Section 4 **Bidder's Products, Methodology, and Approach to the Project**	4.1 FACTS II Requirements Summary	4.11 Interfaces
	4.2 Functional Requirements	4.12 System Development
	4.3 Technical Requirements	4.13 System Testing
	4.4 Customer Relations Management Tools	4.14 System Training
	4.5 Project Initiation and Management	4.15 Conversion
	4.6 System Hardware	4.16 System Implementation
	4.7 System Planning and Analysis	4.17 Post Implementation Support
	4.8 Requirements Verification	4.18 Support Federal Review
	4.9 System Design	4.19 Security
	4.10 Reports	DE_SACWIS-002c_4

4.3 Technical Requirements

RFP reference: 6.3 Technical Requirements, Page 40

The Deloitte team brings a wealth of experience and assets to bear from 16 different jurisdictions, and from the State of Delaware itself. The IT best practices that we employ on every SACWIS have been shown to work and are based on CMMI processes.

To deliver a solution that meets the integrated children services requirements within an optimal time frame we propose the use of our Web-based DC FACES.NET solution as the functional and technical foundation for Delaware FACTS II.

Its Web-based architecture is built to automate the business of child welfare and extend other functionalities such as Youth Rehabilitative Services, Adult Protective Services.

Deloitte understands DSCYF's strategic goals and vision to deliver efficient and effective statewide technology solutions. Our application is accessible over the web and its architecture is aligned with your vision to meet business needs in the form of a fully integrated Statewide Web-based Delaware FACTS II solution.

The architecture that we have chosen for the DE FACTS II project provides benefits now and for the

section HIGHLIGHTS

Our proposed Delaware FACTSII solution is web-based and n-tiered:

- Aligns with your enterprise standards and vision
- Utilizes current technology, including .NET and Oracle
- Based on our Production Proven District of Columbia FACES.NET solution
- Easily scales to DSCYF requirements - supports 1,500 users in DC and 2,300 in the Alabama
- Developed using best practices and CMMI based processes defined in our Playbook methodology
- Highly stable – it has been available 24/7/365 ever since it went live in DC in February 2006

future - designed and developed with the following guiding principles in mind:

Design Principle	Deloitte Approach Benefits DSCYF
Maximize Operational Ease of Use	The solution leverages State of Delaware's current infrastructure investments, assets and people – minimizing the need to research and learn new technologies and products. This approach will help DSCYF easily maintain and operate the system once the implementation is complete.
Ensure Scalability and Reliability	The solution is designed to support clustered deployment such that the applications can be scaled to meet changing usage patterns and volumes in the future.
	This is accomplished by strictly managing our approach to user state management which allows each user's session to switch from one application server to another application server on each successive request response cycle round trip. By virtue of this approach, the system eliminates the potential for a single point of failure for the application and supports scalability and reliability.
Provide Seamless Extensibility	The solution can be extended to support integration and data sharing with other applications to provide an integrated, seamless view of human services that have been provided by DSCYF across all services. Our existing installations have been extended to include Child Care, Youth Rehabilitative Services, and Adult Protection Services functionality. Although many of the same clients receive services from different human service programs, they should be treated in a unified, holistic fashion. Our solution provides for this integrated capability; the concept of service integration has always been a cornerstone of our system architecture
Minimize Maintenance and Operational Costs	The solution has been developed using Deloitte's Playbook methodology that provides a set of standards and IT best practices which have evolved from our past implementation experiences. Our previous SACWIS implementations have been successfully assessed at CMMi. Over the course of the project we anticipate that representatives within your organization will become familiar with Playbook, allowing them to better support FACTS II when the time comes to transition into system maintenance and support.
	The solution's architectural approach leverages mature technologies, supports key industry standard platforms, such as .NET, rather than proprietary approaches, and embrace open standards such as XML. Once developers understand the technical underpinnings of one functional area, they will understand the component structure and component dependencies of the entire online system
	Our inclusion of loosely coupled third party components for items such as Search increases the amount of functionality that can be modified and maintained without the cost of development staff.

Design Principle	Deloitte Approach Benefits DSCYF
Maximize Flexibility	The solution's architecture is flexible by virtue of our use of a loosely couple, object-oriented design approach. New functionality can be added without adversely affecting the function of existing parts of the application. Existing functionality can be enhanced or replaced with new components without needing to reprogram major pieces of the application. This is extremely important in a child welfare environment where practice evolution and legislative change are facts of life.
	Legislation and social trends lead to changes in policies and programs, funding sources, and service types. These types of changes can be reflected in the dynamic, table-driven SACWIS system.

Table 4.3-1. Key Design Principles and benefits to DSCYF.

N-Tier Application Architecture

RFP reference: 6.3 Technical Requirements, Page 40

DSCYF requires that Delaware FACTS II be web-browser based. Bidders must identify how their use of IT Best Practices will provide for a fully functional, scalable, and maintainable solution in a timely fashion.

DSCYF envisions that Delaware FACTS II will have an n-tiered application architecture. Bidders must identify how their solution will be constructed across the following layers:

- Presentation Layer;
- Business Logic Layer; and
- Data Layer.

In addition, Bidders must identify the Middleware components that integrate these layers, and identify how these layers and their respective software components are implemented on hardware platforms.

Our solution is built upon a n-tier architecture, with explicit separation of presentation content, business logic, and data objects. Each layer is independent and has defined interfaces for communication.

This architecture facilitates changes in the presentation, business logic, or database management without affecting the other tiers. The architecture therefore provides a solid foundation for DSCYF's vision of a Web-based, n-tiered integrated children services system.

DC FACES.NET is built using Microsoft's Visual Studio .NET toolset which enforces n-tier design principles. The following are key characteristics of our architecture:

Ever since it went live in February 2006, except for the scheduled maintenance, DC FACES.NET has provided 24/7/365 accessibility to all its 1500 users

- Isolates the presentation layer from other layers. A developer can therefore stay focused on designing an easy to use screen without worrying about the underlying data model or the business rules for fetching that data from the database.

- Encapsulates business rules into components that are easy to create, use, and re-use. This makes development and ongoing maintenance easier.

- Centralizes the data access method into a common set of components. This results in less repeated code. Every screen that needs to obtain data in a particular table structure always uses the same component. This helps with maintenance, since changes to any data access routine need be made only once in the core component.

- Provides the flexibility to separate these tiers onto different physical machines at any time. This helps with scalability and reliability.

- Allows business rules and workflows to be developed and encapsulated separately from the application – resulting in key parts of the FACTS II application that can be maintained and enhanced without the need for developer involvement.

Developing a **comprehensive system** requires significant start-up time to build a solid foundation on which the eventual business solution is based. We have invested significant time and energy to evolve our DC FACES.NET solution into a comprehensive, n-tiered, object-oriented .NET system architecture, providing an application foundation uniquely suited for integrated children services based systems – so that we do not have to do this from scratch for Delaware. The following diagram depicts how our solution is organized and how the functional business layer is built on top of the technology layer.
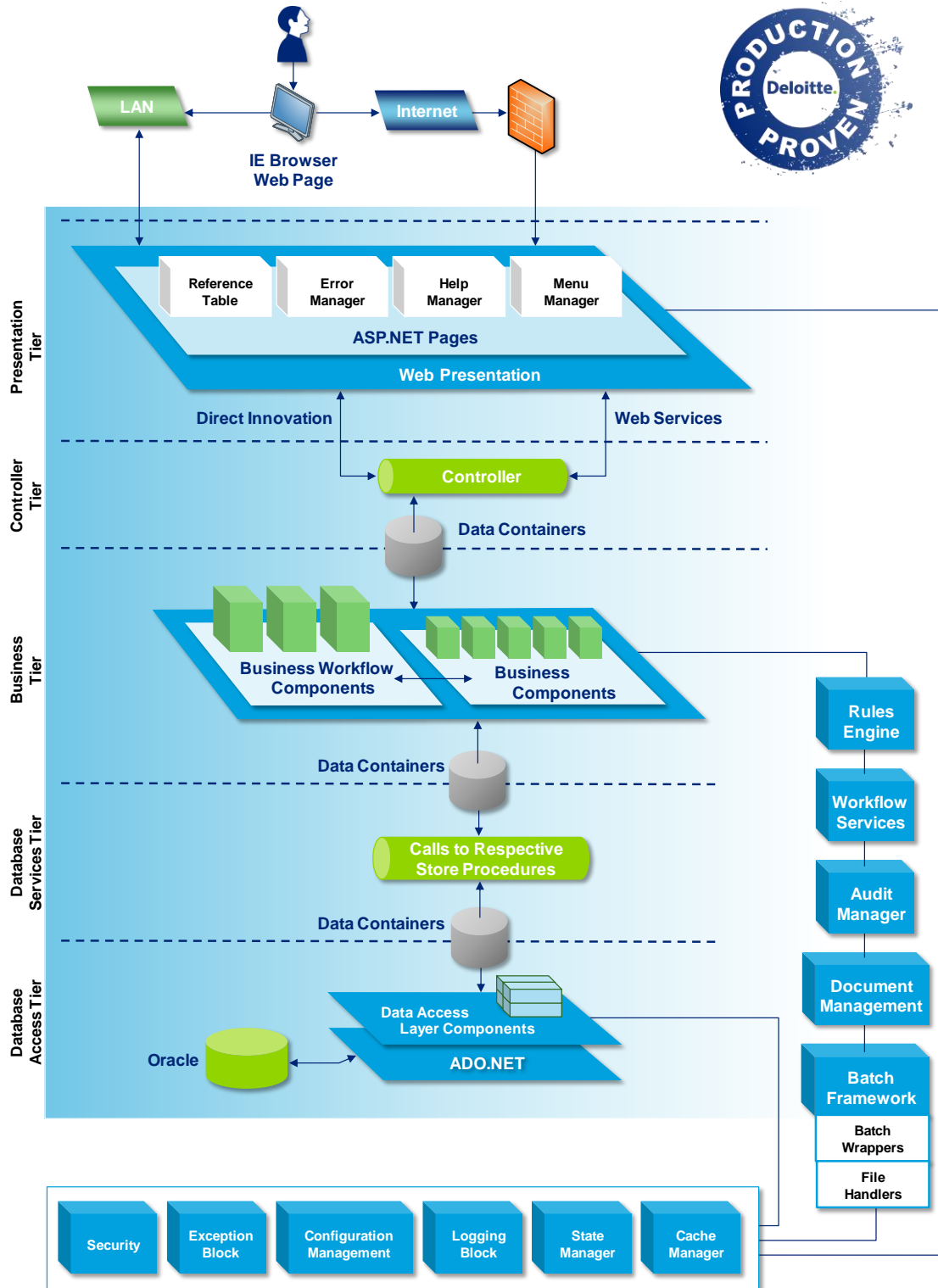
**Figure 4.3-1. Expanded N-Tier Architecture.**
DE FACTS II architecture enables access through a web browser. Each tier is isolated and hence easily modifiable. A set of shared components provide robust services such as reference data management, rules externalization, security etc.

The figure above illustrates the logical architecture of DC FACES.NET. The following sections describe each of the layers within this architecture in greater detail.

Presentation Layer

Our presentation layer is developed using ASP.NET Web Forms. Web Forms intentionally separate the functional aspects of a dynamic web page from the presentation elements. The functional elements, called code-behind pages, are designated as the domain of the application developer, while the presentation pieces (graphics, fonts etc.) are primarily the domain of our graphic artists. This decoupling within the presentation layer follows industry best practices.

The use of Web Forms also supports the concept of pervasive computing, allowing access to the application components on a variety of devices that include desktop computers, laptops, tablet PCs, PDA and a variety of .NET compatible smart devices.
The figure below presents the content of the Web presentation tier.


DE_SACWIS-127a_7
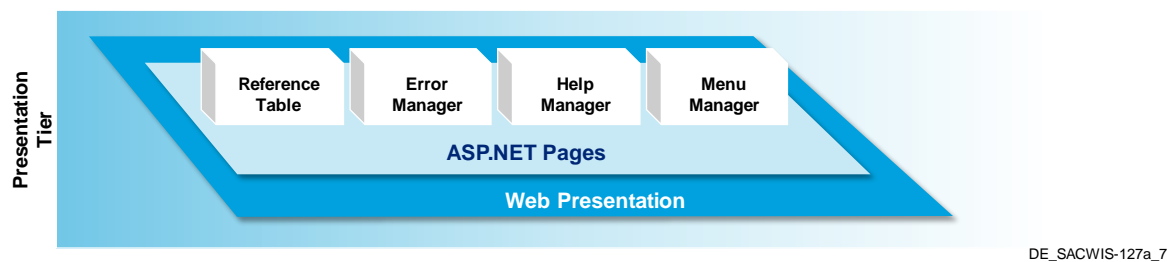
Figure 4.3-2. Components of Presentation Tier
ASPX page is rendered as HTML on user's browser and is supported by user controls, graphics and stylesheets that provide rich GUI.

Controller

To address the needs of a truly extensible architecture, the presentation layer in the architecture is extended with the inclusion of the Controller layer.

As ASP.NET handles the Graphical User Interface ("GUI") and the code-behind executes any complex presentation logic, the Controller provides abstraction between these objects and the application tier driving business logic execution.


DE_SACWIS-127b_7
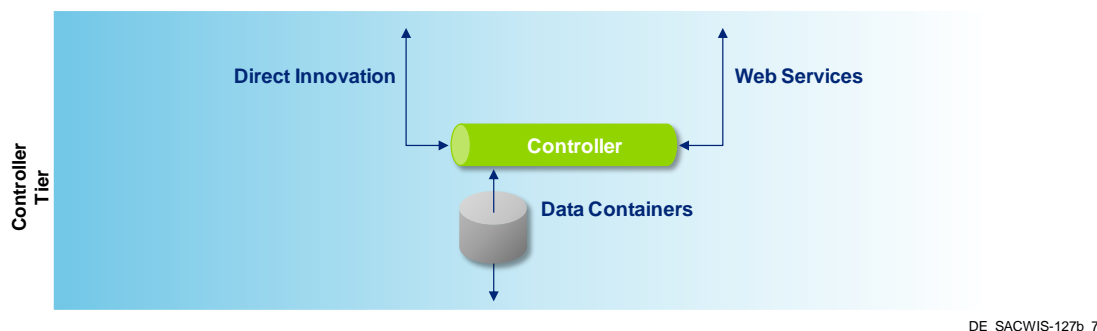
Figure 4.3-3. Extensible Controller.

The following are some examples of when a Controller layer is advantageous:

- As an additional security authorization component in order to verify user access to business objects during execution or to the presentation objects after post back

- As a dynamic workflow navigation component for several web-pages where the workflow path is determined during runtime based on complex business rules, especially when that workflow may persist between user sessions.

Business Logic Layer

The Business layer encapsulates the core functionality of DC FACES.NET. Based on Microsoft best practices, and object oriented principles, the solution's business layer has been architected to provide an extensible and robust solution for all application needs.

DE_SACWIS-127c_7
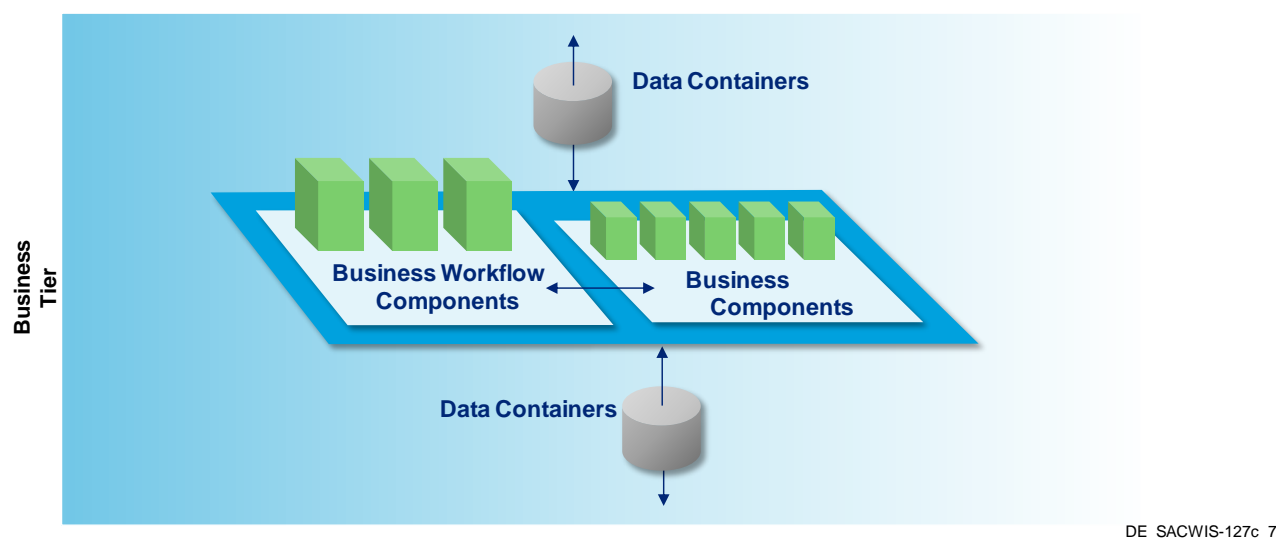
Figure 4.3-4. Business Logic Layer.
While Business Components are grouped according to the specific business modules they support, Business Workflow components dictate the order in which business components are executed.

Functionality is divided between two types of objects - workflow components that can each be mapped to a single business functional requirement and business components which handle the breakdown of this functionality into smaller, manageable tasks.

- **Business Workflow Component (BWC).** The business workflow component creates a single process to encompass complex business functionality and manages the execution of each part of the task through multiple business components. Thus, a single BWC is used for the execution of the high-level task, while the Create, Read, Update, and Delete (CRUD) behaviors of that task are executed by business components.

- **Business Component (BC).** The business component is used to perform a single work item and directly deal with the data layer. Code reuse is promoted by allowing each BC

to be used by multiple BWC's. These components support the core business processing of our application.

Database (DB) Services

DC FACES.NET interaction with the database is addressed through Data Access Layer. However, in order to provide an additional layer of abstraction between the physical implementation of the database and the application, the DB Services Layer, illustrated in the figure below.

DE_SACWIS-127d_7
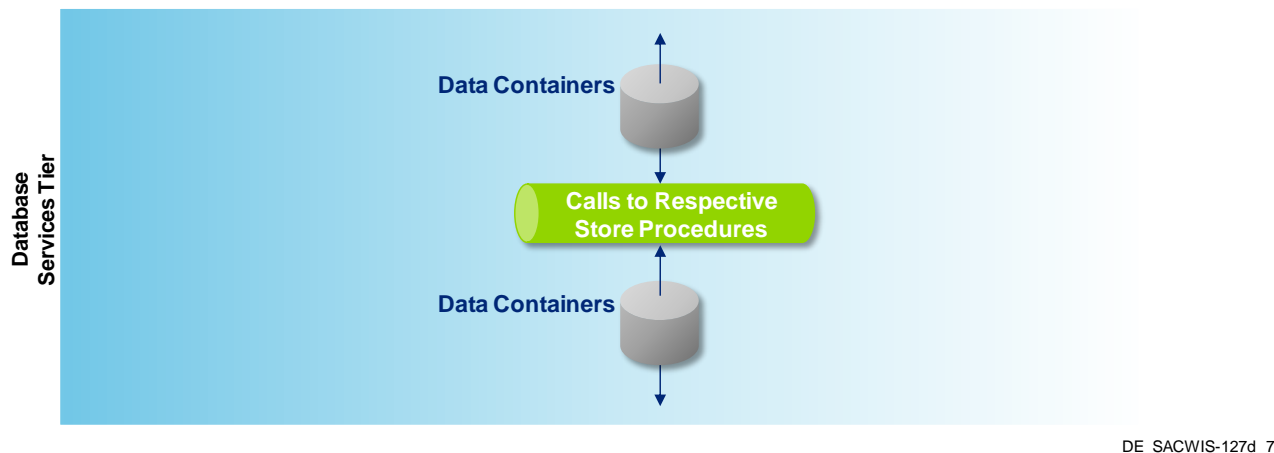
Figure 4.3-5. Database Services.
Data Tier consists of precompiled .NET API to invoke PL/SQL stored procedures. The API provides services such as converting .NET data types into SQL data types and vice versa. It even provides cacheable XML datasets for faster execution.

The DB Services Layer allows the flexibility to upgrade the database version while insulating the application code from needing any change.

Data Access Tier

This tier encapsulates the Data Access code and provides a highly optimized mechanism for communication with the database. By encapsulating the database interactions in this way, they can be reused across the application, yielding ease of maintenance and ease of optimization benefits.

This is in line with our principle of providing a decoupled, yet robust, scalable and maintainable architecture.
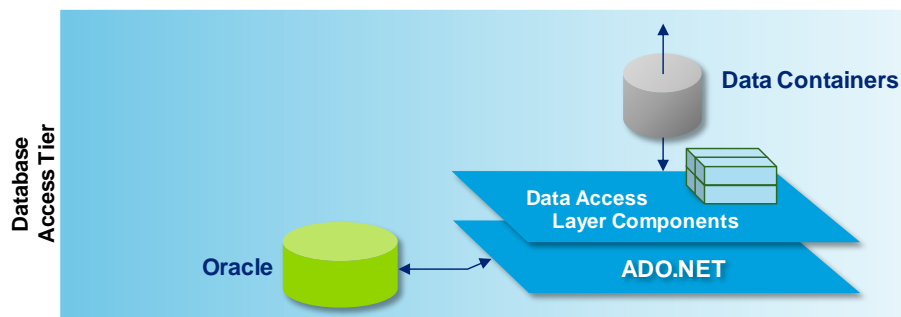
DE_SACWIS-127e_7

Figure 4.3-6. Title. Data Access Tier.
Data Access Tier utilizes Microsoft Enterprise Library framework through ADO.NET which uses XML for interoperability and provides easy programmability for interfacing with different types of databases and systems.

The Data Access Tier is also architected to be database agnostic for multiple databases. Since the execution code for interaction with all data stores is contained within the Data Access Tier, the rest of the application is coded without coupling to a specific database. The Data Access Tier can thus be specified to point to any of the major database packages, and proper use of object oriented design helps to see that minimal overhead is incurred for this functionality. In addition, we employ optimization strategies such as parameter caching to provide a high-level of performance.

Infrastructure Support Reusable Functions

In addition to our primary application architecture, DC FACES.NET includes a set of standardized application infrastructure components that support it operations. The following sections describe these standard components.

Reference Tables

Our solution framework includes a Reference Table component that handles the complete array of reference table needs for the application. Reference table values may be managed and updated through a screen in DC FACES.NET – eliminating the need for developer involvement.

Error Manager

Our Error Manager component provides DC FACES.NET with a simple mechanism for delivering and managing error messages. By storing the text of the message, indexed by an error key, the Error Manager offers a DC FACES.NET screen to allow changes to error messages to be made without the need for a developer.

The Error Manager also simplifies the task of developing screens through the use of a standard API that not only retrieves the error message text, but also defines the way in which the error is to be displayed and user actions that can take place to address it – 'OK' button, 'Cancel' button, 'Yes' and 'No' buttons etc.

At present, the solution manages approximately 900 error messages using the error manager.

Help Manager

The Help Manager component of our solution provides a consistent, streamlined and centralized mechanism for delivering and managing online and context sensitive help text within the application.

The following functionality is included:

- Help content can be specified at the screen level and field level
- Help content can be associated with a business context

The Help Manager is used in conjunction with Adobe RoboHelp to provide the "Help" function and to manage content for online help in our solution.

Navigation Manager

The Navigation Manager is responsible for rendering menus and breadcrumbs that provide intuitive navigation functionality for the user. Menus are enabled and disabled depending upon the business process and user's security profile.

Rules Engine

When business rules are mixed with application or data logic, maintenance and configuration challenges can arise. A rules engine provides an additional layer of abstraction by removing rules from the application code and manages those rules outside of the core application.

Integrated Children Services applications are characterized by a number of challenges associated with the management of rules – complex business rules, frequent changes in policies, high cost, time and effort required to implement changes. Our solution addresses these challenges by using a comprehensive in-built decision table based business rules engine. Few of the key functionalities that are supported through decision table based rules engine are Child Protective Services Outcome Decisions, Intake Priority Response Decisions, Structured Decision Making Assessments and Eligibility. Our solution's Rules Engine, provides substantial benefits, including:

- Separation of business rules from application logic
- Efficient change management and decreased deployment time
- Lower development costs
- Ability to change and redeploy business rules without changing application code
- Enhances control over business rules by policy staff
- User-friendly interface for rules management

- Easy integration into client architecture

- Reusable business rules

- Supports real-time and batch rule processing

Workflow Services

Our solution utilizes Microsoft Windows Workflow Foundation as its tool to implement workflow management.

Windows Workflow Foundation offers comprehensive workflow automation along with integration to standard communication tools and connectivity with Oracle database for easy process designing. At present, the solution supports more than 50 workflows, each of which can be modified and maintained with the need for developer involvement.

Audit Manager

The Audit Manager provides a customizable framework for logging user activities and audit trail. All updated records are time stamped and identify the user who updated the record. When users access information by navigating the application screens, the Audit Manager also captures data such as name of the screen accessed, date and time of access, User ID of the person accessing the screen and list of entities whose data is accessed – Case, Client, Provider etc

Document Management

Our solution provides document management through the use of our File Cabinet functionality using Oracle Text - a component of the Oracle database. This functionality enables storage and organization of diverse data types including: MS Word documents, PDF documents and images.

Our solution also integrates Atalasoft Document Imaging. This COTS product enables uploading scanned documents directly into the File Cabinet. Atalasoft also provides enhanced document manipulation functionality including scaling, cropping and redaction.

Batch Framework

The DC FACES.NET Batch Framework component provides us with a standard mechanism for creating high volume; background functionality that runs in batch mode. All batch jobs are run as PL/SQL stored procedures.

The Batch Framework includes error handling and logging, gating, file handling and allowing for the multi-threading of batch jobs.

Caching and State Management Block

Our solution framework Caching Block component is an extension to the .NET framework for advanced caching. This block makes it easier to cache the data from all the application layers in a consistent manner. By incorporating the Caching Application Block into DC

FACES.NET, we increase the application's performance as well as improve its scalability. Features of the Caching block include:

- Flexible lifetime management and expiration policy management

- Last-recently-used scavenging algorithm support

- Easier administration of application caching behavior and performance

- Integrates with Enterprise Instrumentation framework and Logging application Block

- Some of the most frequently used values that are cached to provide faster access are as follows:
  - Reference Table values
  - Error Messages
  - Navigation/Menu structure
  - Logged in User Profile

Logging Block

Our Logging Block component provides an extensive tracing mechanism to give the development team detailed messages about the execution of the application during runtime. The component allows for the tracking of critical functions during runtime for easy system support and monitoring of system events. The use of this component has significantly reduced application troubleshooting and earlier defect identification in previous SACWIS projects.

Exception Manager

Our Exception Manager component provides the application with a mechanism to track system exceptions. This component reduces the amount of custom error handling and allows for easy debugging.

Security Manager

The Security Manager provides layers of security for a user to pass through before accessing data ensuring authorized access to critical information. A user trying to access FACTS II is first authenticated in active directory using Lightweight Directory Access Protocol (LDAP). Upon authentication, our solution utilizes a robust role based security model to determine what actions the user is authorized to perform, that is, which screens are accessible or not, which screens are updatable or not, etc.

Integration of Layers and Middleware

Our solution employs a modular, scalable, business oriented technical architecture that meets the requirements stated in the RFP. The different tiers of the proposed Delaware FACTS II solution are based on the MVC (Model-View-Controller) design pattern that allows various tiers to communicate seamlessly with each other and yet maintain distinct characteristics.

Communication between layers is achieved through Data Containers. These are lightweight and serializable components that serve as the transport vehicles that move data between all layers of the solution. Data Containers are entity objects that only provide attributes and no methods. For example, a Data Container could consist of attributes such as Client First Name, Middle Name, Last Name, Age and Address. As Data Container traverses between layers, each layer either provides or consumes these attributes values. This ensures that in future if any attributes are to be added or deleted, the signature of individual methods of various layers using this Data Container need not change; only the Data Container class needs to change. Therefore, it is only the link to each data container that is passed between the tiers of an application, without copying and recopying data. This saves resources, time and improves scalability.

The illustration that follows provides an overview of how our solution layers are integrated and how are they implemented on their respective hardware platforms.
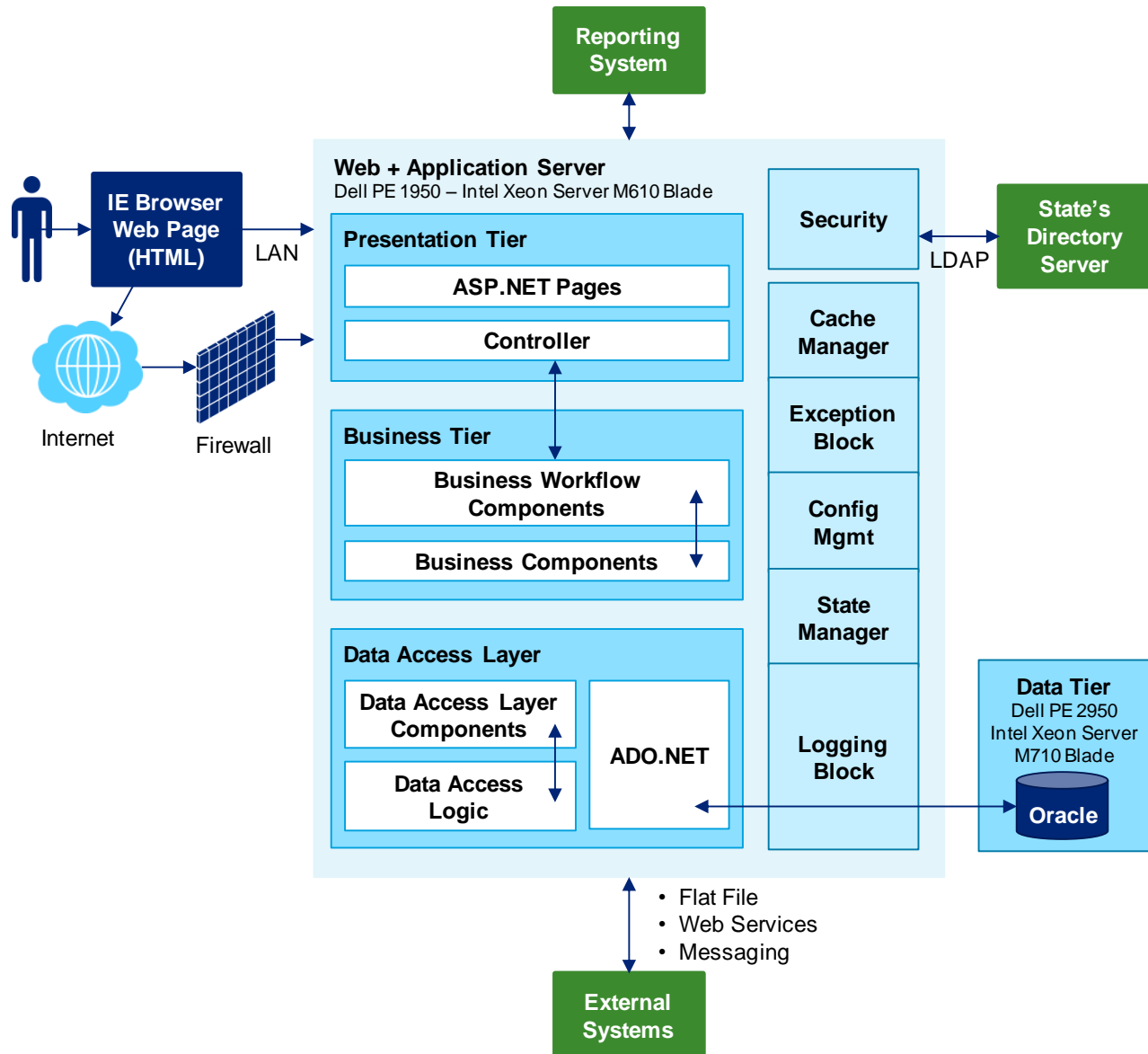
DE_SACWIS-129_3

Figure 4.3-7. Interaction of Different Layers and their Implementation on Different Platforms.
DE FACTS II layers are constructed using standard ASP.NET, C# code that interfaces with Oracle PL/SQL objects. Robust .NET based architecture allows interfacing with external systems using SOA based Web Services.

DC FACES.NET functionality deployed as services can be shared with other applications. Similarly, SOA allows DC FACES.NET to easily plug into services deployed within other agencies, or commercial services offered by external entities. For example, DC FACES.NET integrates a third party GIS and address validation service. The solution can integrate mapping services offered by Microsoft (as has been done in Alabama), Yahoo or Google (as has been proposed for Delaware).

COTS Components

Where possible and practical, the proposed Delaware FACTS II solution will use Commercial- Off-The-Shelf (COTS) components that are fully integrated into a proven best-of-breed solution. The COTS components proposed must be commercially and generally available, offered at established catalog or market prices and must comply with Federal software Ownership regulations, 45 CFR 95.617(c)3. Proposals should identify any COTS products that have been successfully integrated into an implemented solution and should detail the methodologies used for the integration. Proposals should include anticipated methodologies for Delaware FACTS II including and/or interfacing with the State's existing Oracle/PeopleSoft HR and Financial modules. Bidders must identify their approach to upgrades (both standalone and integrated) of the various integrated products that comprise the solution.

DC FACES.NET solution integrates with best of breed third party COTS components. We think of them as technology enablers that provide innovative, specialized and "out-of-the-box" functionalities. It is important to note that some of these components provide functionalities that would be difficult to build grounds up – taking too much of resources to build and maintain while others simply provide best in class specialized functionalities. As a result, DC FACES.NET uses these components where it is beneficial, practical and cost-effective.

Our solution does not use any tools, technologies, frameworks, or automated systems which limit the ability to integrate with other applications or use add-on products. This is made possible because our architectural approach leverages mature technologies, supports key industry standard platforms, such as .NET and Oracle, rather than proprietary tools and embraces open standards such as web services. Our approach to integrating COTS is simple – it is either through web services or through .NET and Oracle based libraries that are provided by COTS.

The table that follows lists the COTS components that we propose to use for the Delaware FACTS II project and also describes our integration methodology so as to provide a seamless user experience.

Wherever applicable, the table also identifies the components we propose to add or upgrade so as to meet specific RFP requirements; as well as to take advantage of the State's existing technology investments.

Have You **HEARD?**

Deloitte's state government practice regularly assesses COTS products using a standard, non-proprietary form. It captures 7 categories of data and support weighted and un-weighted assessments:

- Product Vendor Profile
- Product Technical Details
- Product Functional Details
- Product Cost
- Product Install Base
- Product Partners
- Product Support
- Product Documentation

We continuously update our preferred portfolio of COTS products for key pieces of SACWIS functionality based on the outcomes of these studies.

Delaware FACTS II Technology Enablers – COTS					
Function	**Description**	**Tool**	**Addition or Upgrade for Delaware**	**Advantage**	**Integration Methodology**
Spell Checking	Provides spell checking in case notes and narratives	Keyoti Rapid Spell	No. This tool is already used by DC FACES.NET	Improves quality of documentation by providing quick spell check features especially when documenting lengthy text notes and narratives.	**Third Party Library** Keyoti Rapid Spell provides a .Net library (dll) which is referenced by DC FACES.NET solution.
Document Scanning and Imaging	Captures documents for attachment to a case, client or provider	Atalasoft DotImage Document Imaging	No. This tool is already used by DC FACES.NET	Integrates paper forms and documents allowing the complete record to exist in one place and reduce the need for paper case files.	**Third Party Library** AtlaSoft Document Imaging provides a .Net library (dll) which is referenced by DC FACES.NET solution.
GIS – Address Validation and Mapping	Validates addresses and support the mapping of address locations	Google Google Maps	Yes. DC FACES.NET utilizes Citizen Atlas web service which will be replaced by Google MAPS API for DE FACTS II. API is used by invoking methods through JavaScript that allow interfacing with Google MAPS web service.	Helps improve the validity of addresses and provides users with the exact location for investigations or inspections	**Web Service** DC FACES.NET uses Citizen Atlas web service for address validation and GIS functionalities. DC FACES.NET interfaces with the web methods exposed by the web service to provide and consume Address and GIS related data. For Delaware FACTS II, Deloitte proposes Google Maps API. DC FACES.NET architecture is extensible and modular and has in the past allowed Deloitte to change the address validation and GIS web service provider. For example, upon transferring the solution to the State of Alabama, GIS web service provider was changed from Citizen Atlas to Microsoft Mappoint to meet the requirements specific to the State of Alabama.

Delaware FACTS II Technology Enablers – COTS					
Function	**Description**	**Tool**	**Addition or Upgrade for Delaware**	**Advantage**	**Integration Methodology**
Intelligent Search	Support the real-time searching for clients using demographic data	Intelligent Search Technology Ltd. NameSearch	No. This tool is already used by DC FACES.NET	Eliminates the need for users to pour through hundreds of client records to find the right one. This tool uses advanced algorithms to narrow down potential matches using minimal information from the user	**Third Party Library** Intelligent Search provides a library that is installed on the DC FACES.NET database server. DC FACES.NET stored procedures written in PL/SQL use the API methods exposed by this library to perform data matching functionalities.
Information Delivery	Provides the method for static and ad hoc reporting	SAP BusinessObjects	No. This tool is already used by DC FACES.NET	Supports robust static and ad hoc reporting through a web-browser	**Third Party Library** DC FACES.NET utilizes BusinessObjects for developing dynamically generated online reports. DC FACES.NET solution references the business objects library (dll) in order to interface with such reports.
Online, Context Sensitive Help	Provide tool to document and use online help content	ADOBE° RoboHelp	Yes. DE FACTS II will be upgraded to integrate Adobe RoboHelp by referencing RoboHelp library that enables integration of context sensitive help.	Supports creation of help files that could be integrated with online web pages	**Third Party Library** RoboHelp provides a .Net library (dll) which is referenced by Delaware FACTS II solution. The DC FACES.NET solution provides online help on specific client-identified screens within the application but does not use a third-party tool. DC FACES.NET has a modular and extensible architecture which supports integration of RoboHelp as an online, context sensitive help tool

Delaware FACTS II Technology Enablers – COTS					
Function	**Description**	**Tool**	**Addition or Upgrade for Delaware**	**Advantage**	**Integration Methodology**
Content Security	Provides ability to secure content	iText	Yes. DE FACTS II will be upgraded to integrate iText to sign PDF files.	Confirms that the received and sent communication is secured and originates from a valid source	**Third Party Library** iText provides a .Net library (dll) which would be referenced by Delaware FACTS II solution. DC FACES.NET supports multi-format documents such as Office and PDF. iText is a library that enables creation and manipulation of PDF documents such that the users can add their credentials using the digital signatures. At present, iText is being used by Deloitte for California Administrative Offices to meet the client specific requirements.
Scheduling	Provides ability to schedule batch jobs.	ORSYP Dollar Universe	No This tool is already used by DC FACES.NET	Supports planning, execution and status reporting for batch jobs.	**Third Party Tool** **Dollar Universe is an automation tool that utilizes Batch files to execute scheduled programs and interfaces. It only requires configuration changes that enable it to determine which jobs need to be executed and at what time – daily, monthly, quarterly, etc.**

Table 4.3-2. Delaware FACTS II Technology Enablers – COTS.

Apart from integrating COTS products, our solution also uses a service component to interface with and send messages to external applications such as State's existing Oracle/PeopleSoft HR and Financial modules. The message structure is customizable and in the format provided by DSCYF.

Our interface service components use XML that enables exchange of structured data with integrating applications. The XML schemas describe the metadata such as attributes, parent/child relationships, the order & number of child elements, data types and default values for elements. These schemas are extensible and can support multiple data types and are a preferred mechanism for describing and validating data that is being exchanged with external systems. Additionally, DE FACTS II solution also supports data transfer using Flat files and FTP. In essence, our architecture allows DE FACTS II solution to interface with external systems in multiple ways. An example of interoperability is DE FACTS II interfacing with an address validation service by exchanging XML data packets through web services. Such package-oriented data exchange facilitates easy provision and consumption of data between FACTS II and the address validation service thereby providing interoperability. Section 4.11, Interfaces also describes our approach to interfacing with specific systems specified in the RFP.

## Business Rules Engine and Integrated Workflow Capabilities

RFP reference: 6.3 Technical Requirements, Page 40

Bidders are encouraged to submit solutions that are based on a Business Rules Engine, and that also include a modifiable Integrated Workflow capability. Additional features, such as rules and workflows that are end-user configurable, should be identified.

In the absence of a rules engine and workflow engine, business rule must be embedded within the application code. Within the child welfare domain, legislative changes and evolution of clinical best practices necessitate frequent changes to business process and business rules. Without a rules engine/workflow engine this demands the involvement of development staff.

The basis of our configurability in this area is provided by the Windows Workflow Foundation (WWF). WWF combines the capacity of a standard workflow engine with sufficient rules processing capabilities to address the majority of instances within a SACWIS in which rules processing is required.

The WWF Designer presents a non-developer user with a straightforward way to construct, maintain and amend workflows and their associated business rules. The figure below illustrates the WWF Designer in action.
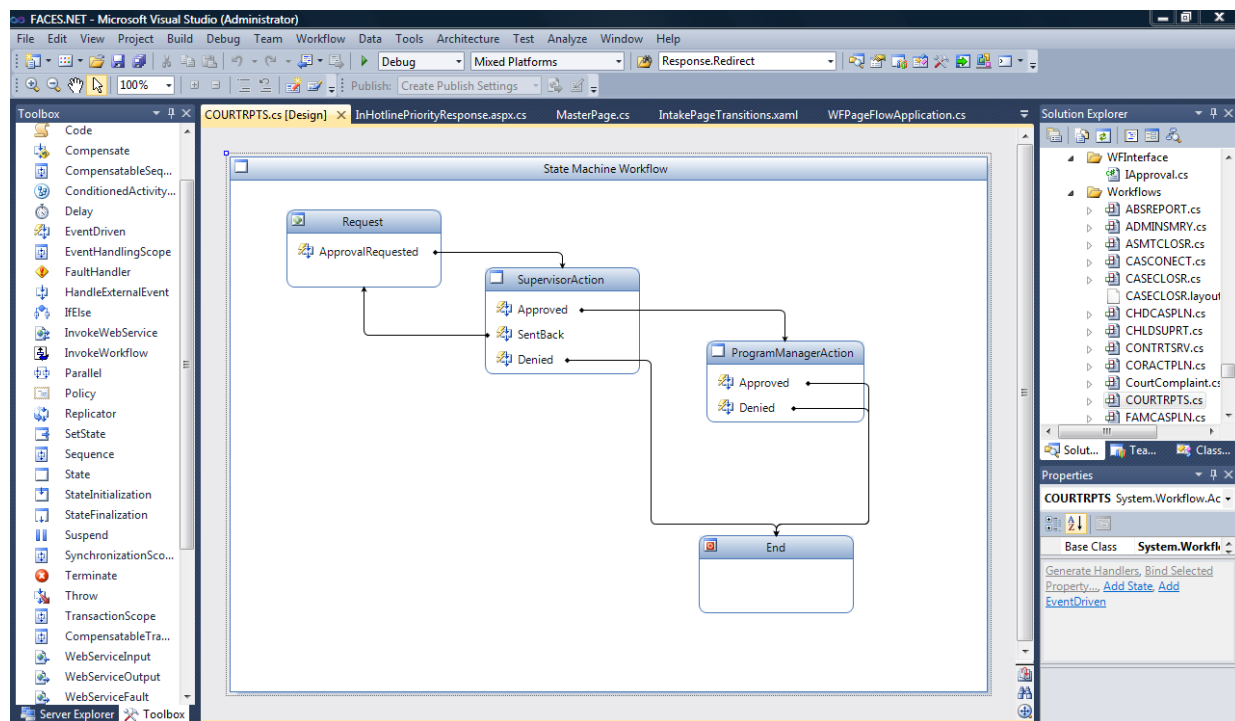
DE_SACWIS-314

Figure 4.3-8. Windows Workflow Foundation Designer.
Windows Workflow designer is integrated with Visual Studio environment and enables drag and drop functionality to define business process workflows which are integrated with Web-based .NET applications such as DE FACTS II.

In this example, we present the WWF Designer during the construction of rules and workflow processes needed to support SACWIS case opening procedures. The specific business rules being crafted here are as follows:

- An investigation worker is mandated to "request" supervisory approval before concluding an investigation – which may result in opening of a new case.

- If the investigation supervisor concurs with the findings of the worker then he is mandated to "request" Program Area manager's approval to open a new case.

- The supervisor can also "deny" the investigation findings which results in case not being opened or

- The supervisor may "send back" the data for further clarifications.

- If the Program Area manager agrees with the decision made by the supervisor, he may "approve" the request to open a new case or "deny" it.

Although WWF can address the majority of instances within a SACWIS where a separate rules engine makes sense, we have identified two instances where something more specialized is required: Assessments and Title IV-E.

In these two areas DC FACES.NET incorporates a table driven rules engine to deliver the required functionality.

The following figure shows Structured Decision Making Assessment screen and Decision Tool screen which use this decision table based rules engine to not only display questions and answers that are presented to the user but also calculates assessment scores by comparing user responses with rules defined in the decision table.

This calculated score helps determine the next activity in the business process, such as, if the score is above "N" then the child is considered to be "at risk" and appropriate next steps are suggested.

Figure 4.3-9. Rules Engine driven Assessments.
Rules Engine utilizes decision tables to help arrive at a decision. Since the rules are externalized in decision tables, it is easy to configure them. The configurable rules also help determine the process flows for example, based on the decision arrived at using Decision Tool; the system recommends screening out the referral or opening of a new case.

Taken together, WWF and our table based rules engine provide the complete spectrum of rules and workflow processing in an easily configurable manner.

Compliance with All of State IT Standards

Bidders must comply with all of the State IT standards. The standards will be provided at the Bidders' conference upon the State's receipt of signed nondisclosure agreements.

A review of the State IT Standards, including standard Operating Systems, Database Management System, Application Programming Languages etc indicates that our proposed application architecture is in compliance with those standards.

Our solution takes full advantage of the State's current Windows and Linux infrastructure, so that you do need to develop support skills in a range of unfamiliar technologies.

We propose to use Oracle 11g on Red Hat Linux box as our production Database Management System and C# as our application programming language – both of which align with State's IT standards.

Transfer Solutions

If transfer solutions are proposed, the State requires that the Bidder identify the components of the solution that can be modified and those that cannot. The Bidder must provide training to the State staff prior to design sessions on the components and features that are not subject to modification, as well as the anticipated scope of changes to the transfer solution as defined in the Bidder's responses to individual requirements. This training is intended to provide sufficient background to the design participants to facilitate productive design sessions and to focus on reaching design solutions rather than learning the transfer functionality.

DC FACES.NET is the proposed transfer solution for Delaware FACTS II. It consists of an n-tiered architecture. DC FACES.NET has been transferred to multiple other jurisdictions (illustrated in the figure below).
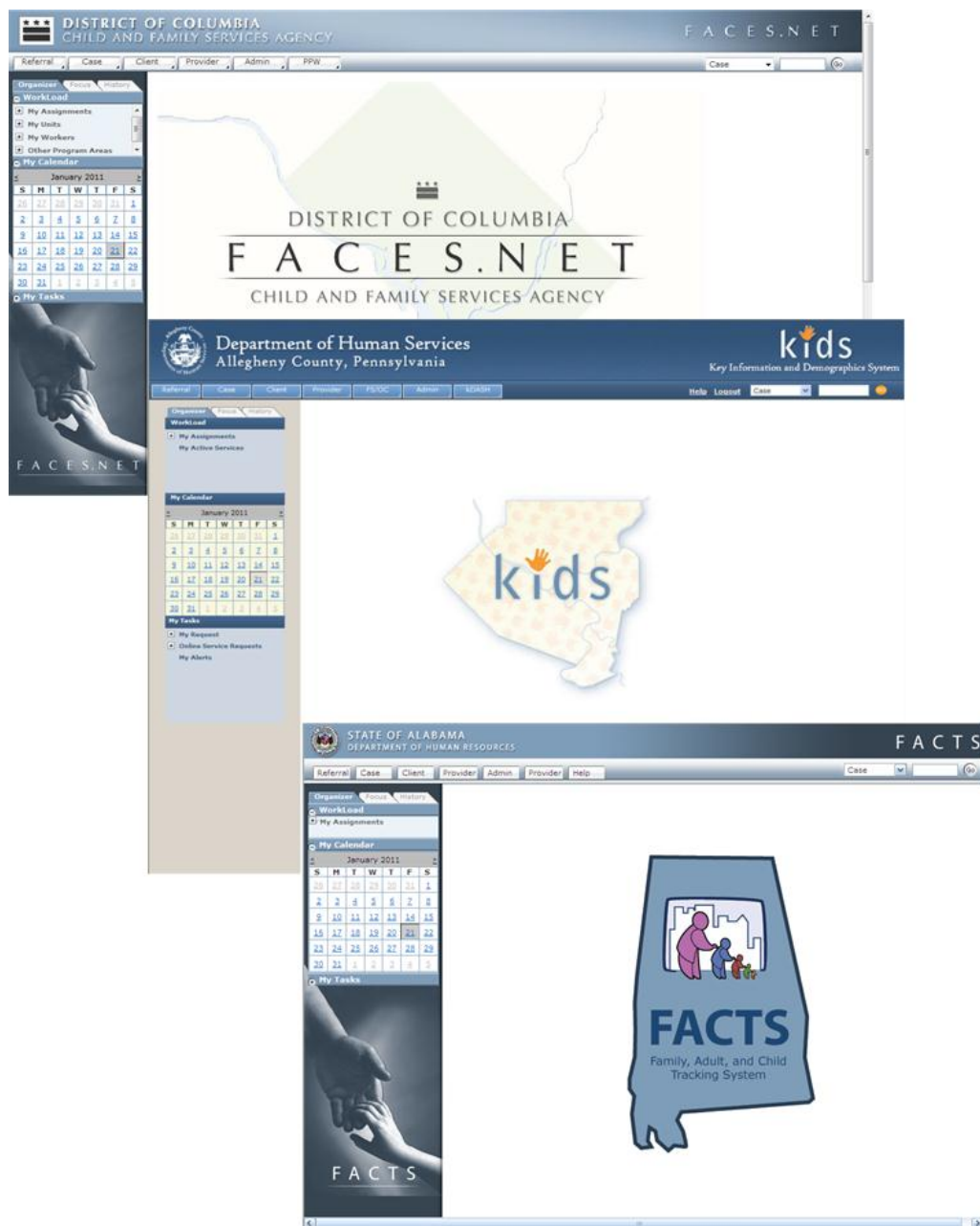
DE_SACWIS-313

Figure 4.3-10. Changed Presentation Tier Components of the transferred solution to support individual system requirements.

State staff could be trained to understand the semantics of different layers and how they interface with each other. For instance, DE FACTS II presentation tier may change to meet DE specific requirements but the State staff could begin training even before the changes are completely implemented.

Based on our current understanding of Delaware FACTS II requirements we do not anticipate any major changes to the application architecture. The table below indicates our understanding of the extent of any changes to the application architecture. We provide training to state staff for each of these components.

Components	Anticipated Scope of Changes
Reference Table Components	Changes restricted to specific reference table values implemented to support Delaware FACTS II solution
Error Management Components	Changes restricted to specific error message texts implemented to support Delaware FACTS II solution
Session Management Components	No significant changes required
Menu Management Components	Changes restricted to specific menu items implemented to support Delaware FACTS II solution
Controller Components	No significant changes required
Business Components	Changes restricted to specific functional requirements implemented to support Delaware FACTS II solution
Database Service Components	Changes restricted to interacting with modified or new stored procedures implemented to support Delaware FACTS II solution
Data Access Components	Changes restricted to modified or new database objects implemented to support Delaware FACTS II solution
Rules Engine Components	Changes restricted to modified or new decision table based rules implemented to support Delaware FACTS II solution
Audit Management Components	Changes restricted to modified or new tables that require audit trail feature to support Delaware FACTS II solution
Batch Framework Components	Changes restricted to the modified or new batch programs implemented to support Delaware FACTS II solution
Document Management Component	Changes restricted to the modified or new document types implemented to support Delaware FACTS II solution
Security Components	Changes restricted to modified or new security roles implemented to support Delaware FACTS II solution
Cache Management Components	No significant changes required
Exception Management Components	No significant changes required
Configuration Management Components	No significant changes required
State Management Components	No significant changes required
Logging Components	No significant changes required

Table 4.3-3. Components that are not subject to architectural changes.

Deloitte understands the value of providing training to the design participants in order to facilitate productive design sessions. After completing the general coordination activities for the requirements and design sessions, we orient the DSCYF project team to the methodologies, principles, tools, processes, and ground rules in preparation for sessions to begin. As discussed in Section 4.7 – System Planning Analysis, the following training will be provided to DSCYF project team staff.

- **DC FACES.NET Walkthrough.** Even before the start of the formal design sessions, we facilitate a formal walkthrough of the base solution, DC FACES.NET, which we propose to transfer for FACTS II. We understand that the design participants benefit a lot by getting some amount of hands on experience on the functionality of the solution. We support this by providing DSCYF with a laptop that is preconfigured with DC FACES.NET solution. We encourage design participants to use this laptop and get acquainted with the basic functionalities of DC FACES.NET solution such as user interface, navigation features as well as high level business functionalities.

  The training sessions are conducted by our key team members who are also participants in the design session from our side. During the walkthrough sessions we also identify the areas of changes at the module/sub-module level which form the basis of our discussion during requirements gathering and joint application design sessions.

- **Business Model Walkthrough.** This walkthrough is a two way process where we get to learn your business processes and enhance our understanding of your current operational environment. We ask DSCYF staff to facilitate business sessions with the Deloitte team. While we are experts in implementing an integrated children services solutions, we value the knowledge and insight we can gain by learning DSCYF specific processes and workflows. You are the experts of your own business practices and who best to understand the intricacies of your business and culture. These sessions help us to gain a common understanding of the business terminology so that all design participants talk the "same language".

  Documentation from these discussions become business flows that are used in subsequent requirement validation sessions and is the beginning work product that is ultimately the Conceptual Design deliverable.

- **Common Components.** The objective of this session is to enable the participants to learn about key features such as search tool, navigation tool, reference table management, and error message management. Based on our past experience, we know that these are the components that are most frequently customized to meet specific client requirements. For example, every jurisdiction to which we transfer DC FACES.NET recommends its own set of reference table values. Knowing how the application manages reference table values helps break common ground during sessions.

- **Application Architecture.** The objective of this session is to provide an overview of underlying n-tiered architecture of DE FACTS II application. The participants learn how the tiers interact with each other and are also provided training on the components that are identified in the table above.

This document also contains a section on our Training and Knowledge Transfer approach that discusses in details our approach of using mentors, class-room training and tools specialist to impart ongoing training to DSCYF staff.

Following a Structured SDLC

RFP reference: 6.3 Technical Requirements, Page 40

Bidders must identify how their organization follows a structured life cycle approach and best practice development models and methods. Bidders must identify the development methodology and life cycle to be utilized as well as the implementation approach. For example:

- Agile Development Methodology;
- Iterative Development Methodology;
- Waterfall Development Methodology;
- Big-bang Implementation Approach;
- Phased Implementation Approach; or
- Features-based Implementation Approach.

Development Methodology

We understand that the success of projects the size and magnitude of Delaware FACTS II require tight integration between the people, process, and technology components. A good methodology alone is not enough. A good Project Management and Development Methodology approach is essential to successfully deliver a project. Thinking through the leadership and vision, execution of work plan steps, effective and efficient resource planning, and addressing difficult issues as they arise require a strategy above and beyond what a typical industry methodology can offer.

For example, in order for the application to be ready for production, the technology infrastructure must be in place; interfaces must be ready to be turned on; procedures must be in place to shut down legacy systems; individuals whose jobs are changing must be ready to assume new roles; end users must be trained on the system and new business processes; implementation support plans and processes must be ready, and contingency plans must be in place to mitigate the risk of unforeseen problems.

Bringing all of these elements together requires that all project teams be in sync with each other as they drive toward the implementation target date.

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Key features of customized Playbook methodology are:

- Follows CMMI processes

  Utilizes standardized best practices derived from our experience delivering 19 integrated children services projects using the same methodology

- Is well documented and distributed firm-wide to each of our consultants whenever a new version is created allowing the project team to have access to the latest and updated tools and methodologies at all times

A critical element to making this happen is our Delaware FACTS II Playbook which includes the Deloitte **Systems Development Life Cycle (SDLC) Playbook** that supports the waterfall approach to systems development, and our **Project Management Methodology (PMM4)** for overall project management. It was developed based on our Deloitte playbook of industry standard approaches, combined with specific proven experience and examples from 16 integrated children services implementations similar to Delaware FACTS II.

Combined together, PMM4 and the SDLC Management portion of Playbook contain standard tools, detailed procedures, templates, checklists, and other materials that support all threads of the project including design, development, conversion, testing, implementation and transition. We use our proven Playbook methodology to support the development and implementation of Delaware FACTS II. The figure below depicts our methodology --The Delaware FACTS II Playbook method ("Playbook").
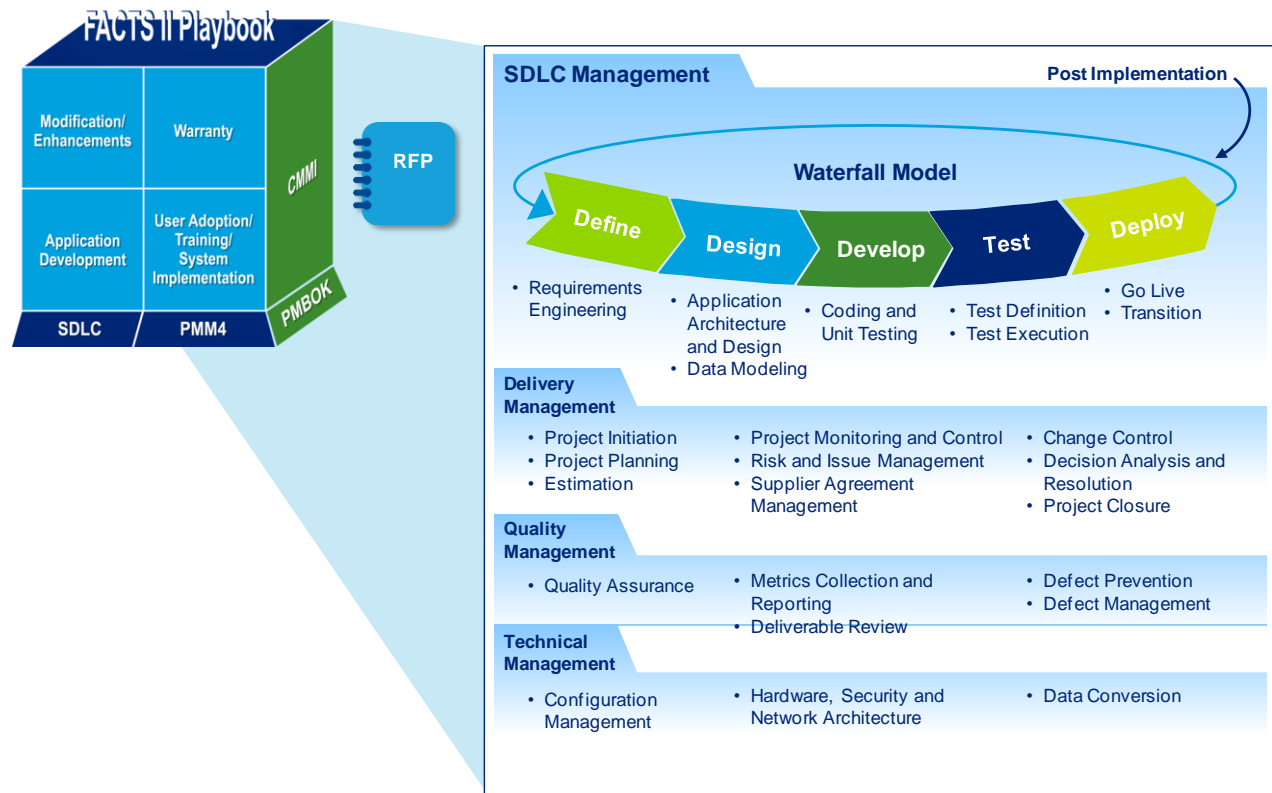
DE_SACWIS-321_2

Figure 4.3-11. The Delaware FACTS II Playbook approach.
Playbook helps accelerate the design and reduce the time for delivery. Using the Waterfall model and best practices from our approach helps produce high quality results.

The SDLC Management portion of Playbook supports a waterfall model through the key systems development life cycle phases of requirements definition, design, development, testing, and deployment (implementation). It focuses on delivering software development solutions based on the use of patterns and frameworks.

The "PMM4" method is based primarily on the Software Engineering Institute's (SEI) Capability Maturity Model Integration (CMMI ®) and the Project Management Body of Knowledge (PMBOK ®), and integrates with a wide range of industry standard methodologies including the waterfall model. It provides activities, tools, best practices, areas of risk, risk mitigation, quality assurance checks, and templates to support the systems integration approach. PMM4 focuses on applying proven project management principles and best practices to project delivery.

Additionally, the waterfall model provides one of the simplest development models for "Transfer" solutions. Since the core technical architecture and core design requirements for Delaware FACTS II have already gone through multiple iterations and review in other jurisdictions, the waterfall model becomes easy to implement, understand and most importantly, easy to demonstrate compliance with. In this model, a project proceeds through a sequence of *phases,* from start to finish and each phase is defined in terms of *inputs, tasks,* and *outputs.* Phases capture the life cycle of the project. At the end of each phase is a collection of templates and standards that have been used on previous projects with similar scope, technology, and complexity as Delaware FACTS II. Design templates, sample test plans, risk/issue trackers, and many other templates allow us to jumpstart the project customization and provides an opportunity for the Delaware FACTS II team to propose changes prior to starting work on deliverables. This reduces the time required for development, review, and approval of deliverables. Major processes in our methodology are organized into the following:

Define. The Define Phase describes the requirements gathering and project planning processes. Activities and deliverables focus on understanding DSCYF needs and conducting visioning workshops to further develop the scope, objectives, structure, and overall approach. During this phase we work with DSCYF stakeholders and subject matter experts to analyze, assess, and elaborate functional and non-functional requirements for the Delaware FACTS II solution. Throughout the Define Phase, the Deloitte team conducts a gap analysis between the transfer application and the detailed requirements defined over multiple sessions. After performing this gap analysis, we work with DSCYF to prioritize the requirements and gaps. Each elaborated requirement is documented and used to establish a traceability plan to confirm these requirements are adhered to throughout each project phase. Section 4.8, Requirements Verification describes in details our approach to this phase.

Design. The output of the Design Phase ultimately drives the acceptance of the end product by a user since the Develop Phase merely reflects the result of Design. We therefore place a very high emphasis on the thoroughness, traceability to requirements, application of standards, performance considerations, scalability and flexibility when designing the configurations and customizations to fill the gaps identified in the Define Phase. The purpose of the Design Phase is to develop the architecture and software design changes required to customize the transfer system to meet the requirements defined after the Gap Analysis, and Requirements Validation and Elaboration tasks completed during the Define Phase. The processes, templates and tools in the Playbook are geared toward these objectives and are used in developing the design.

To confirm that Delaware FACTS II meets DSCYF's standards of quality, we leverage our extensive design experience of customizing similar systems. During Design, we work collaboratively with DSCYF, end users and other partners in Joint Application Design (JAD) sessions to assess screen design and the corresponding page fields, events/responses (actions which can be taken on a page), page validations, and error messages. We use our existing solution as the basis for all design discussions. A key benefit of our solution is that we can demonstrate existing functionality to DSCYF using an installed version of our application. Section 4.9, System Design describes in details our approach, artifacts and tools to be use in this phase.

Develop. The purpose of the Develop Phase is to customize our solution to adhere to the approved design and perform code review and unit testing. The activities for this stage include making the configuration and customization changes, code review, and unit testing the code. This phase also involves defining the test plan and appropriate test cases for each required Test Phase. As opposed to being done in the Design Phase, the Develop Phase includes the execution schedule, which is produced after a final design has been accepted. Prior to proceeding to the Test Phase, Develop Phase exit criteria must be met. Section 4.12, System Development describes in details our approach, artifacts and tools to be use in this phase.

Test. The objective of this phase is to test that the software has been correctly customized against the requirements and design defined during the previous two phases. The execution of the approved Test Plan needs to be repeated for each Test Phase, including:

- Unit Test

- Integration Test

- Regression Test

- User Acceptance Test

Prior to proceeding to the Deploy Phase, Test Phase exit criteria, such as signoff of the User Acceptance Test tasks, must be met. Activities to tailor and configure Delaware FACTS II for DSCYF are grouped into these phases. Section, 4.13, System Testing describes in details our approach, artifacts and tools to be use in this phase.

Deploy. During the Deploy Phase, we work with DSCYF to execute the system cutover and perform actual business operations in the new system. The purpose of this phase is to effectively implement the Delaware FACTS II solution in the production environment and to provide implementation and post-implementation support. A go-live date typically involves significant planning and coordination between the development, testing, implementation and support teams, and possibly third party groups as well. This process helps take the dependencies into account to achieve an effective implementation. Key activities include:

- Cutover to new processes and applications

- Establish review procedures for ongoing system monitoring

- Stabilize and improve the integrated production environment

- Fine-tune production infrastructure, including tuning and testing

Section 4.16, System Implementation describes in details our approach, artifacts and tools to be use in this phase.

We will work with DSCYF to review the assets available in Playbook and select the best documents to use in the delivery of Delaware FACTS II. By using our standards and templates, we help DSCYF leverage existing best practices thus allowing the project team to focus their efforts on the unique conditions of this project. Using Delaware FACTS II Playbook thus benefits DSCYF by reducing the overall technological risk and assists in the timely delivery of the project that is of high quality.

Implementation Approach

The implementation approach primarily depends on the size of the user base. A large user base means more users need to be trained to use the new system before it goes live. This imposes logistical challenges in terms of setting up the training sites and infrastructure as well as having sufficient number of trainers available to impart training at these sites.

Have You HEARD?

Deloitte team successfully implemented DC FACES.NET (which has a user base similar to Delaware) using a big bang implementation approach

In addition, conversion considerations play a large part in determining the implementation approach. Phased rollout demands that multiple conversions be conducted for each phase and interim procedures formulated to support families who move between converted and unconverted offices.

The following table describes the various implementation approaches Deloitte has adopted for different jurisdictions where DC FACES.NET was implemented/transferred.

Deloitte's Implementation Approach	Where was this implemented?	#Users	#Offices
Big-Bang	FACES.NET, Washington DC	1,400	2 Primary Offices and 10 Subsidiary Offices
Phased	AL FACTS, Alabama	2,300	67 County Offices and 1 State Office
Feature-based	KIDS, Allegheny County, PA	2,200	5 Regional Offices and 1 Department Headquarter

Table 4.3-4. Deloitte's Implementation Approaches using DC FACES.NET Solution.

Based on our past experience, we believe that the "big bang" implementation approach is most suited for Delaware FACTS II project implementation.

We followed a similar approach in District of Columbia where we went live with DC FACES.NET in "one go" across all 12 offices, releasing the system to 1,400 users.

Therefore, for Delaware FACTS II, with three counties and 1,600 users we believe that a Big-Bang implementation approach is the most suitable approach for overall statewide rollout.

Using an Integrated Applications Development Environment

RFP reference: 6.3 Technical Requirements, Page 40

In their proposals, Bidders must identify how their solution is built using an Integrated Applications Development Environment (IADE, often referred to as an IDE or ADE). Integrated toolsets, such as a source code editor, a compiler and/or interpreter, build automation tools, and a debugger should be identified. Version control system and various tools to simplify the construction of a GUI must be identified as well. Any integration with class browsers, object inspectors, and a class hierarchy diagram should be identified and if the IADE supports multiple-language (e.g., Eclipse IDE or Microsoft Visual Studio).

We chose to develop DC FACES.NET solution using the Microsoft's .NET framework, because it offers a more productive and cost-effective application platform for object-oriented development. Additionally, we propose to use the same toolset for Delaware FACTS II as was used in the District of Columbia - C# as the programming language, Microsoft Team Foundation Server as the source code control system and Oracle as the database.

In an environment where IT investments require rigorous justification and clear evidence of a positive ROI, solutions need to be delivered faster, better, and cheaper to meet expectations. The use of a .NET framework and Microsoft Visual Studio 2010 (VS 2010) Ultimate edition cuts the time and cost of development and operations.

The following are the technical considerations that have led us to conclude that .NET with Visual Studio 2010 offers the most appropriate Integrated Application Development Environment for the Delaware FACTS II.

- Rapid Application Development through visual tools for tracking changes.

- Web site editor and designer that allow web pages to be authored by dragging and dropping widgets.

- Integrates with Team Foundation Server which acts as a powerful source control system and automates build and deployment functionality.

- In-built class browser and object inspector - an advanced property grid that lists and shows every control on the form as well as every attribute and method in a class. When the user selects one item, Object Inspector shows all its properties.

- Capability to generate Class Hierarchy Diagrams that allows generation of dependency graphs at assembly, namespace or class levels.

- In-built Testing features that support ability to eliminate non-reproducible bugs, fast setup and deployment of tests and the ability to confirm all code changes are tested.

- Support for web service based applications, both as a consumer and provider of web services, for reusing existing business functions or exposure to other business areas.
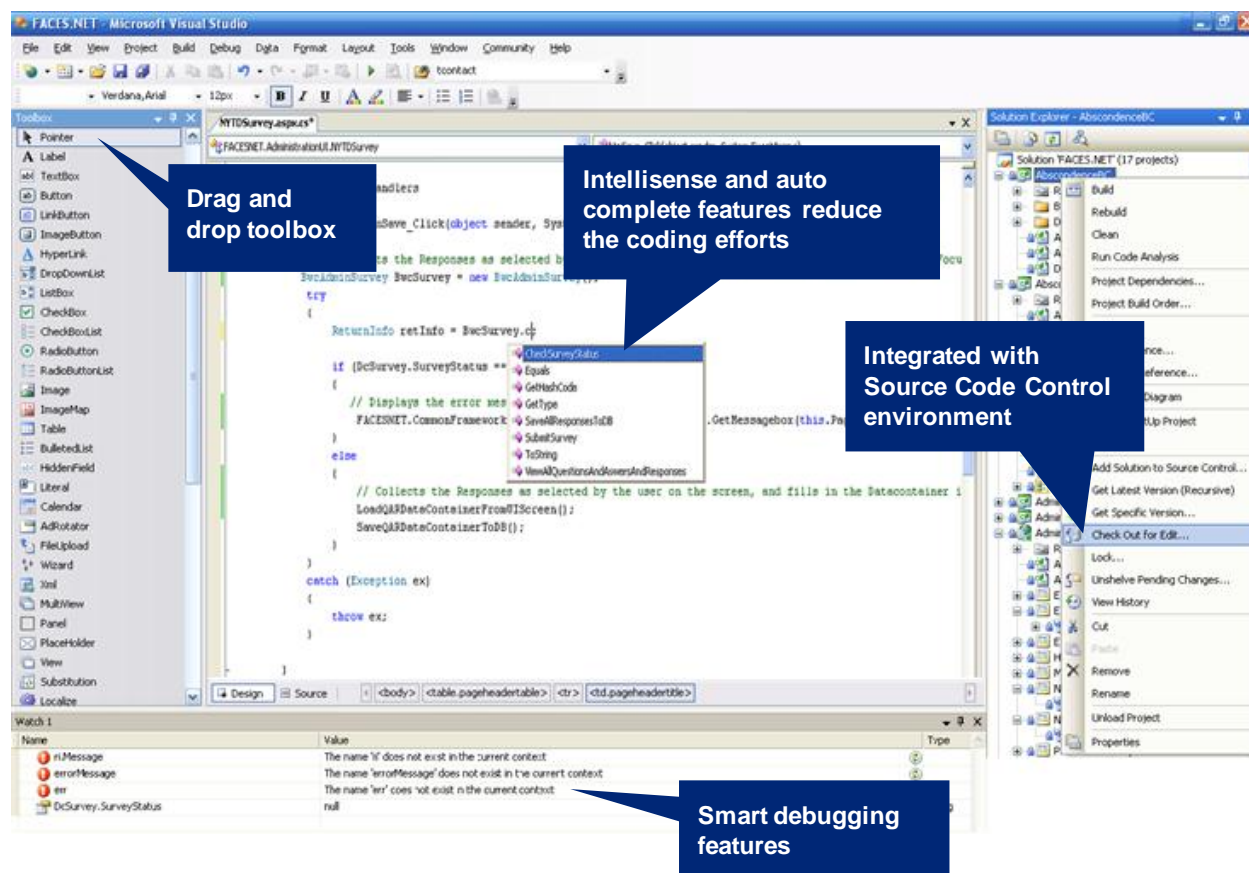
DE_SACWIS-194_3

Figure 4.3-12. Microsoft Visual Studio provides a powerful integrated development environment.

Microsoft .Net framework with C# language provides a solid IADE that confirms with the State Standards and Policies. Visual Studio provides a single environment to design, code and debug. It integrates with Team

VS 2010 Ultimate edition along with Microsoft Team Foundation Server provides an integrated version controlled source code repository and enables automated build and deployment processes – again from within a single application window. Team Foundation is a change management system that provides integrated source control, issue tracking, and process management for development teams. We use Team Foundation Server for source code control and automated build and deployment for DC FACES.NET.

It also allows for team development in a variety of roles. Each tool is configured specifically for the job functions it supports including, software architects, developers, testers, and project manager. Visual Studio increases team productivity with advanced life-cycle tools and an intuitive user experience for each role in the development team. It provides rich collaboration features to facilitate communication between business, development and operations teams.

Deloitte has been using Visual Studio, Team Foundation Server on our DC FACES.NET solution as a source code editor, compiler, debugger, version control system and for

automated build and deployment processes. It also uses scalable, reliable and enterprise class database - Oracle - as its backend for DC FACES.NET solution. The following is a list of the software products required to implement the proposed Delaware FACTS II solution.

Product Name	Version
Development Framework	
Microsoft .Net Framework – Free	4.0
Workflow	
Microsoft Windows Workflow Foundation – Free	4.0
Web Server	
Microsoft Internet Information Services – Free	Latest
Session Management	
Microsoft ASP.NET State Management Service - Free	Latest
Database Client	
Oracle 11g R2 Client – Free with Oracle Enterprise	Latest
GIS/Maps – COTS	
Google Maps API	Latest
Online Help – COTS	
Adobe RoboHelp	Latest
Reporting Tool	
Crystal Reports 2008 (for development)	Latest
Business Objects Enterprise Server XI	Latest
Business Objects Web Intelligence XI	Latest
Database	
Oracle 11g R2 Enterprise Edition (Production and Disaster Recovery)	Latest
Oracle 11g R2 Enterprise Edition	Latest
Microsoft SQL Server 2008 R2 Standard Edition (Source Code Control)	Latest
Search - COTS	
Intelligent Search Technology's, NameSearch	Latest
Scheduler (Batch)	
ORSYP Dollar Universe	Latest
ORSYP Dollar Univiewer	Latest
IDE	
Microsoft Visual Studio 2010 – Ultimate with MSDN	Latest
Microsoft Visual Studio 2010 – Professional with MSDN	Latest
PL/SQL Editor	
Toad for Oracle Base Edition	Latest

Product Name	Version
Toad DBA Suite for Oracle	Latest
Spell Check - COTS	
Rapid Spell Web .NET	Latest
Training Content Development	
Macromedia Captivate	Latest
Macromedia Studio	Latest
SnagIT	Latest
Data Modeling	
CA ErWin	Latest
Source Code Control	
Microsoft Team Foundation Server 2010	Latest
Monitoring Tool	
Operations Manager Server 2007 R2	Latest
Standard Server ML	Latest
Imaging - COTS	
AtalaSoft DotImage Document Imaging SDK	Latest
AtalaSoft DotTwain Add-On	Latest
Atalasoft for Production Usage	Latest
File Compression	
WinZip	Latest
Miscellaneous	
Microsoft Office Professional 2010	Latest
Microsoft Visio Professional 2010	Latest
Microsoft Project Professional 2010	Latest
FxCop – Free	Latest
NAnt – Open Source	Latest
Nunit	Latest
JAWS 64 bit Professional	Latest
iText	Latest
GOVT NETBACKUP	Latest

Table 4.3-5. Software Products Required for Delaware FACTS II.

Knowledge Transfer

RFP reference: 6.3 Technical Requirements, Page 40

Bidders should describe their approaches to providing knowledge transfer to facilitate long-term system support.

Our experience shows that effective knowledge transfer is a continuous and phased process that relies upon a positive, collaborative learning environment that must be established early in the project life cycle. Preparing DSCYF staff to support, maintain and enhance the proposed technology solution is a priority. Deloitte understands that need and is prepared to develop and execute a detailed Training, Mentoring and Knowledge Transfer plan. These plans will guide the process of thoroughly training and mentoring the DSCYF staff that have application development and maintenance responsibilities for the new system, as well as the staff that have administrative, operational and maintenance responsibilities of the system's hardware and software. Our knowledge transfer program establishes a foundation at the beginning of the project, builds upon that foundation throughout the life of the project and ultimately prepares the DSCYF staff for full transition of the project responsibilities at the conclusion of the project.

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A Continuous Approach to Training and Knowledge Sharing

Ongoing Training to identified DSCYF staff throughout the entire project lifecycle

A seamless transition of capability to the State throughout the entirety of the project

Deloitte uses a variety of delivery methods to conduct knowledge transfer to DSCYF staff. The image below identifies the full gamete of knowledge transfer activities employed by Deloitte.
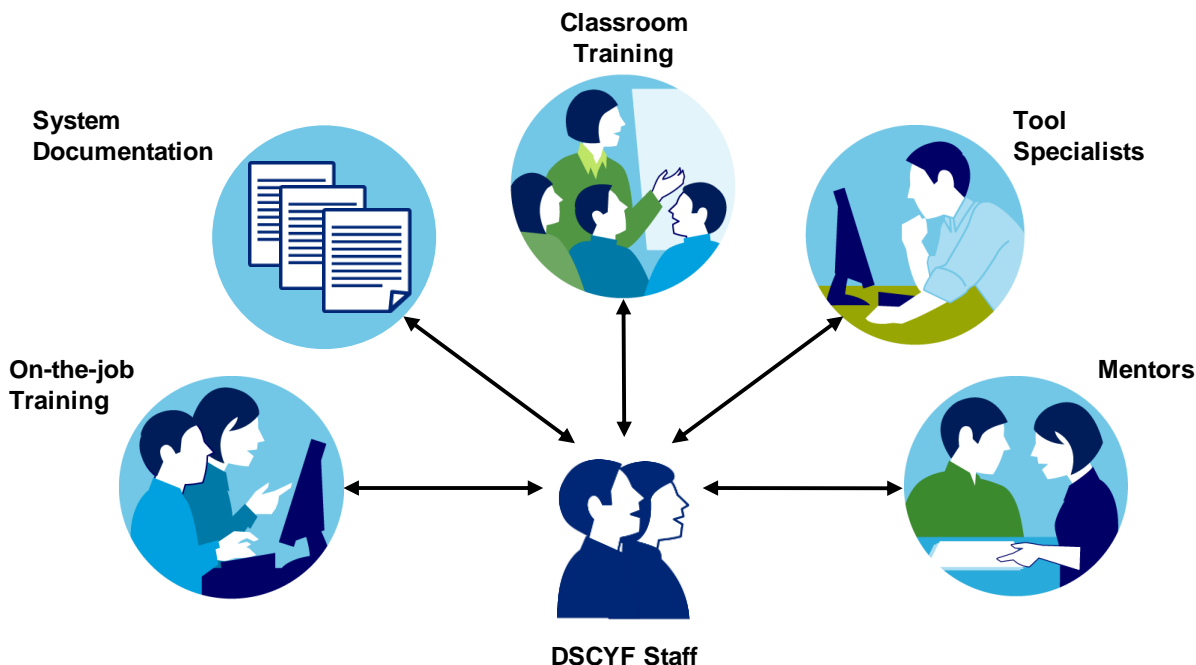
DE_SACWIS-295_2

Figure 4.3–13. Knowledge Transfer Delivery Methods.
Truly effective Knowledge Transfer requires a balance of all of the above mentioned delivery methods.

Our plan offers each DSCYF project member the opportunity to learn their roles and responsibilities through a proven knowledge transfer methodology which includes activities aimed at the progression towards self sufficiency. As we work with DSCYF staff on the Delaware FACTS II project, we may make recommendations for some staff to attend additional training to gain more experience with a specific set of skills. In these cases, we will align those staff with assignments that appropriately use the skills that were gained through training. For example, if we recommend that a DSCYF staff member attend training for Windows Workflow software, once training is complete we will align the staff member with activities related to testing the Workflow process integrated within the system. This allows the DSCYF staff member to practice the skills obtained in training in a live environment with guidance from a Deloitte mentor.

Plan Training, Mentoring and Knowledge Transfer Activities

The driving force behind a successful knowledge transfer program is Training, Mentoring and Knowledge Transfer Plan. This Plan includes three primary parts:

- **Assessment.** The first step is to develop project role-based Knowledge Transfer Plans, which include learning objectives tied to the specific knowledge transfer activities. The intent is to identify the recipients of the knowledge transfer, organize the recipients into logical shared skill groups, determine what each group's needs consists of, and finally analyze this data so recommendations can be made for an effective training and mentoring program. These assessments are updated during later stages of the project. The updated assessment includes recommendations for appropriate staffing levels and

efficient organizational structure designed to support, maintain, and enhance the proposed solution following the contract period. At the same time, Deloitte identifies the appropriate source of the knowledge to be transferred, which is typically a member of the Deloitte project team, but where appropriate vendor training may be recommended.

- **Training.** The second part of the Knowledge Transfer Plan is the Training Approach, which is similar to the end user training approach described in Section 4.14, System Training but includes more interaction between DSCYF staff and Deloitte project staff throughout the life of the project. Several forms of training are used to grow the skills of DSCYF staff. This may include:

  - Informal tool specialist training as part of a "Lunch-and-Learn sessions"

  - Self-study by executing test scenarios in lower environments or reviewing system documentation

  - Online help to answer any questions along the way

  - Formal end user training if/when there is availability

  - Training materials used to educate DSCYF staff (system documentation materials which are maintained throughout the life of the project and transitioned to the DSCYF at the conclusion of the project). These materials include documents that act as manuals for Technical User and System Operations. DSCYF staff will play a key role in the development and review of these materials.

- **Mentoring/Shadowing.** Finally the Knowledge Transfer Plan outlines the mentoring activities that involve more hands-on coaching and direct involvement of DSCYF staff in the day-to-day project operations. This includes designated office hours when mentors are available for discussion, unscheduled (ad hoc) question and answer sessions, involvement in sub-project team meetings and review of system documentation and deliverables. Each DSCYF staff member is aligned with at least one mentor, which possesses the required skills for transfer.

Below is an excerpt of the Knowledge Transfer Plan activities, which will be used as a guide to develop the DSCYF Knowledge Transfer activities.

Knowledge Transfer Activities

DE_SACWIS-297_2

Figure 4.3–14. Example Knowledge Transfer Activities.
This step by step plan outlines the different knowledge transfer methods and explains how the program will be tracked and continuous improvements implemented.

Our successful execution of the Knowledge Transfer Plan helps the DSCYF staff members to thoroughly understand how the system was developed, why the design was selected, and ultimately provide DSCYF staff the abilities and skills to maintain and further enhance the system.

Mentor DCSYF Staff

We identify the appropriate mentors within the Deloitte team based on their project role and relevant knowledge and skills that need to be shared with DSCYF knowledge transfer recipients. Each mentor is responsible for providing skill coaching to DSCYF staff within their specific project role. Mentors focus on providing assistance and coaching with day-to-day skills needed to complete project tasks and are actively involved during system and infrastructure development and documentation.

The mentor/mentee relationship leads to a process called On-the-job Training. Deloitte resources actively work side-by-side with DSCYF team members to successfully accomplish project activities. Thus, our approach provides DSCYF team members an opportunity to learn and practice completing the same project tasks, applying the same methodologies, and using the same tools as the Deloitte resources. DSCYF staff increase involvement and self-sufficiency over time, culminating in the ability to independently perform project tasks pertinent to their respective roles.

Share System Documentation

We provide system documentation to the DSCYF team. The objective is to provide reference materials for staff to learn new skills and tools. This documentation is updated throughout the life of the project and turned over to DSCYF at the conclusion of the project. Such documentation includes document(s) that provide manuals for Technical User and System Operations. Our team understands that some DSCYF staff may be assigned new roles and responsibilities during the life of the project. One way we can assist staff in their transition to these new roles is by providing access to documented reference materials. Listed below are key highlights of what technical documentation covers:

- **Technical User Manual/Handbook.** The purpose of a Technical User Manual is to provide information that enables DSCYF staff to maintain the Delaware FACTS II application components and troubleshoot errors. It serves as a resource in the ongoing maintenance, support, and enhancement of Delaware FACTS II application. It covers topics such as:
  - Development Environment and Coding Standards
  - Application Architecture
  - Common Functions and their usage
- **System Operation Manual.** The purpose of the Operations Manual is to provide the operations staff enough details about Delaware FACTS II application, its component and dependencies so they can support the application from an infrastructure and system administration stand point. This document is structured to provide operations and support related information for various Delaware FACTS II system components and procedures such as:
  - Application Infrastructure (Servers and OS)

- − Backup and Restores
- − Batch Processes

Provide Classroom Training

Delaware FACTS II team members gain hands-on systems and tools experience through attending classroom training session related to relevant technical components. Deloitte will propose a formal list of training topics based on the needs of staff participating in knowledge transfer. For each proposed course, we provide prerequisite knowledge required,, the target audience, as well as course objectives, outlines, delivery method (group instruction or a classroom) and course provider. It is important to note that the DSCYF staff identified to receive training may be need to posses' pre-requisite knowledge such as - the staff identified for technical development training must know object oriented programming.

Additional information on formal and informal training for DSCYF staff is described in *Section 4.14, Systems Training*.

Ongoing Operations

Ongoing operating costs associated with a system are an integral cost component of a solution. Bidders should delineate system performance standards assumptions, including such items as application release upgrade frequency and version control, and should describe the resources required to meet the described standards. Specifically, Bidders should detail required activities, as well as the number, roles, experience, and skill sets of resources needed to meet these standards. For ongoing system maintenance, Bidders are requested to provide a cost estimate and to offer such services as an option in their proposal. Bidders should propose an option that incorporates a minimum of State staff, as well as an option that incorporates a maximum of State staff. The State reserves the right to accept or reject any such option offered.

Deloitte's proposed Web-based transfer solution, DC FACES.NET, has been in production since February 2006. Since then, it has been transferred to two additional jurisdictions – the State of Alabama and Allegheny County, Pennsylvania. Additionally, the Deloitte Team has been managing existing Delaware FACTS legacy system for the past 17 years. Overall, our team not only understands what it takes to operate a solution the size and scale of DE FACTS II, but we also understand your organizational culture. This gives us an unmatched and distinct advantage in proposing activities, type and number of resources that are required to keep DE FACTS II operational over a long period time.

Streamlined and optimized operational management and processes are key determining factors for every organization. When managing ongoing operations, the most critical factor to consider is the availability of the operational assistance that is provided by a staff with effective skills to execute their day to day tasks. This section describes the required activities, as well as the number, roles, experience, and skill sets of resources needed to meet the operating standards of FACTS II solution. Our recommendations of the required resources and skills are based on our experience in managing such systems in different jurisdictions and are as follows:

- **Performance Standards.** FACTS II continues to support at least 1,600 users including staff persons, service providers and customers. The system is capable of managing seasonal peak user load and is available even outside the normal business hours – such as for hotline workers. System Maintenance activities such as hardware replacement, network cabling etc are planned in advance, and executed after having informed the users in order to ensure business continuity.

- **Release Upgrade Frequency.** Based on our experience, as the system stabilizes and users get acquainted with the application, new fixes and enhancements are scheduled for release once every two months. The releases cover activities that require modifications to code due to error in the existing business functionality or implementation of new enhancements. Critical Data Fixes are implemented on an ongoing basis.

- **Version Control.** All source code components including ASP.NET C# code and Oracle PL/SQL code is version controlled using Team Foundation Server. Even the Business Objects reports are version controlled. Automated processes are in place to enable build, labeling and code migration from one environment to another. For example, a successful build process migrates the code from Testing environment to Production environment and updates the label of the version to reflect major, minor and release number.

On the basis of the assumption listed above, following is the list of activities, skills, roles and number of resources required to keep FACTS II operational.

Application Development and Unit Testing Activity

In order to ensure that DE FACTS II meets your ongoing business requirements it needs to be managed by a team of developers who can modify the existing solution code and even make enhancements as and when necessary. Developers who manage the application need to understand the solution architecture and the tools that are integrated with the system. DE FACTS II is developed using .NET and Oracle technology and hence the development team must be well versed with this technology stack. Following table lists the specific skillsets, Roles, Number and Experience required for performing this activity:

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
- ASP.NET - PL/SQL - HTML and JavaScript - Web Services - XML - Windows Workflow	Application Developers	6 to10	2 to 5 years of experience in design, development and testing of ASP.NET and Oracle applications

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• PL/SQL • Oracle Database Administration • Data Modeling	DBA	1	At least 5 years of experience in managing Oracle databases. Efficient in troubleshooting production database issues. Experienced in data modeling and managing backup/restore and scheduling activities.
• Design Patterns • Business Processes	Application Lead	1 to 2	Minimum 6 years of experience in designing and developing Web-based applications with good leadership skills. Good communication skills with ability to translate business requirements to technical requirements and vice-versa. The Lead should be well versed in technical architecture concepts, design patterns and software/hardware configuration. Must have a solid understanding of the business functionality supported by DE FACTS II solution.

Table 4.3-6. Resource Matrix for Application Development and Unit Testing Activity.

Reports Development and Unit Testing Activity

DE FACTS II allows users to analyze the data captured by the system through its vast array of reports. The reporting toolset needs to be managed by a team of developers who can execute the existing reports, update them and develop new reports as they are identified to support evolving business needs. DE FACTS II reports are developed using Business Objects and Oracle technology and hence the reports development team must be well versed with this technology stack. Following table lists the specific skillsets, Roles, Number and Experience required for performing this activity:

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• Crystal Reports Developer • PL/SQL	Reports Developers	2 to 4	2 to 5 years of experience in design, development and testing of Crystal Reports on Oracle database.

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• Business Objects Enterprise Architecture • Data Modeling • Business Processes	Reports Lead	1	At least 5 years of experience in managing Oracle. Efficient in troubleshooting production database issues. Experienced in data modeling and managing backup/restore and scheduling activities. Must have a solid understanding of the business functionality supported by DE FACTS II solution.

Table 4.3-7. Resource Matrix for Reports Development and Unit Testing Activity.

Testing Activity

All changes applied to the system must be tested thoroughly before they are made available to the DE FACTS II business users. Testing Team ensures that the changes made by the development team do not adversely impact the system integrity. Testers also ensure that the system passes the User Acceptance Test. DE FACTS II Testing team must be well versed with the business functionality that the application offers. They must be capable of documenting test cases and executing test scenarios. Following table lists the specific skillsets, Roles, Number and Experience required for performing this activity:

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• Microsoft Office	Tester	2 to 5	2 to 5 years of experience in understanding functional requirements, documenting of test cases and executing test scripts. Solid understanding of DE FACTS II defect identification and migration processes. Good communication and documentation skills to ensure that business issues are well documented and communicated back to the Application and Reports team.

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• Microsoft Office – including Visio and Project • Manual and Automation Testing • Business Processes	Test Lead	1	Minimum 6 years of experience with good leadership skills. Good communication skills with ability to translate business requirements to system requirements and vice-versa. The Lead should be well versed in Microsoft Office products including Visio and Project to enable understanding of business flows and planning and tracking of testing activities. Must have a solid understanding of the business functionality supported by DE FACTS II solution.

Table 4.3-8. Resource Matrix for Testing Activity.

Training Activity

Over a period of time, new staff persons join the organization and existing staff transitions in different roles due to their promotion or transfers. Training Team ensures that the users are well trained to use the system depending upon their roles and can use DE FACTS II investment optimally. Additionally, all key changes tested and approved by the Testing Team must also be circulated among the users who might be impacted by it. Its only after the applicable training is provided to the users, the changes must be released to the Production. DE FACTS II Training Team must be well versed with the business functionality that the application offers. They must be capable of documenting training material using standard tools such as Office and sophisticated tools such as Adobe RoboHelp. Good presentation and communication skills are also a must and the ability to use audio visual tools such as projectors, monitors is also a necessity. Following table lists the specific skillsets, Roles, Number and Experience required for performing this activity:

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• Microsoft Office • Adobe RoboHelp • Audio Visual Tools	Trainer	2 to 5	2 to 5 years of experience in understanding functional requirements and content management. Good communication skills to ensure that Training issues are well documented and communicated back to the Project Management. Must have a solid understanding of the business functionality supported by DE FACTS II solution.

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• Microsoft Office – including Visio and Project • Adobe RoboHelp • Audio Visual Tools • Macromedia Captivate • Macromedia Studio • Business Processes	Training Lead	1	Minimum 6 years of experience with good leadership and communication skills. The Lead should be well versed in Microsoft Office products including Visio and Project to enable understanding of business flows and planning and tracking and scheduling of Training activities. Must have a solid understanding of the business functionality supported by DE FACTS II solution.

Table 4.3-9. Resource Matrix for Training Activity.

Help Desk Activity

The mission of the DE FACTS II Help Desk is to aid users with application, procedural, usability, and technical problems. The DE FACTS II Help Desk will support over 1,600 users statewide. DE FACTS II Help Desk must be well versed with the business functionality and technical functionality of the application. They must be capable of documenting user problems, providing assistance where possible, and referring outstanding problems to the Project Management, the application team, or other resources required to resolve the user's problem. Following table lists the specific skillsets, Roles, Number and Experience required for performing this activity:

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• Microsoft Office • Basic technical skills	Help Desk Operator	2 to 3	2 to 5 years of experience in customer service. Good communication skills, especially listening skills. Ability to troubleshoot basic technical issues such as setting screen resolution, verifying software versions etc. Must have prior experience in documenting, tracking and resolving customer tickets.
• Microsoft Office • Basic Technical skills • Business Processes	Help Desk Lead	1	Minimum 6 years of experience in customer service with good leadership skills. Good communication skills. Ability to recommend solutions and escalate issues on time. Must have prior experience in managing Customer Service/Help Desk operations.

Table 4.3-10. Resource Matrix for Help Desk Activity.

Infrastructure Management Activity

The hardware, operating systems and the various software that constitute DE FACTS II system must be kept operational and available 24/7/365 days. The staff managing the infrastructure must be well versed with configuration of networking, hardware and software components. They must be capable of troubleshooting any infrastructure related issues that may impact the system operations. Following table lists the specific skillsets, Roles, Number and Experience required for performing this activity:

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• Networking • Hardware Configuration • Windows and Red Hat Linux setup, configuration and updates	Network Engineer	2 to 3	3 to 5 years of experience in setting up and managing network infrastructure. Experience in setting up and configuring desktops and servers running on Windows and Red Hat Linux operating systems. Good technical skills and ability to work with external vendors to troubleshoot any infrastructure related issues.

Table 4.3-11. Resource Matrix for Infrastructure Management Activity.

Project Management Activity

The Project will consist of minimum one Project Manager who has the ultimate responsibility of the project. Other management staff such as Deputy Project Manager could be appointed to supplement and support a full time project manager. The Project Manager will be at the project site full time and has day to day responsibility to manage the project and to deliver. This team is responsible for the daily operations of the project site and provides support in maintaining the project financials for the Project Team. The team is accountable for monitoring and reporting the project's progress to the program executive leadership. Following table lists the specific skillsets, Roles, Number and Experience required for performing this activity:

Specific Skills	Role	Minimum and Maximum #Resources	Required Experience
• Project Management • Health and Human Services Business Knowledge	Project Manager	1 minimum and 1 optional Deputy Project Manager	8 to 10 years of experience in implementing various large-scale enterprise system implementations in the State and Local Government sector, primarily in Social Services. Deep understanding of state as well as federal expectations from such implementations. Excellent communication skills and ability to lead under pressure and escalate issues when necessary.

Table 4.3-12. Resource Matrix for Project Management Activity.

We will continue to work with you and mentor and train your staff while implementing DE FACTS II solution and will proactively provide you updates based on our assessments with regards to eventual resource requirements.

The resources identified above perform a very important function of managing the components that constitute DE FACTS II system – the hardware and software components. As per the standard used throughout our response to this RFP, we provide a detailed cost structure in the Cost Proposal which provides the initial and maintenance hardware and software purchase costs needed for the DE FACTS II.