | The Institute of Electrical and Electronics Engineers, Inc. |
| INC | Integrated Nonfiler Compliance System |
| IO | Issue Owner |
| IPR | In-Process Review |
| IPSec | Internet Protocol Security |
| IRP | Issue Response Package or Issue Resolution Package |
| IRR | Implementation Readiness Review |
| ISD | Instructional Systems Design |
| IV&V | Independent Verification and Validation |
| IV-A | Title IV-A of the Social Security Act |
| IV-D | Social Security Act, Title IV, Part D |
| IV-E | Social Security Act, Title IV, Part E |
| IVR | Interactive Voice Response |
| J2EE | Java 2 Enterprise Edition |
| JDBC | Java Data Base Connectivity |
| JIT | Just In Time |
| JMS | Java Messaging Service |
| JSP | Java Server Page |
| JTS | Java Transaction Services |
| JVM | Java Virtual Machine |
| KDO | Key Data Operations or Key Data Operator |
| KIDZ | Kidz Joint Powers Authority (one of six Consortia Systems) |
| L2TP | Layer 2 Tunneling Protocol |
| LAN | Local Area Network |
| LCSA | Local Child Support Agency |
| LDAP | Lightweight Directory Access Protocol |
| LDDR | Logical Database Design Review |
| LDM | Logical Database Model |
| LMS | Learning Management System |
| LPARS | Logical Partitions |
| MES | Miscellaneous Equipment Specifications |
| MOF | Metadata Object Facility |

| Acronym | Translation |
|---|---|
| MPLS | Multi Protocol Label Switching |
| NAT | Network Address Translation |
| NCP | Non-Custodial Parent |
| NDM | Network Deployment Methodology |
| NICE | Non-IV-D Information Collection and Evaluation |
| NPCA | Network Problem and Change Application |
| NSF | Non-Sufficient Funds |
| O/S | Operating System |
| OCSE | Office of Child Support Enforcement |
| OLAP | On-Line Analytical Processing |
| OMG | Object Management Group |
| OO | Object Oriented |
| ORAR | Operational Readiness Assessment and Review |
| ORB | Object Request Broker |
| OS | Operating System |
| PBP | Performance Based Procurement |
| PCPMM | Port Checking and Pattern Matching Monitor |
| PDF | Portable Document Format |
| PDM | Physical Data Model |
| PMA | Project Management Approach |
| PMBoK | Project Management Body of Knowledge |
| PMI | Project Management Institute |
| PMO | Project Management Office |
| PMP | Project Management Plan (CDL PM 001) |
| PMR | Project Management Review |
| POP | Paternity Opportunity Program |
| PRWORA | Personal Responsibility and Work Opportunity Reconciliation Act |
| QA | Quality Assurance |
| RA | Robustness Analysis |
| RACI | Responsible, Approve, Consult, and Inform |
| RAID | Redundant Array of Independent Disks |
| RM | Requirements Manager |
| RUP | Rational Unified Process |
| SAN | Storage Area Network |
| SCM | Software Configuration Manager |
| SCP | Solicitation for Conceptual Proposals |
| SCR | State Case Registry |
| SDC | Service Delivery Center |
| SDD | Software Design Description |
| SDR | System Design Review |
| SDU | State Disbursement Unit |
| SEI | Software Engineering Institute |
| SITD | System Integration Test Description |
| SITRR | System Integration Test Readiness Review |
| SLA | Service Level Agreement |
| SLO | Service Level Objective |

| Acronym | Translation |
|---|---|
| SLMS | State Licensing Match System |
| SME | Subject Matter Expert |
| SNMP | Simple Network Management Protocol |
| SONET | Synchronous Optical NETwork |
| SOW | Statement of Work |
| SQL | Structured Query Language |
| SQTD | Software Qualification Test Description |
| SRM | Server Resources Management |
| SRR | System Requirements Review |
| SRS | Software Requirements Specification |
| SSDD | System/Subsystem Design Description |
| SSL | Secure Sockets Layer |
| SSS | System Subsystem Specification |
| STAR/KIDS | Support Through Automated Resources Keeping Integrated Data on System (one of six Consortia Systems) |
| STVRR | System Test Verification Readiness Review |
| SWDR | Software Design Review |
| SWRR | Software Requirements Review |
| TCO | Total Cost of Ownership |
| TM | Test Manager |
| TMA | Technical Management Approach |
| TR | Technical Review |
| TRAP | Technical Review Acceptance Process |
| TSM | Tivoli Storage Manager |
| UAP | Unreimbursed Assistance Pool |
| UC | Use Case |
| UML | Unified Modeling Language |
| UPM | Unified Process Model |
| VAJ | VisualAge for Java |
| VLAN | Virtual Local Area Network |
| VPN | Virtual Private Network |
| W3C | World Wide Web Consortium |
| WAN | Wide Area Network |
| WBS | Work Breakdown Structure |
| WWPMM | Worldwide Project Management Method |
| XME | XML Metadata Exchange |
| XML | Extensible Markup Language |
| XSL | Extensible Stylesheet Language |

**Table 2 - Glossary**

| Term | Meaning |
|---|---|
| Action Item | Any unanticipated work that is assigned to a team member and tracked. |
| Actor | In a technical context, actor is an abstraction for entities outside a system or sybsystem that interact directly with the system or subsystem. An actor participates in a use case or coherent set of use cases to accomplish an overall purpose. See also *use case*. |
| Adult Learning Principles | A set of learning principals that include: accommodation of a variety of learning styles, scenario-based learning, consistent training regardless of delivery method, access to updated information, and reduced work disruption. |
| alliance | Refers to the corporate entities teamed to develop and implement the CCSAS CSE System. The team is made up of Accenture, AMS, and IBM (lead organization). See also "Business Partner". |
| Asset Management (AM) | The systems, processes, and procedures IBM uses to manage hardware and software assets as they pass through a life cycle beginning with acquisition and ending in disposal. |
| Atomicity, Consistency, Isolation, Durability (ACID) | An acronym and mnemonic for remembering the four primary attributes to be exhibited by a transaction. |
| Attribute | When used in a technical context, a single item of data contained in a class. This is much the same meaning as a database attribute. |
| Baseline | When used in a technical context, a configuration item(s) that has been formally reviewed and agreed to by responsible parties, that thereafter can only be changed through Change Request Management. |
| Behavior of an Object | In a technical context, a collection of actions, possibly with a set of constraints on when they may occur. A behavior may include internal actions. The actions that actually take place may be restricted by the environment in which the object is placed. See also *operation*. |
| Best of Breed | CSE Version 2 |
| Boundary Object | A logical representation of an interface of the system used during Robustness Analysis. |
| Business Object | For CSE, a Business Object is a specific type of component that represents an entity in the system. Within CSE, a Case, a Participant, and a Payment are all examples of Business Objects. Business Objects occupy a defined position in the application architecture, and provide capabilities to retrieve, manipulate and persist data. At the design level, a Business Object represents the data that is persisted in the database, and operations on that data. At the implementation level, a Business Object is usually implemented as a J2EE Entity EJB, or, for fine-grained objects, they may be implemented as a simple Java class. |
| CCSAS Business Model | The CCSAS Business Model defines the operational and business processes to be implemented with the CSE Version 2. |

| Term | Meaning |
|---|---|
| Class | When used in a technical context, a *class* is the descriptor for a set of objects with similar structure, behavior, and relationships. |
| Class Diagram | A UML diagram representing the static structure of a model, in particular, the things that exist, their internal structure, their relationships to other things. |
| Collaboration Diagram | A UML diagram that represents interactions organized around roles explicitly indicating the relationships among roles. |
| Common Object Request Broker Architecture (CORBA) | An Object Management Group (OMG) intended for use by software designers who want to produce applications that comply with OMG standards for the Object Request Broker (ORB). |
| Computer Based Training (CBT) | Self-paced training that uses a computer as a means of instructional delivery. |
| Configuration Item | A document or an aggregation of equipment, software, or both that is designated for configuration management and treated as a single entity in the configuration management process. |
| Consistent | When used in a technical context, the term Consistent is used to describe (1) the condition of the data in the database following a restore, where the data is restored to the exact condition that existed at some previous point in time when the data was in a consistent state and representative of committed business transactions; (2) the state of being uniform, standard and free from contradiction among the Specifications or the CSE System and its components. |
| Decision Makers | As used in the TMA, selected State staff responsible for technical content decisions. |
| Decomposition | A process whereby a higher-level description is broken down into lower level detail. |
| Dependency Chart | An overview of the critical path that highlights the cross-project dependencies and their sequence. |
| Deploy | To put into use by end users any hardware or software in accordance with a plan or approach. |
| Design Pattern | A written document that describes a general solution to a design problem that recurs repeatedly. A formal approach is used to describe a design problem, its proposed solution, and any other factors that might affect the problem or solution. |
| Dynamic Model | A part of the UML model which represents the dynamic behavior of the system. The dynamic model is primarily represented using UML Sequence Diagrams, which shows interactions between classes via the operations defined by each class. It is so called because it represents the dynamic, or run-time behavior of the system. |
| E-Child Support Self-Service | A web-based interface that allows child support participants and other parties to perform self-service functions. |

| Term | Meaning |
|---|---|
| e-learning | The computer-based training modules delivered electronically via an internet or intranet. E-learning modules are developed by the Business Partner for the CSE Version 2. |
| End User | See Users. |
| Enterprise Application Integration (eAI) | A framework for integrating end-to-end business processes and data (information) across disparate applications -- both inside and outside the enterprise. |
| ® Enterprise Java Bean (EJB) | A standards-based approach to designing and implementing server-side Java functionality. The term "EJB" is used both for the standard's specification, and the bean itself, which is a special type of Java class that adheres to the standard. In fact, an EJB exists as a group of Java classes that collaborate to implement the EJB's functionality. There are two main types of EJB: Session Beans and Entity Beans. |
| Entity Bean | An EJB that contains application data and its associated business logic. It is responsible for accessing and saving (persisting) the bean's data from and to the database (or other persistent store), and for performing data related logic such as validation. |
| Entity Object | A UML object that may participate in many different use case realizations and usually outlives any single interaction. |
| Entry Criteria | Criteria that must be satisfied before an event or activity, such as a Technical Review, can take place. |
| Exit Criteria | Criteria that must be satisfied before an event or activity, such as a Technical Review, can be considered complete. |
| External Entity | Agencies, financial institutions, employers, etc. outside the Department of Child Support Services (DCSS), and the CCSAS Project. |
| Family Support Act of 1988 (FSA 88) | The Federal Law which mandates the implementation of automated Child Support Enforcement systems. |
| Graphical User Interface (GUI) | A graphics-based user interface that incorporates icons, pull-down menus and a mouse. |
| Incident | Questions encountered and reported by CSE System users who call the Help Desk for assistance. |
| Incident Management | The process by which incidents are tracked through their lifecycle to closure. |
| Instructional Systems Design (ISD) | A design methodology for analysis, design, development, implementation, evaluation, and improvement of training. |
| Issue | A significant problem or question that requires a decision or agreement, and if not resolved will have an adverse impact on the project. |

| Term | Meaning |
|---|---|
| Issue Management | The process by which project issues are managed |
| Learning Management System (LMS) | Software for managing and reporting on user training courses, student accounts, and student performance. |
| Local Area Network (LAN) | A group of computers and associated devices that share a common communications line and typically share the resources of a single processor or server within a small geographic area (for example, within an office building). |
| Method | In a technical context, a procedure defined within a class for purposes of processing. |
| Migration | The process of moving software configuration items from one system environment to another (e.g. From Production Simulation to Production). |
| MQSeries | Pertaining to a family of IBM licensed programs that provide message queuing services. |
| Network Deployment Methodology (NDM) | Refers to the processes, procedures, and practices IBM uses to manage large and complex network deployments over wide geographic areas |
| Non IV-D | A child support case not enforced by a child support IV-D office. |
| Object | A model of an entity, characterized by its behavior and its state. An object is distinct from any other object. An object is encapsulated, i.e. any change in its state can only occur as a result of an internal action or as a result of an interaction with its environment. |
| Object Management Group (OMG) | The OMG is an open membership, not-for-profit consortium that produces and maintains computer industry specifications for interoperable enterprise applications. |
| Object Oriented (OO) | Of or pertaining to a class of programming languages based on the concept of an object. See also object. |
| Operating System | The program that, after being loaded into the computer, managers the other programs in the computer. |
| Operation | In a technical context, a discrete action with a possible constraint on when it may occur. See also behavior of an object. |
| Personal Responsibility Work Opportunity Reconciliation Act of 1996 (PRWORA) | Federal law that provides requirements to assist in locating non-custodial parents and establishing enforcement and collection, and child support. |
| Problem | Application failures, usually identified as a result of testing activities. See also defect. |
| Problem Resolution | The process by which development problems are managed. |

| Term | Meaning |
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| Project Management Reviews (PMR) | A quarterly project review to assess project performance. Assessments of project performance are reflected in the Balanced Score Card. |
| Rational Unified Process (RUP) | A software engineering process developed by Rational Software Corporation. |
| Reference Application | An application used as the basis for standardization. |
| Release | In a technical context, a grouping of software items that is made available to the user community at a point in time. |
| Requirements Management | The controlled process for incorporating approved changes to a requirement Configuration Item. |
| Roadmap | A summary chart that provides a overview of the agreed timeframes and milestones for projects activities over the lifecycle. |
| Rollout | The implementation of CASES or the CSE System to LCSA and DCSS users in accordance with the project schedule. |
| Sequence Diagram | A UML diagram that represents an interaction as a two-dimensional chart. |
| Service Level Objectives (SLO) | An objective measurement of system or staff performance that is mutually agreed to prior to the measurement period. |
| Servlet | A Java program that extends the functionality of a web server, generating dynamic content and interacting with web clients using a request-response paradigm. |
| Session Bean | An enterprise bean that is created by a client and that usually exists only for the duration of a single client-server session. A Session bean performs operations, such as calculations or assessing a database, for the client. While a session bean may be transactional, it is not recoverable should a system crash occur. Session bean objects can be either stateless or they can maintain conversational state across methods and transactions. If a session bean maintains state, then the EJB container manages this state if the object must be removed from memory. However, the session bean object itself must manage its own persistent data. |
| Site | Any physical location where CCSAS CSE Project equipment is deployed. |
| Solicitation for Conceptual Proposal (SCP) | The Alternative Procurement version of a Request for Proposals provided to qualified businesses issued September 10, 2001, asking for proposals to partner with the CCSAS Project to design, develop, convert, test, implement, and maintain a solution to the existing problem. |
| Stakeholders | Individuals and organizations that are involved in or may be affected by CCSAS Project activities. |

| Term | Meaning |
|---|---|
| Statewide Services | The central services and functions that will be provided and implemented as part of CSE Version 1. |
| Static Model | A model which emphasizes the structure of objects in a system, including their classes, interfaces, attributes and relations as appropriate. |
| Storage Area Network (SAN) | A high-speed special-purpose network (or sub-network) that interconnects different kinds of data storage devices with associated data servers on behalf of a larger network of users. |
| Superusers | Superusers are designated State staff who serve as a local point of contact for users' questions and problems. |
| Total Cost of Ownership (TCO) | A type of calculation designed to help consumers and enterprise managers assess both the direct and indirect costs and benefits related to the purchase of any information technology component |
| UML Dynamic Model | See dynamic model. |
| Unified Modeling Language (UML) | A standard for modeling the behavior and design of (usually) object oriented applications. |
| Use Case | A UML specification of sequences of actions, including variant sequences and error sequences, that a system, subsystem or class can perform by interacting with outside actors. See also actor. |
| Use Case Diagram | A UML diagram that represents the relationships among actors and use cases within a system. See also actor, use case. |
| Use Case Model | A UML model that describes the functional requirements of a system or other classifier in terms of use cases. See also actor, use case. |
| Users | For the purpose of this Contract, Users are defined as the 10,000 staff defined in the SCP at the LCSAs and DCSS. |
| Wide Area Network (WAN) | A geographically dispersed telecommunications network. The term distinguishes a broader telecommunication structure from a Local Area Network (LAN). |
| Work item | The piece of work defined in the WBS and assigned to an individual or group with which duration and effort are associated. |
| Work package | A group of work items assigned to a single person or small group to be done over a period of time. |