Deloitte.

Arkansas Department of Human Services (DHS)

Questions for Deloitte

December 6, 2017

Contents

DHS QUESTIONS FOR DELOITTE

Pricing remains sealed and must not be discussed during Oral Presentations. Any pricing information disclosed shall cause the vendor's proposal to be disqualified.

Questions for Presentation

1. Discuss alternative staffing strategies if DHS cannot provide the level of State resources outlined in your proposal. How does this effect the timeline if this is the only staffing DHS will provide?

A common theme and critical success factor in our recent successful Integrated Eligibility projects like the Arkansas IE-BM effort is sufficient resourcing by both State and Deloitte staff in all key areas of the project. Sufficient resourcing by the State helps to make sure the system supports the State's needs from the requirements through implementation and transition, and ultimately facilitates user adoption.

For the IE-BM project, we took the following factors into consideration for estimating the required levels of State staff participation to successfully execute the project:

- Project duration of 36 months using multiple releases.

- Pilot and phased rollout strategy for each release.

- State staffing levels to support project needs including project management and planning, requirement validation, design, data conversion, user-acceptance testing, training and knowledge transfer and deliverable reviews throughout the project.

- State staffing levels to support technical aspects of the project including architecture reviews, environment build-outs, and ongoing infrastructure monitoring and support.

Based on this, we estimated State staff requirement to be approximately 36 FTEs (on average) throughout the project. We recognize our estimate for State staff requirement is significantly higher than specified in the RFP on page 63, section 3.6.1.1 during some of the project phases. However, this level of support is very consistent with our experiences on similar IE-BM projects in other States, including the four successful statewide implementations we completed in 2017.

An alternative staffing strategy to address this variance is to engage staff augmentation resources to supplement your resourcing for activities like project management support, user-acceptance testing, facilitate and/or training delivery and infrastructure build-outs and related monitoring. We have worked closely with numerous clients like DHS that have augmented their teams in these areas. In addition to contracting, some of our clients have augmented their resources from other departments within the agency and even other agencies within the State. In addition to using staff augmentation resources for project roles, our clients have also leveraged staff augmentation resources to backfill current operations positions while the operations personnel move into project roles. Our experience with similar projects have proven it is important that State resources are engaged to support areas of the project that have a direct input into the end product (including requirements, design and UAT execution) so that you get a solution that meets your needs and expectations.

In the event resourcing levels cannot be provided at the suggested levels, we will work with the State to address any possible schedule impacts. There are a variety of timeline options to consider relative to the potential resource constraints. The timeline options would need to be discussed in the context of the guidelines provided in the RFP in "Section 3.9 Proposed Project Work Plan", Pages 120/146 & 121/146.

2. Describe the proposed mobile application's Caseworker and Client functionality, including the user uploading of files and browsing of existing files.

We have responded to your question below from the perspective of both clients and caseworkers.

Client Mobile Functionality

Clients access their information through our solution's **Customer Portal** and can do so using tablets, smart phones, personal computers, public computers. Our Customer Portal provides a consistent experience across devices which improves usability and reduces the learning curve. All features available in the Customer Portal are accessible from any device type (i.e., smart phone, tablet, computer) as our portal uses a responsive-based design. This includes account management, validations, alerts and notifications, apply for benefits, report a change, renew benefits, upload files, access letters and forms, as defined in our response to requirements 1.8 in T-6.

One of the features supported via the Customer Portal is the ability to upload files and browse existing files. Figure 1 and Figure 2 illustrate how clients upload and browse existing files through mobile devices. Note that while we show

Figure 1. Uploading Files on a Mobile Device.

clients the status of documents they previously uploaded, we typically do not allow clients to view these files for security reasons. This can be configured to display the files if the State prefers. Clients, however, are able to view images of correspondence that are sent to them from the State.

Caseworker Mobile Functionality

Workers use our solution's **Worker Portal** to access their work and cases. The primary method of access is through a computer or laptop due to the robustness of the solution and the number of features, screens, and fields. However, the solution may be accessed through a tablet if desired (which provides the same browser experience as a computer/laptop). If the state is interested in enabling worker mobile capabilities we should discuss which use cases and determine best approach to meet the need.

In addition, our module for reporting and visualization called HHSInteractive is also available to DHS staff via mobile devices including tablets to allow access to dashboarding and data visualizations. These dashboards are equipped with similar functionality to the desktop version of the

Figure 2. Uploading Files on a Mobile Device.

dashboard with menus and controls optimized for mobile viewing and operations per our response to requirement 13.41 in T-6.

3. Current DHS processes have achieved a level of 50-60% "no touch" for eligibility application and 80% for renewal – what level do you anticipate achieving, by program and process, in Arkansas? What level have you achieved, by program and process, in other States where NextGen has been used?

For the metrics you provided (50-60% "no touch" for eligibility application and 80% for renewal), we assume these are related to MAGI Medicaid transactions. We recognize the importance of "no touch" processing as it helps to realize processing efficiency and we strive to achieve the highest level of "no touch" eligibility possible for DHS. We also recognize the importance of staying compliant with your policies and regulations in terms of the "no touch" business rules. We have successfully implemented "no touch" processing across all Medicaid programs.

Deloitte's HHS NextGen 2.0 solution defines "no-touch" real time eligibility determination as an automated eligibility determination process approved by the state where no worker intervention is required to determine eligibility. When a client applies via the FFM and/or the customer portal and meets the criteria defined by the State, Deloitte's solution approves benefits for the applicant without any tasks performed by the State workers.

In regard to the applications from the FFM, we accept these via automated account transfers. The application/FFM information from the FFM is transferred to the Worker Portal and the eligibility rules engine can validate and certify the eligibility results.

Additionally, we also allow clients to apply via the Customer Portal. The application information from the Customer Portal is transferred to the Worker Portal and the eligibility rules engine in real-time. If the application does meet the criteria for "no-touch" real time eligibility, the applicant is shown the eligibility results on the Customer Portal in real-time. This provides clients with an immediate eligibility decision, while initiating the downstream processes related to client noticing and interfacing such as transmitting the information to the State MMIS system (for Medicaid eligible clients).

Our team brings the "no-touch" eligibility determination experience and expertise gained through various implementations to the State of Arkansas. The level of "no-touch" eligibility determination will depend on the criteria defined by the State and varies from state to state and their program policies.

Should the verification criteria and verification data sources remain the same, and the verification information is available during conversion, Deloitte's solution will meet or exceed the current levels for no-touch in Arkansas for the MAGI Medicaid program. In addition, our solution is flexible enough to expand the no-touch rules to all programs (based on DHS program rules) in order to increase the number of "no-touch" eligibility determinations.

Deloitte has implemented a similar solution for "no-touch" eligibility across multiple States. The level of no touch determinations for some of our IE-BM solutions is provided in the following figure. Note that each State has achieved a different level of no touch as the verification rules and processes associated with post-eligibility verifications differ across the States.

State	% of no-touch applications	% of no-touch renewals
State of Connecticut	• 83% for CHIP and MAGI Medicaid applications.	• 92% for CHIP and MAGI Medicaid renewals. • 96% for passive renewals attempted for the MSP program.
State of Michigan	• 81% for CHIP and MAGI Medicaid applications.	• 79% for CHIP and MAGI Medicaid renewals.
State of Montana	• 63% for CHIP and MAGI Medicaid applications.	• 86% for CHIP and MAGI Medicaid renewals.
State of New Hampshire	• 55% for CHIP and MAGI Medicaid applications.	• 65% for CHIP and MAGI Medicaid renewals.
Commonwealth of Pennsylvania	• 85% of CHIP and Medicaid (including MAGI and Non-MAGI) applications.	• 97.5% for CHIP and Medicaid (including MAGI and Non-MAGI) renewals are attempted for no-touch renewals. Of those attempted, 92% are either fully automated or partially automated.

Figure 3. Experience with "No-Touch" Eligibility Transactions in Other IE-BM Solutions

4. Please provide a detailed description of how documents received through DocuShare will be accessed by users through the NextGen solution.

The NextGen solution provides the functionality to capture documents uploaded through various sources. The solution provides the ability to upload documents through the Customer Portal and also supports scanned and indexed paper documents. Additionally, correspondence generated by NextGen is also stored in DocuShare so that it can be retained, retrieved and/or reprinted as required. The following diagram shows these channels and the flow of documents into DocuShare.

How Documents Get into DocuShare

Customer
Portal Uploads

Paper
Documents

Generated
Notices

DocuShare
Repository

AR DHS_IEBM-500a
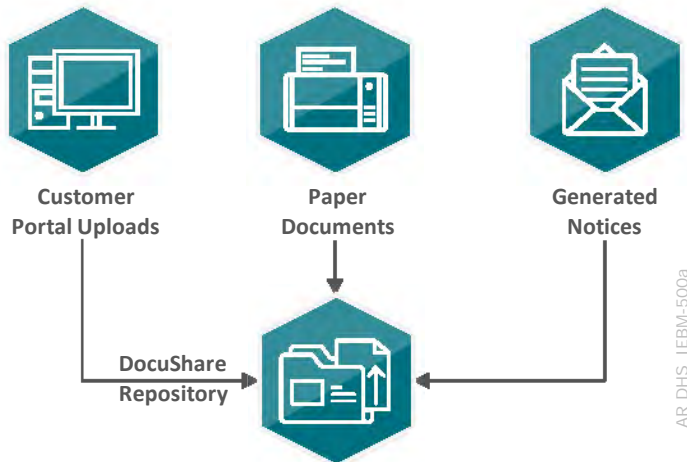
Figure 4. Document Flow into DocuShare.

Each document will have associated metadata that will be used to identify the document. The metadata includes the document type, case/client information, date received, and date processed, for all documents stored within the repository. The documents are associated with the requisite metadata to facilitate storage, search and retrieval of the documents via the NextGen Worker Portal and NextGen Customer Portal.

How DHS Workers Access DocuShare through NextGen

Multiple NextGen Worker Portal modules interact with DocuShare to retrieve and display the documents to the users. Documents are viewed during the processing and completion of work items tasks through the Workflow Management module. Each case has an Electronic Case File which aggregates all the documents that are associated to the case and the clients within the case. From here, workers can review the documents metadata and re-index if required. While workers are viewing and revising cases within the Data Collection Module, they have a quick access link to open the Electronic Case File. All pending and historical correspondence is access through the Correspondence module.

The interaction of these module with DocuShare is shown in the following figure.

How Workers Access Documents in DocuShare
(via Worker Portal)

DocuShare Repository

Workflow Management
- *View Task (including Document)*

Electronic Case File
- *Search Case File*
- *View Document*
- *Re-Index Document*

Data Collection
- *View Case File*
- *View Document*

Correspondence
- *Search Correspondence*
- *View Correspondence*

AR DHS_IEBM-500b
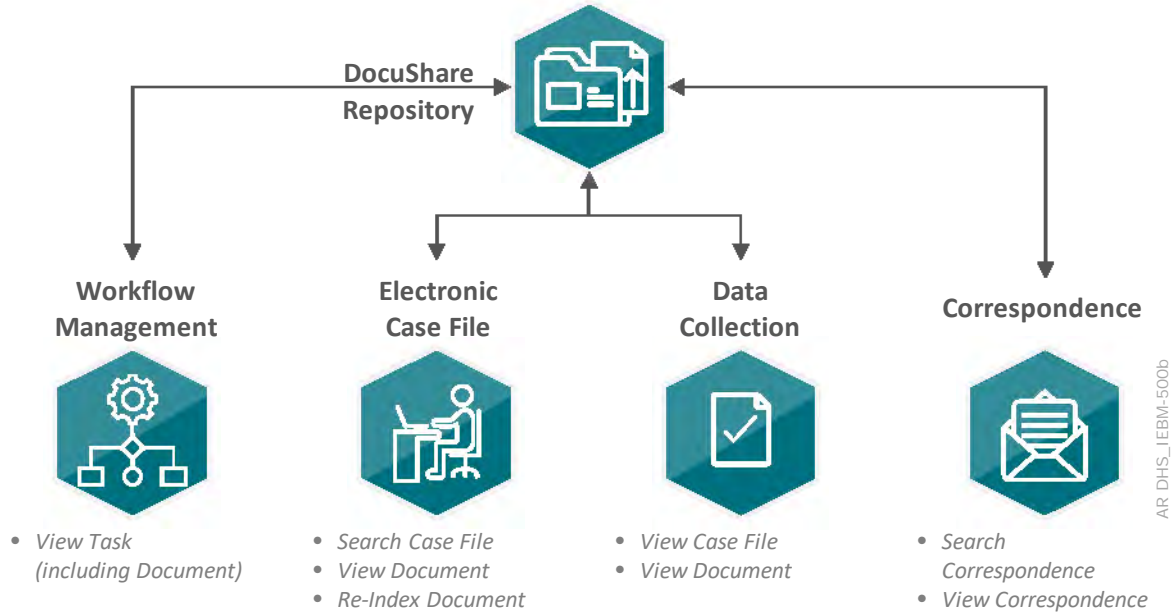
Figure 5. Accessing Documents in DocuShare.

When workers review their tasks, they will also be able to see which documents need to be processed in each.

Figure 6. Task Review in Worker Portal.

Workers can also search for and retrieve documents out of DocuShare using the documents metadata as search criteria.

Search Documents

SEARCH DOCUMENTS

Search by:

Case:	●
Other Criteria:	○

Case or Application #:	111239816 🔍
Client ID:	🔍
Reference #:	
Transaction #:	
Document Type:	▼

Document Received Date

Begin Date:	MM / DD / YYYY 📅
To Date:	MM / DD / YYYY 📅

↻ reset form

SEARCH

DOCUMENTS

Case/App#	Document Type	Received Date	Reference #	View
111239816	Expenses, Shelter	06/23/2017	4068013089	👓
111239816	Proof of Income	06/23/2017	4068013088	👓
111239816	Citizenship	06/23/2017	4068013087	👓
111239816	Identification	06/23/2017	4068013086	👓
	Page 1 of 1 ◄ ◄ ► ►	10 ▼		View 1 - 4 of 4

AR DHS_IEBM-5182_1

Figure 7. Document Search functionality in Worker Portal.

While working in a case, the worker can easily access the documents associated to the case by using the "View Document" link in the right navigation. Upon clicking that link, the Electronic Case File will open, which provides an aggregation of all the documents in DocuShare for the case and the clients on the case.
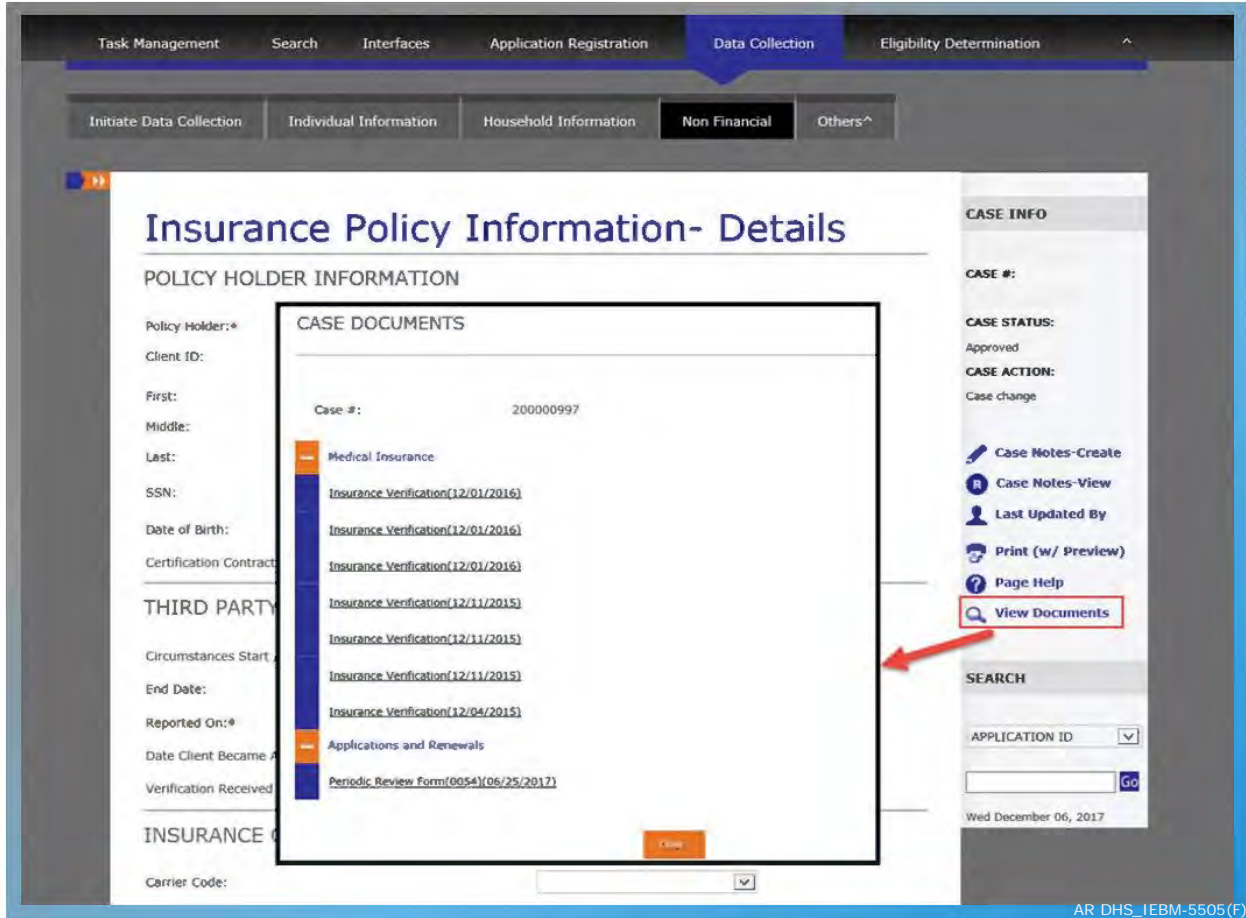
Figure 8. Case Document View.

Additionally, through the Historical Correspondence module, the worker can see all the notices which were generated for the case which are stored in DocuShare.
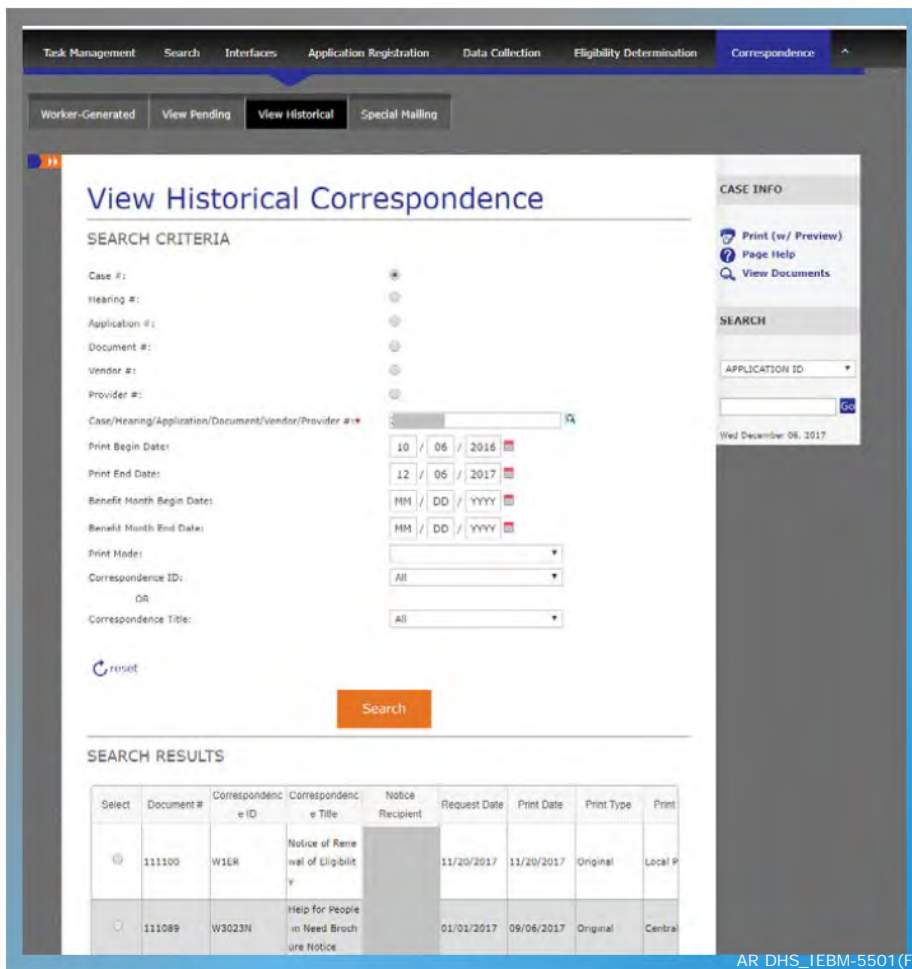
Figure 9. View Historical Correspondence.

How DHS Clients Access DocuShare through NextGen

The Customer Portal also integrates with DocuShare to show pertinent information to DHS clients. Clients can view the status of documents that they have submitted to DHS. Additionally, clients can see electronic versions of the notices they were sent. Clients who enroll in paperless noticing will receive an email to check their correspondence through this module.

The integrations between the Customer Portal and DocuShare are detailed in the following figure.

How Clients Access Documents in DocuShare
(via Customer Portal)

Document Status   **DocuShare Repository**   **Correspondence**

View Document Status   *View Correspondence*

AR DHS_IEBM-500c
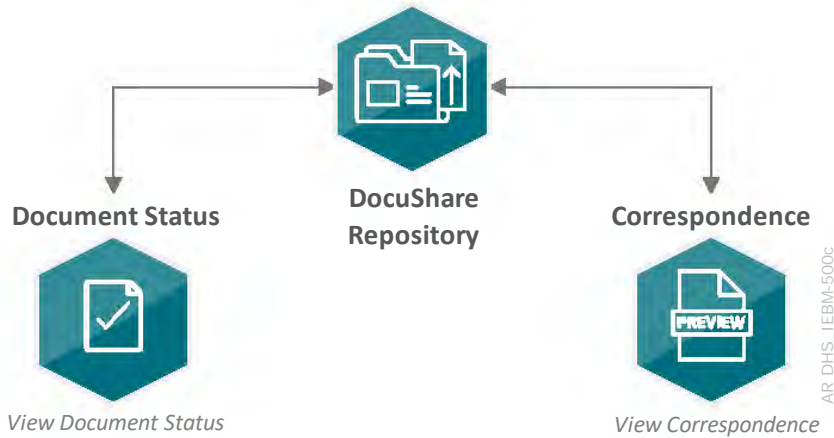
Figure 10. Accessing Documents in DocuShare via Customer Portal.
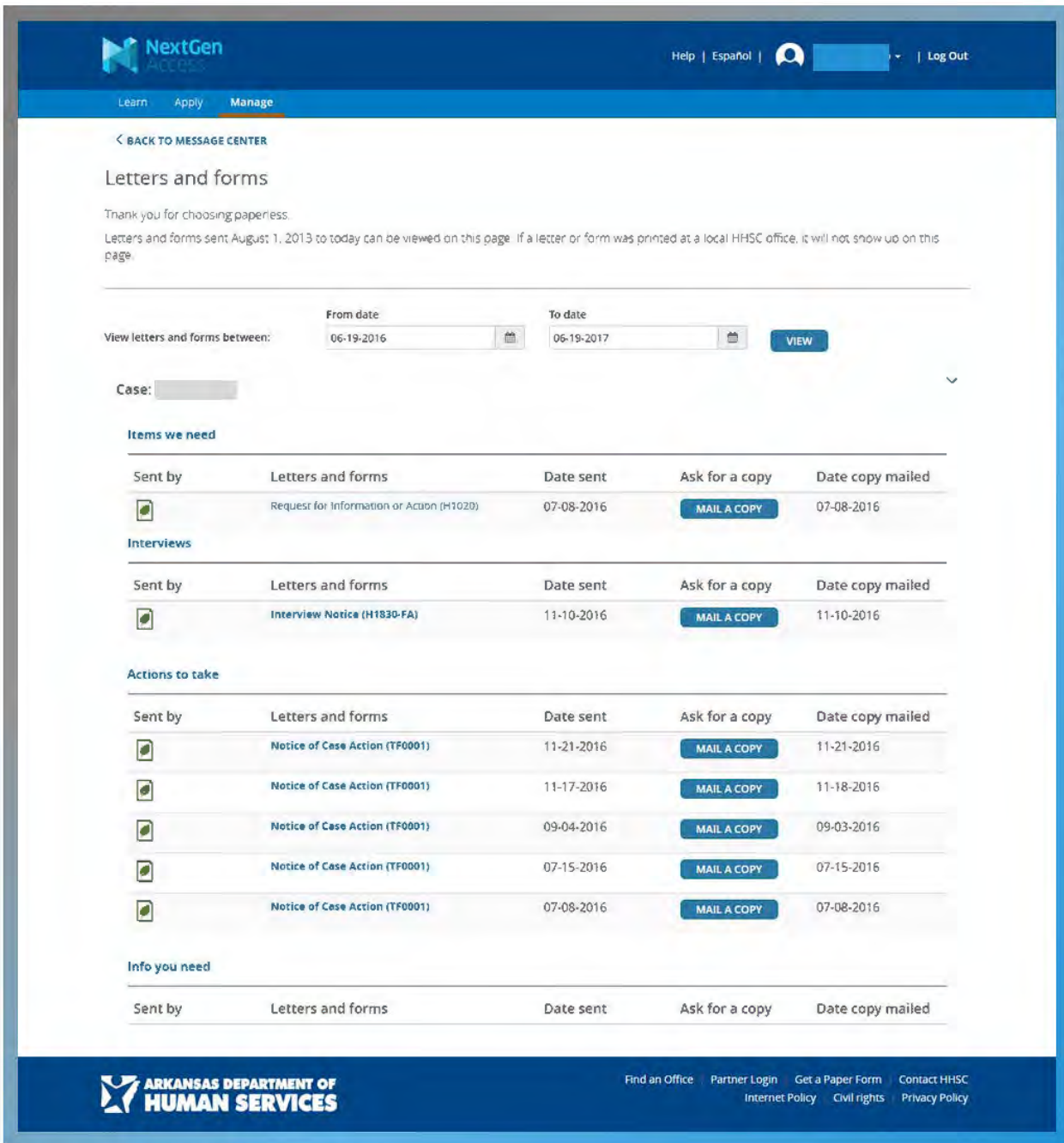
Clients can see the status of the documents the have uploaded through the Customer Portal. For security reasons, we typically do not allow clients to view submitted documents. However, this can be adjusted based on DHS requirements.
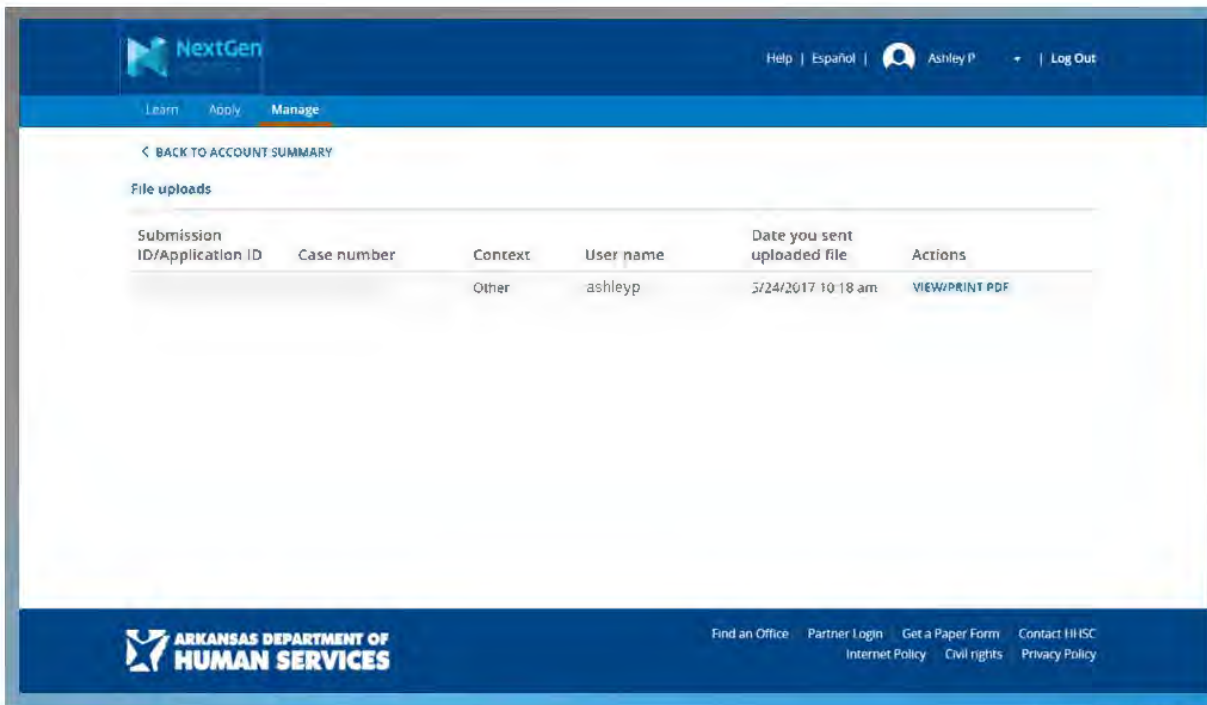
AR DHS_IEBM-5265(F)_2

Figure 11. Document Status in Customer Portal.

In the Customer Portal, clients can view and print correspondence they have been sent.

AR DHS_IEBM-5082(F)_2

Figure 12. Correspondence View in Customer Portal.

5. Please clarify how document/notice templates are to be created for use in the new system, including the specific system from which they are generated and what staff role will be responsible.

Deloitte's HHS NextGen solution uses the OpenText Exstream product to create and manage document/notices templates. Notice templates are created in OpenText using the OpenText Exstream LiveEditor tool. This tool is an easy to use visual editor that allows document/notice templates to be

created or modified without the need for technical development. The following screen shot shows an example template.
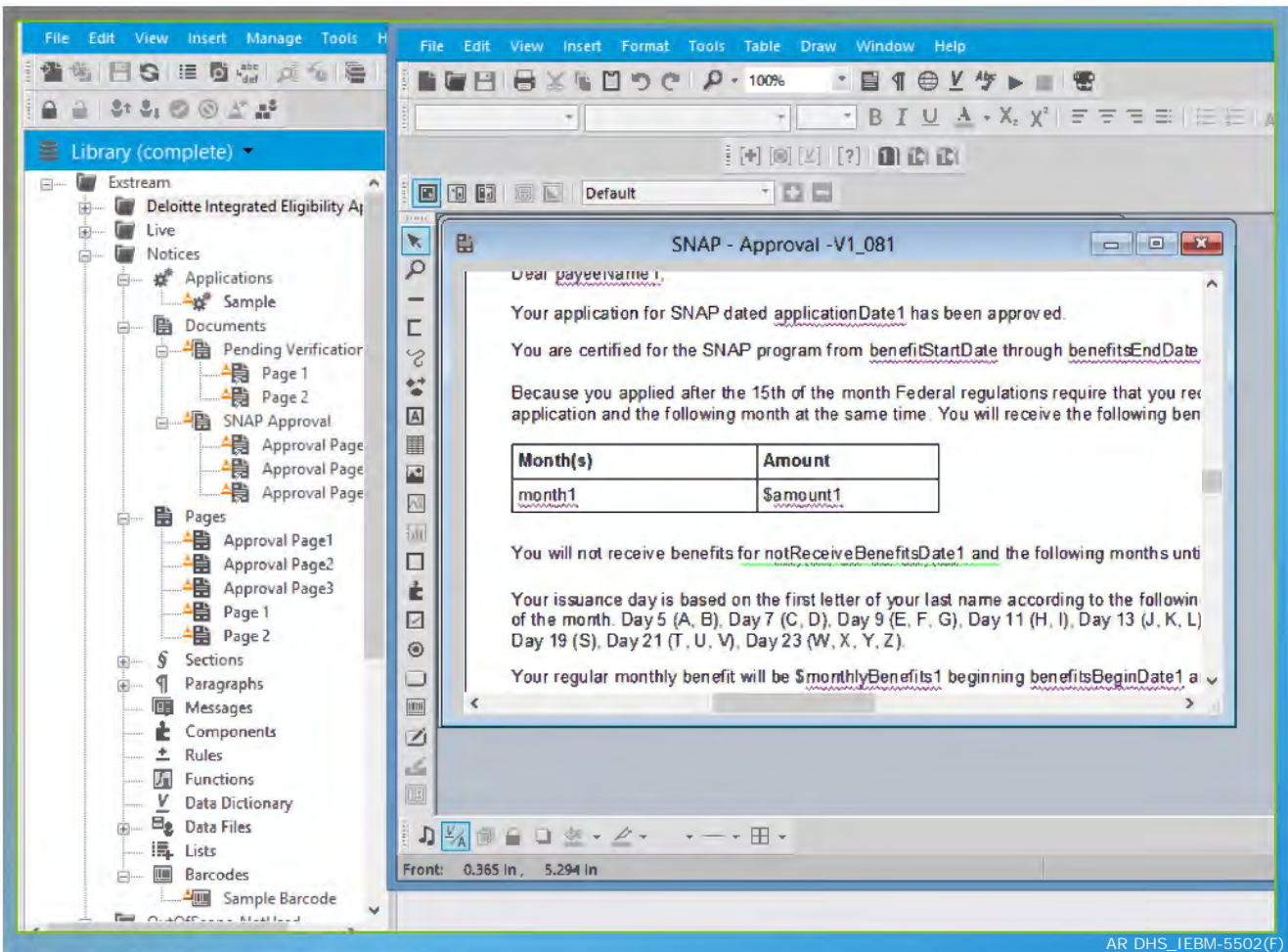
Figure 13. Example Template in OpenText Exstream LiveEditor Tool.

In order to generate notices, OpenText integrates with the IE-BM Worker Portal to receive the necessary case and client data. OpenText uses this information to populate the templates and generate the client notices which are stored in DocuShare and can then be locally printed or centrally printed/mailed.

During the design, development and implementation (DDI) phase of the project, our business analysts/functional leads work with DHS to design and create the templates. Our programmers configure the integration between OpenText and the IE-BM application and then this is validated by our testers. During the maintenance and operations (M&O) phase of the project, our business analysts/functional leads make modifications to the templates and/or static text based on changes approved by DHS. Alternatively, DHS can also modify the templates and/or static text directly using the OpenText Exstream LiveEditor tool.

In either case, the templates are promoted through the environments for testing and after validation, they are deployed into the production environment.

6. Please confirm that clients may report changes and that they will be stored in the system without verification.

Yes, clients may report changes and they will be stored in the system without verification. Clients may report changes via defined access channels such as phone, mail, or online via the customer portal. Our solution will capture the type of change reported (e.g., change in employment, someone has become pregnant or someone has moved out of the home), the date on which the change was reported, when the change took place, when the individual reporting the change became aware of the change, and who reported the change. If a client provides documentation as part of the reported change like a check stub associated with a change in income, our solution will store the documentation associated with the change. Workers then record the date they confirmed the verification, if confirmed, and the source/type of verification. Some information will be validated immediately using available real-time and stored data sources, as per the response to Functional Requirement 9.5:

Req. #	Requirement Description	Use Case #	Requirement Met	Solution Method	Proposed Phase	Suggested Clarifying Comments
FR9.5	The System will determine if documentation is required for the change to be considered submitted and display the option to attach electronic documentation	15	Y	C	Phase 1	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. See section 1.10.1.2

Figure 14. Our Response to Functional Requirement 9.5.

After the data is entered onto the case when eligibility is run, the updated benefit results can either be authorized immediately or, if by program policy the change requires verification, the eligibility results will pend and a notice for verification will be generated as per the response to Functional Requirement 9.6:

Req. #	Requirement Description	Use Case #	Requirement Met	Solution Method	Proposed Phase	Suggested Clarifying Comments
FR9.6	The System will generate a notice, resulting from reported changed, to the Client identifying the specific verifications necessary and the due date by which the verification must be provided and any action that will occur, based on State and Federal policy, if the verification is not provided	15	Y	C	Phase 1	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. See section 1.10.1.5

Figure 15. Our Response to Functional Requirement 9.6.

7. Provide an overview of the appointment and caseload management solution including:
a. Allowing updates and cancellations of scheduled appointments to be synched with external calendars
b. A worker scheduling an appointment with a client
c. Resources becoming unavailable (allowing for automated rescheduling or must

appointments be rescheduled by the DHS staff (functional requirement 12.11)
d. Please describe how the proposed solution will meet functional requirement 12.22

We have provided an overview for each scenario you provided in the sections that follow:

a. Synchronization with External Calendars
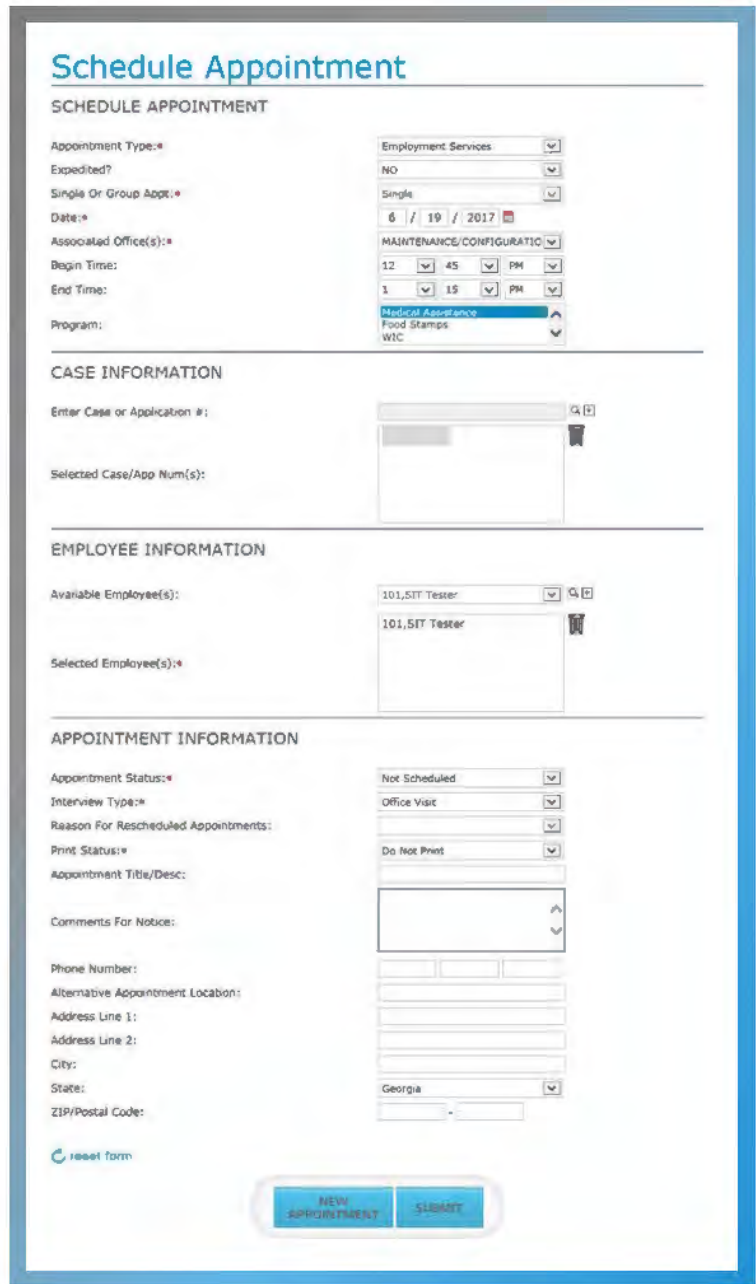
NextGen sends and email to an employee with an Outlook calendar invitation when an appointment is created for that employee. The solution will be configured to also trigger an email when a previously scheduled appointment is updated or cancelled on an Employee's calendar within NextGen. The synchronization is from the NextGen solution to Outlook only. Synchronization from Outlook to NextGen is not included as part of the proposed solution configuration.

b. Workers Scheduling Appointments with Clients

Workers can schedule an appointment for the client using the "Schedule Appointment Screen" in the Scheduling Module of NextGen. They can modify and cancel existing appointments through the "View and Maintain Scheduled Appointments Screen."

c. Changes in Resource Availability

Requirement 12.11 requests that the System will be able to request the client re-schedule their appointment if AR DHS/DWS resource availability changes. Sending a request to the client likely would result in a delay that may impact the timeliness associated with processing the application, change report, simplified report or renewal. From a process perspective, authorized

AR DHS_IEBM-5301(F)

Figure 16. Schedule Appointment Screen.

users will reassign these to another individual that may nor may not require a change in the appointment time/schedule. When a resource becomes unavailable, a worker must reschedule the appointments using the View and Maintain Appointments screen.

View And Maintain Scheduled Appointments

GENERAL DETAILS

Client Name:	
Client ID:	
Phone Number:	N/A
Employee Name:	FIVE,SIT TESTER
Employee User ID:	sittester05
Selected Queue:	N/A
Case or Application #:	120560846
Program:	N/A
Unit #:	
Office Name:	MAINTENANCE/CONFIGURATION
Service County:	Fulton

APPOINTMENT INFORMATION

Date:	06/19/2017 12:45 PM
Appointment Status:	Cancel
Begin Time:	12:45 PM
End Time:	01:15 PM
Appointment:	Employment Services
Appointment Type:	Office Visit
Print Status:	Do Not Print
Comments For Notice:	
Phone Number:	
Alternative Appointment Location:	
Address Line 1:	
Address Line 2:	
City:	
State:	Georgia
ZIP/Postal Code:	

↻ reset form

PREVIOUS   SUBMIT

AR DHS_IEBM-5307(F)

Figure 17. Rescheduling or Cancelling Appointments.

If the State is interested in further enhancing the solution, we have implemented automated scheduling for other states as an optional enhancement on top of the core NextGen solution. A nightly job will identify appointments where a resource is not assigned but the appointment is scheduled and (1) reassign a worker to preserve the original date if possible or (2) change the date of the appointment based on availability.

d. Meeting Functional Requirement 12.22 (automatic work re-assignment)

Requirement 12.22 requests that the system have the ability to re-assign work automatically based on state policy. When a user is created, the system administrator assigns the user a role and a unit. NextGen uses the profile that is created for a user to (1) govern what actions the worker can take in the system, (2) control which screens are viewable/editable, and (3) assign/allocate work to complete. When a user's role or unit changes, NextGen will use the latest profiles to determine to whom work should be assigned. Additionally, a batch job will be configured to reassign any existing work to another user based on state operational approach.

8. DHS has written use cases to capture what the solution must perform. Discuss the approach to identifying the gaps between the use cases and the proposed solution's configurable COTS capabilities. How will the decision on how to address the gaps be made (changing the use case to align with the COTS functionality will decrease customizations, while it will not align with Arkansas' desired approach)? Specify where the Deloitte solution will require customizations to meet the uses cases and the functional requirements.

In completing the RTMs for the proposal, we evaluated your requirements and indicated where the requirement will be met through configuration or customization. In advance of the requirements validation sessions, we will use the RTMs and map the requirements to the use cases and NextGen to help to facilitate the sessions. During the sessions, we leverage the use cases to set context for the sessions and use walkthroughs of the base system to evaluate the fit/gap. If gaps between the requirements and use cases are identified, these gaps will need to be evaluated on a case by case basis. Based on our experience delivering IE-BM systems in other states for organizations like DHS, we may bring alternative ideas for you to consider. Using this information, Arkansas will need to determine if the use case can be modified or if additional customization is required. Our intent is to provide a system that aligns with your needs and requirements without significant alteration of your approach.

9. Please provide the percentage of systematic data conversion and load success achieved in other States. What does Deloitte consider a successful load percentage?

Our success in conversion is driven by our deep understanding of the business and the data needs to support the business. This understanding allows us to design conversion programs that maximize the success of the conversion process and convert data in a standard sequence of events driven by case and program information. While every state is unique, we bring a standard approach refined through numerous implementations to improve the percentage of legacy cases loaded into NextGen.

The following figure provides details on our prior conversion automated successes in Georgia, Connecticut, New Mexico, Michigan and Texas.

Deloitte's Prior Conversion Success				
State Name - Agency	System Name	Number of Source Systems	Approx. Data Volume (No. of cases)	Percent of Cases or Clients Successfully Converted
State of Georgia - DHS/DCH	Georgia Gateway	4	1,200,000	99.92%

Deloitte's Prior Conversion Success				
State of Connecticut - DSS	ImpaCT	3	500,000	93%* *Approximately 7% of the client population remains in legacy pending catch-up wave completion in the coming months.
State of New Mexico - NMHSD	ASPEN	11	830,000	99.96%
State of Michigan - DHS	BRIDGES	3	1,300,000	99%
State of Texas	TIERS	2	1,700,000	99.6%

Figure 18. Prior Conversion Text.

As part of the conversion process, the Deloitte team employs a series of readiness activities that include data profiling, business rule analysis, cleansing and remediation, and validation to confirm that the maximum volume of data is converted and is of high quality. We have found that the percentage of data successfully converted depends on 3 key factors.

- **Quality of data in the existing systems.** Assess data early and often to avoid late data clean-up surprises. Our conversion tool kit includes standard data quality checks and reports to improve lower quality data that can result from legacy systems with less stringent data validation rules and/or older data that includes pending cases and cases not being closed.

- **Comprehensive data mapping rules to handle various data scenarios.** Dig into the source data from the legacy systems to correlate the values with the IE-BM solution and use Deloitte's proven data mapping tool to capture the various elements for data mapping

- **Robust ETL process.** Well-designed and thoroughly tested ETL processes eliminate load failures and achieve the best results in an automated conversion approach. Loading of converted data requires careful consideration and sequential planning which is included in Deloitte's conversion tool kit with pre-defined building blocks, processes and clearly defined interdependencies

10. DHS believes that the programmatic roll-out sequence should be MAGI/CHIP/ ARWorks during the first phase (all currently in Cúram), then Medicaid, SNAP, and TANF in a subsequent phase(s). Please detail how the roll-out proposed is a better option for Arkansas.

The key differences in roll-out sequence Deloitte has proposed are based on the grouping of programs and the number of releases.

Key Difference	How We Differ
Grouping of Programs	Deloitte proposed to implement all the components of the Medicaid program in single Release, including MAGI, CHIP, Non-MAGI (traditional Medicaid) and Arkansas Works. DHS's proposed approach splits Non-MAGI Medicaid into a separate release from rest of Medicaid.
Number of Releases	Deloitte proposed to implement the total scope of IE-BM project in 2 Releases. DHS's proposed approach is 3 Releases.

Figure 19. Key Roll-out Sequence Differences.

We developed our release and roll-out approach based upon our experiences from several similar complex Integrated Eligibility systems implementations, and to meet the following guidelines provided in the RFP in "Section 3.9 Proposed Project Work Plan", Pages 120/146 & 121/146:

- IE-BM project should be completed within 36 months

- IE-BM solution should be implemented in multiple releases

- IE-BM releases should be scoped based on program, function, etc.

- Each IE-BM release should include a pilot and a phased rollout to the offices

Based on our experience, we have taken into consideration the following additional key success factors to create the recommended release and roll-out sequence:

Key Success Factor	Considerations
Worker Impact	Minimize the number of times workers must go through transition to the new IE-BM solution
	Minimize the number of systems workers must use to administer a program (i.e. all Medicaid)
	Minimize the work-arounds for workers during the transition period
Client Impact	Minimize the possibilities of a client being serviced from different systems by completely migrating an entire program to IE-BM solution in a single release (i.e. a client moving from MAGI to non-MAGI)
	Minimize delays in service
	Minimize confusing and redundant notices
Program Impact	Efficient conversion of data at the program level to IE-BM
	Promote ease of program, policy compliance and reporting requirements by not having program participants spread across multiple systems
	Make interfacing with key stakeholders like MMIS as efficient as possible during the transition period

Figure 20. Release and Roll-out Key Success Factors.

The following table summarizes the benefits of the Deloitte proposed Release and Roll-out approach:

Features of Deloitte's Approach	Benefits to Arkansas
All Medicaid functionality is implemented in Release 1 instead of spreading across multiple releases	Allows for expedited retirement of legacy systems and mainframe utilization capacity that currently support Non-MAGI program
	All workers supporting Medicaid program exclusively use IE-BM solution
	All Medicaid clients are served, included mixed families (members of a single family receiving MAGI, CHIP, AR-Works and Non-MAGI Medicaid) from a single eligibility system, IE-BM for all needs that include new applications, change in circumstances and renewals.
	Conversion of all Medicaid related data from EEF and other legacy systems is completed in one release
	Reduced training and transition impact on Medicaid case workers
	Medicaid program management, policy compliance, federal and state reporting functions become more efficient
	Reduces the duration for with key Interface partners like MMIS need to integrate with multiple Medicaid eligibility systems
	Increases overall productivity and efficiency of program administration
All IE-BM program functionality is implemented in 2 Releases instead of 3 or more Releases with in the 36-month project timeline	Allows for sufficient time for SDLC activities for each release and minimizes parallel work across multiple releases
	Allows for sufficient time for implementation activities for each release including pilot and phased rollout
	Allows for more ideal allocation of state resources supporting the project
	Allows for sufficient time for key activities that need to be repeated for each Release:
	• Stabilization
	• Training and transition
	Minimizes the need for synchronization of data across multiple systems

Figure 21. Release and Roll-out Benefits that Deloitte Brings.

Questions for Written Response Only

1. Have you or any of your subcontractors ever had to implement a corrective action plan? If so, please describe the circumstances. Include a description of the circumstances surrounding the issues with Deloitte's implementation of the IEBM system in the state of Rhode Island.

In the last 5 years, Deloitte Consulting LLP has provided services to Health and Human Services clients in 40 States. Based on reasonable diligence, we do not believe Deloitte Consulting LLP has had to implement a corrective action plan for any IEBM DDI project during such period. We are not proposing use of any subcontractors for this project. Regarding our project with the State of Rhode Island, we helped the State implement their health insurance exchange, which went live in October of 2013 and we helped them implement their integrated eligibility system, which was developed on top of the existing health insurance exchange. In September of 2016, the integrated eligibility system went live via a statewide "big-bang" go-live.

2. Have you or any of your subcontractors ever had a contract terminated/not renewed before full completion of the original scope of the engagement? If so, please describe the circumstances.

Deloitte Consulting LLP has not, in the past five years, had a contract terminated for breach/cause. From time to time, a client chooses to terminate a contract or not renew it for various reasons. Deloitte Consulting is not proposing use of any subcontractors for this project.

3. Would you be willing to provide a performance bond?

Yes, we are willing to provide a performance bond.

We would note, however, that Deloitte Consulting LLP's financial condition is strong and we have the full capability to execute the subject contract and satisfy the liability incurred under the agreed to final contract. We are consistently found to be financially capable, including through federal contracting officer reviews, and our financial capability has never been identified as a risk or an impediment to award by any of our Public Sector clients. Performance or financial guarantees have not been required by other Public Sector clients. However, should the State of Arkansas determine an additional performance security is desirable, we can provide a performance bond from a licensed and approved Surety. Further details associated with the bond can be discussed as part of contract negotiations.

4. Many of the referenced projects experienced expansion of scope and the analogous increase in contract value. Please provide a summary of the scope expansion for each project where the contract value is higher than the original contract, the functionality that was provided that was not in the original scope, and the basis for the change in functional requirements (e.g. specific policy changes).

The following table contains the referenced states which experienced expansion of scope and a summary of the scope expansion items which lead to the increase in contract value.

State	Scope Expansion Summary (including the functionality that was provided that was not in the original scope, and the basis for the change in functional requirements)
State of Connecticut	The scope expansion items which led to a higher contract value are as follows: • Extension of the project timeline which provided an extended user-acceptance testing (UAT) and implementation period. • Design and implementation of the financial, provider and vendor management modules. • Release management services to support the state-hosted environments. • Development of a Security Design Plan (SDP) • Development of 100+ functional changes to the system that were not originally documented in the RFP requirements but were identified during requirements and design. • Perform the impact analysis to remove the Master Person Index (MPI) currently designed for the IE system and in production supporting the state's health insurance exchange, and replace it with the EMPI product. • Validate requirements and develop a detailed approach for MAGI enhancements to support further IE/HIX integration. • Confirmation of the Department decision on early release of IE Worker Portal in place of ConneCT Worker Portal, and develop a strategy and options for a revised release schedule • Provide additional security-related services, deliverables, and documentation (including: Creation of additional federal compliance documentation required for the IE system to go-live, Risk Assessment and Controls Testing, Maintenance of Federal (CMS, IRS, SSA) compliance documentation during the 2016 calendar year, Implementation of Additional Technical Safeguards, Automation of Security Governance Processes, Development of Information Security Policies and Procedures and Development of a Business Continuity Plan for DSS Central and Regional Offices) • Implementation of database security for the IE database environments and ConneCT database environments using the IBM Guardium Data Encryption (DE) and Data Activity Monitoring (DAM) tools. • Implementation of data obfuscation (de-identification/data masking) of IE production data in IE non-production environments using the IBM Optim Test Data Management (TDM) and IBM Optim Data Privacy tools. • Provide security support and monitoring services to the State. • Design, develop, and implement the required modifications for the IE system to consume EMPI information management services for a common person repository. • Additional conversion and interface resources to support the State with conversion and interface testing. • Addition of on-site field office implementation resources (21 FTEs during peak support) to support the State. • Addition of reporting and analytics support resources to support the State. • Addition of help desk support resources to support the State. • Expanded data masking services to support additional systems (to support integrated testing w/ IE).

State	Scope Expansion Summary (including the functionality that was provided that was not in the original scope, and the basis for the change in functional requirements)
State of Georgia	The scope expansion items which led to a higher contract value are as follows: • Addition of Business Process Reengineering (BPR) services including As-Is and To-Be assessments, communication services, business readiness activities, and establishment of a change champion network • Addition of Infrastructure services for production (and production like) environments, previously covered by the State through the North Atlanta Data Center (NADC) • Extension of the project timeline at the State's request to allow for additional Pilot time and "recovery" months after each implementation wave • Extension of the project timeline at the State's request to accommodate more time for User Acceptance Testing (after a change in the leading State agency) and to adjust the implementation date beyond the end of year holidays • Addition of Site Support services and resources to each rollout wave in order to provide ample over-the-shoulder and virtual support to office users and those in the field • Extension of the project timeline at the State's request to split the final rollout wave in order to balance the size and geographic scope of each of each implementation (leaving Metro Atlanta counties for the final wave) • Addition of training, communication, and site support services for the Department of Early Care and Learning (DECAL) as they re-insource their Eligibility staff and services back from the Department of Human Services (DHS)
Commonwealth of Kentucky	The scope expansion items which led to a higher contract value are as follows: • Addition of the SNAP, TANF, and Non-Magi Medicaid programs and functions into the system. • Implementation of Medicaid Waiver application (Home and Community Based System) • State option to buy back office services for Issuer Liaison Office to support SBM (SBM - Health Insurance Exchange) • Implementation of SHOP module for the State Based Marketplace • Implementation of Mobility solutions (Phone and Tablet Apps) • State option to buy extended field support after the Integrated Eligibility system was rolled out statewide • Implementation of Child Care Eligibility and Enrollment module • Decommissioning of State Based Marketplace (SBM - Health Insurance Exchange) and transition to SBM-FP (Federal Platform) • State requested system enhancements to SNAP, TANF, Medicaid functionality (over 100K enhancement hours) • State exercised option to extend M&O for two years for the entire system
Commonwealth of Virginia	The scope expansion items which led to a higher contract value are as follows: • Extension of timeline to include additional UAT time. • A Change in the implementation approach to include a pilot and phase rollout for SNAP program to comply with FNS requirement • Automated conversion of MA ABD population • Department established a separate call center to process MA applications for which the system was modified to include separate modules for application , renewals and change reporting • Modification of the self-service portal to include two portals - one for Medicaid only and the other for all other programs • Implementation of no-touch process for FFM applications • Several changes were implemented to meet the new state and federal regulations that went into effect • Additional field support was provided post go-live • Automation of exparte renewals using multiple electronic sources • Change to split child care program into distinct cases • A new integration point to Interface with the Department of Health for support of the WIC program • Implementation of over 100 functional changes to the system to support a variety of business and policy needs.

Figure 22. Referenced Projects Scope Expansion Summaries.

5. The proposed staffing includes a number of staff who are scheduled for 120% and higher commitment to this project. Please provide an explanation for each instance where the commitment exceeds 100% and how you anticipate meeting this commitment.

The work plan includes a comprehensive list of resource groups (shown in the following figure) that is created based on the Vendor and State of Arkansas IE-BM Engagement Staffing as documented in the RFP, and maps each task in the work plan to align with their expected responsibilities.

The work plan provided in our Proposal only mapped tasks to the resource groups and not to individual resources. Because of this, some resources may have appeared to be more than 100% allocated. We would like to confirm that there will no instances in the final work plan, created for the execution of the project, where an individual project resource is resource loaded (allocated) more than 100%, after accounting for expected vacations and time-off.

AR DHS_IEBM-5253

Figure 23. Resource Groups.

6. Throughout the proposal, the schedules reference Phase 1 and 2 as well as Release 1 and 2. Please clarify the time frame, the functionality to be included, and the major dependencies for each. Are phases and releases the same? If not, please define your use of each term.

The terms "Phase" and "Release" are not the same. We acknowledge these terms were used interchangeably in our response in some of the sections and likely caused confusion in your review. The term "Phase" is also used erroneously instead of "Release" in few places.

We have provided clarification below:

Release. The IE-BM Design, Development and Implementation stage will be completed as a part of two major releases, Release 1 and Release 2. The Release-1 will be of 19 months duration and Release-2 will be of 25 months duration, including the statewide roll-out of each of the releases. Refer to the following figure for detailed schedule of the two proposed releases.
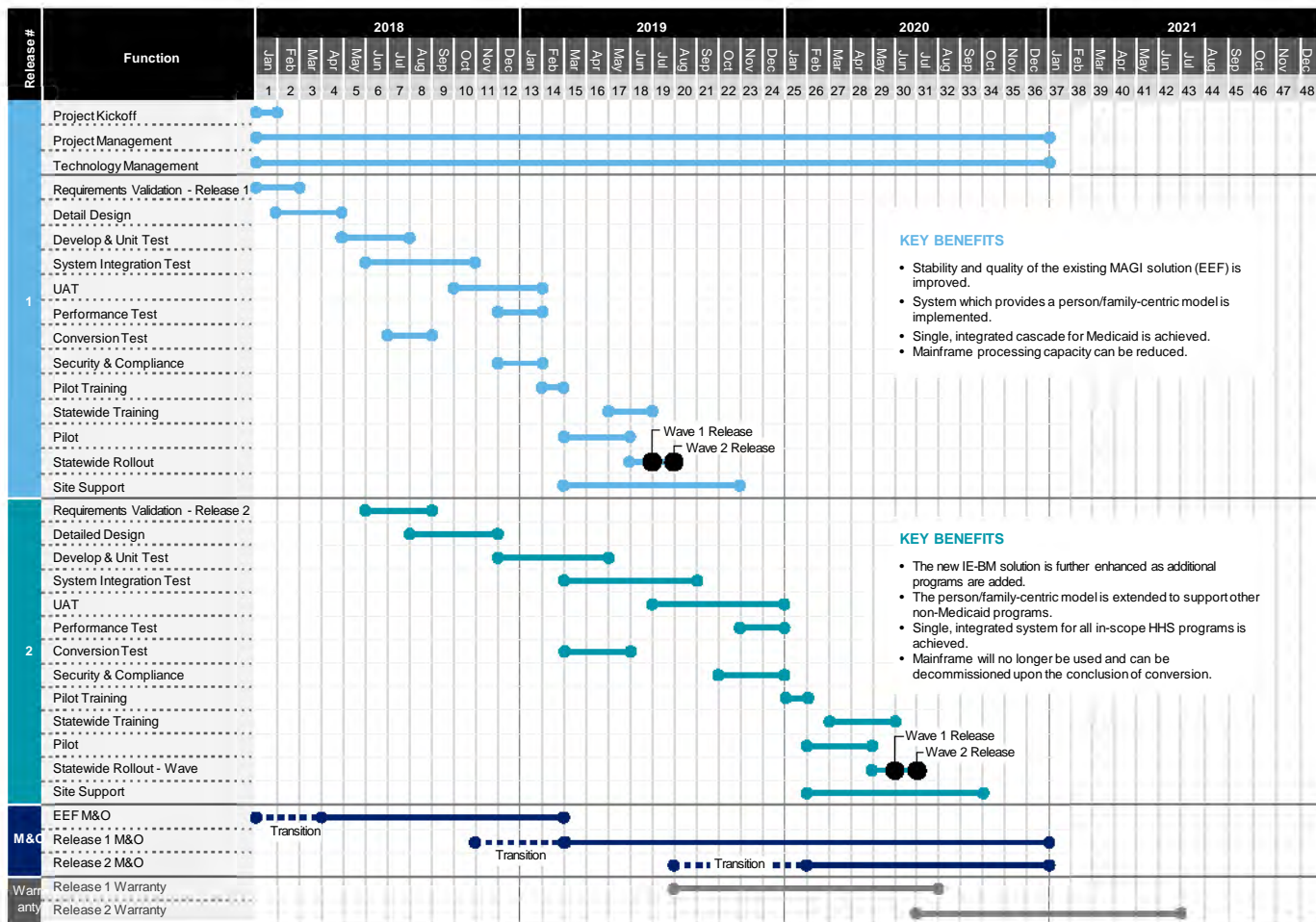
Figure 24. Two-phased Schedule.

Phase. As part of our EVD for SI methodology, there are five broad phases: Inception, Design, Development, Implementation and Operation. Each of these phases have more detailed sub phases such as Initiate and Plan, Requirements and Design, Development and Test, UAT, Train and Deploy, Maintain and Operate. The following figure provides details for each of the SDLC phases and sub-phases.

EVD Phases/Sub-phases

Inception	Design	Development	Implementation	Operation
Initiate and Plan	Requirements and Design	Development and Test	UAT, Train and Deploy	Maintain and Operate

Key Project Objectives

Define and Plan the Project	Design, Build and Test the Solution	Deploy the Solution	Operate the System in Production

Key tasks

Create Project Charter

Develop Project Management Plan

Develop Master Plan and an integrated Project Work Plan

Develop Configuration Management Plan, Requirements Plan, Metrics Plan, and Quality Management Plan

Manage the Work Plan using Project Management enabling tools

Develop an Integrated Tool Strategy

Develop Change Management Strategy

Elicit requirements for the solution

Develop test plans and perform testing

Develop the solution

Establish technical feasibility of the solution

Document and maintain bi-directional traceability of requirements

Create architecture and design specification documents

Perform User-Acceptance Testing (UAT)

Prepare super users and train end-users

Make go/no-go decision

Execute cutover And go-live with solution

Close project and execute warranty: proceed to Operation phase as contracted

Perform service desk function and incident management

Identify and prioritize continuous service improvement opportunities

Monitor continuous service improvement performance

Monitor service level performance

Execute and monitor service delivery governance

Monitor service delivery organization and process and procedure performance

Perform service delivery

Monitor service delivery technology performance

EVD for SI   **Let the method be your guide**

AR DHS_IEBM-228

Figure 25. SDLC Phases and Sub-phases.

We are providing clarification of the following sections of our proposal where the term "phase" is used instead of the term "Release":

Clarification 1

In documents, Tab 6 Functional Requirements Traceability Matrix and Tab 8 Technical Requirements Traceability Matrix, the RFP asked for each requirement to be mapped to an Implementation Phase, the requirement will be met in. The term 'Phase' should have been translated to 'Release' to follow the

definition and approach (as explained above) we used for the terms 'Phase' and 'Release' throughout our proposal.

In both these documents please interpret the term 'Phase 1' and 'Phase 2' as 'Release 1' and 'Release 2' respectively.

Clarification 2

Template T-11. Implementation Requirements Approach Response Template, Page2

"Our proposed ~~implementation~~ strategy consists of two ~~phases~~ releases"

IMPLEMENTATION STRATEGY AND KEY BENEFITS

Our Implementation Strategy:

IE-BM RELEASE 01 — **Medicaid/CHIP**
- Pilot: 3 Months in Single Office (Include Sampling of All Medicaid/CHIP Programs)
- Wave 1: Convert all MAGI and CHIP (Statewide)
- Wave 2: Convert all Non-MAGI (Statewide)

IE-BM RELEASE 02 — **All Other Programs**
- Pilot: 3 Months in Single Office (Include Sampling of All Other Programs)
- Wave 1: Regional Conversion Part I
- Wave 2: Regional Conversion Part II

Key Benefits:

✓ Multiple, condensed releases so all lessons learned can be incorporated

✓ Single, integrated cascade for Medicaid is achieved with Release 1

✓ Person/family-centric model is implemented starting with Release 1

✓ Mainframe processing capacity needs are reduced starting with Release 1

Figure 26. Two-release Proposed Implementation Strategy.

Please note the phrase 'Wave' in the graphic above, refers to phased implementation of a Release as recommended in the RFP.

7. Many of the T6 requirements indicate "Configuration", though the instructions indicate that configuration is to be used to indicate existing DHS platform assets. Please provide clarification, for every requirement listed as "C", if the Vendor will use DHS assets or if the configuration will occur against a third party product. In addition, if the requirement will be met by the third party product, please indicate if the requirement will be met without configuration (out of the box).

This question was withdrawn by the State on December 1, 2017, as the question conflicts with the instructions noted in Addendum 1 issued under the RFP.

8. Please identify the modules within the proposed solution that meet the Federal definition of modularity and will be available for access and utilization by other Arkansas programs outside of the initial scope of this proposal.

The foundation of Deloitte's HHS NextGen 2.0 solution is based on a modular, SOA-based architecture that supports asset reuse and extension. Our NextGen solution installations have been expanded in a number of states to be used by other program areas. The Commonwealth of Virginia initially installed the NextGen solution to support case management for Child Care with later expansions into Medicaid, TANF and SNAP. The State of Connecticut has extended the assets from the core NextGen solution to be used across its Health Insurance Exchange and the Integrated Eligibility System. The State of Georgia has exposed modules from the NextGen solution to provide a multi-department Master Person Index leveraging the Master Data Management component; as well as, used the Customer Portal to serve as a common self-service solution for traditional integrated eligibility programs as well as the Women, Infant and Children (WIC) Program. The examples above are a representative sample of how the NextGen solution provides our clients with the flexibility to meet their unique environmental needs while supporting asset reuse. The following figure represents the overall functional topology of NextGen. Each of the modules may be reused and extended by other efforts. As some of the modules are supported by COTS components, additional licenses may need to be procured to address the increase usage.
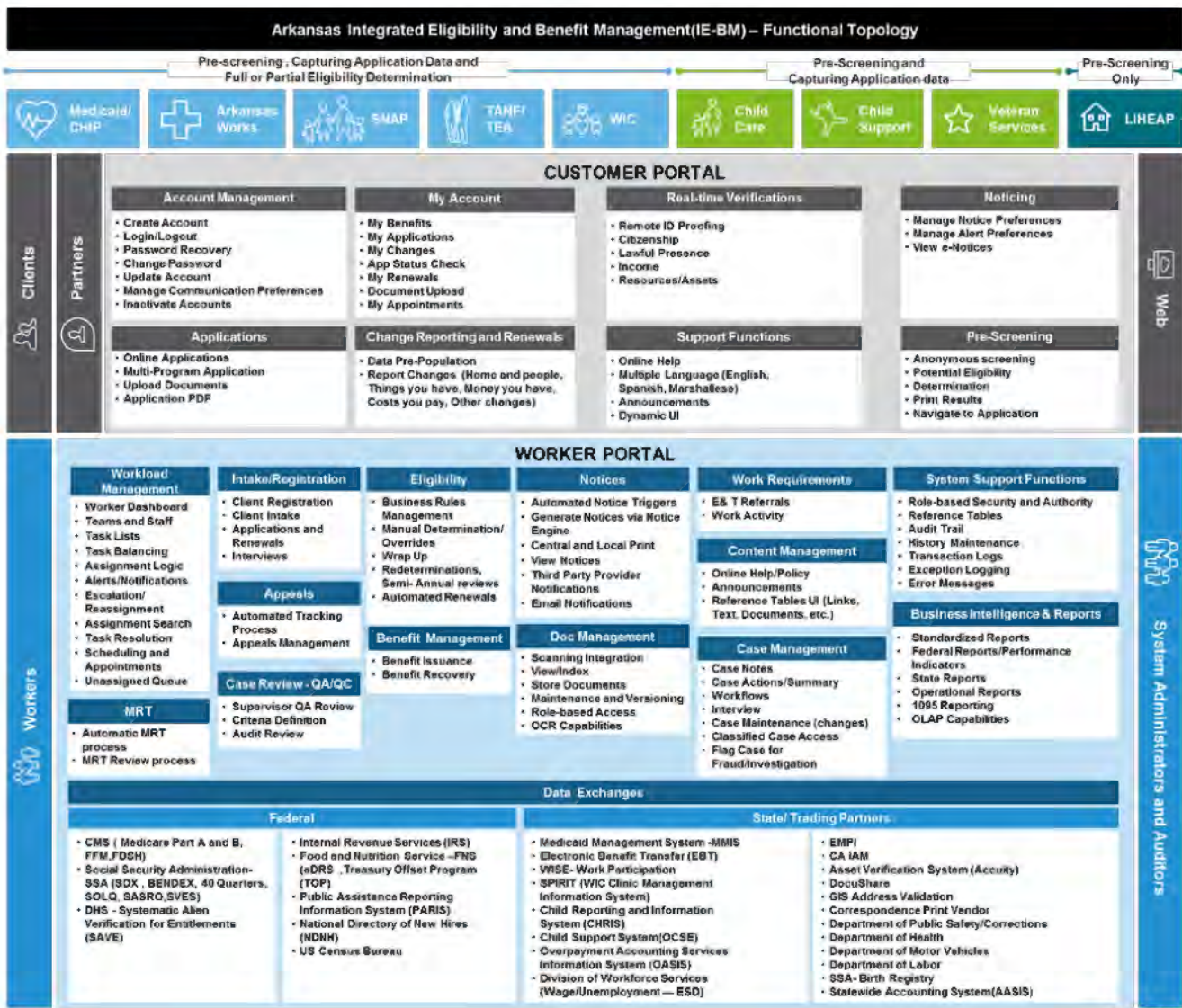
Figure 27. Modules that May Extend Other Arkansas Programs.

9. Please confirm that the solution's capabilities described in the proposal as "can" and "has the capability to" shall be included in the scope of the proposed solution.

Generally solution capabilities described with the terms "can" and "has the capability to" in the Requirement Traceability Matrices responses would be considered in scope. The exception to this generalization is if our Suggested Clarifying Comments indicated otherwise. The Requirements Traceability Matrices provide a comprehensive review of the solution's functionalities and capabilities.

Per Functional Requirement Assumption 8, "during the course of the review, if any discrepancies are identified between sections T6 and T7, please defer to T6 for our response to how NextGen meets your requirements." Therefore, we have provided more details around how "can" and "has the capability to" are used in the Functional and Technical Requirement Traceability Matrices in the following figure. Red text denotes added language and strikethrough text denotes text that has been removed relative to the original clarification provided with our proposal response.

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
FR1.24	The System must support sanctioning a client for a specific time period		Y	C	Phase 1	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. Our proposed solutions worker portal provides screens where sanctions and disqualifications can be created and lifted at an individual level. The screen captures various details like the type of sanction, level, good cause, start date, end date. Access to this screen can be restricted so that only authorized workers can lift or modify/override a sanction.	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. Our proposed solutions worker portal provides screens where users will create and lift sanctions and disqualifications ~~can be created and lifted~~ at an individual level. The screen captures various details like the type of sanction, level, good cause, start date, end date. Access to this screen is controlled by the security module where ~~can be restricted so that~~ only authorized workers can lift or modify/override a sanction.
FR1.25	The System must track sanctions by individual client, not the household		Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. Our proposed solutions worker portal provides screens where sanctions and disqualifications can be created and lifted at an individual level. The screen captures various details like the type of sanction, level, good cause, start date, end date. Access to this screen can be restricted so that only authorized workers can lift or modify/override a sanction.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. Our proposed solutions worker portal provides screens where sanctions and disqualifications can be created and lifted at an individual level. The screen captures various details like the type of sanction, level, good cause, start date, end date. Access to this screen is controlled by the security module where ~~can be restricted so that~~ only authorized workers can lift or modify/override a sanction.
FR1.35	The System will provide Clients and Applicants access to all self-service functionality in multiple languages including: a. English		Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards.

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
	b. Spanish c. Marshallese Translations must be available for all static text and all drop down menus and conditional statements					NextGen out-of-box includes an English and Spanish versions for the Customer Portal. On each page of the Customer Portal, the user is able to change between languages. This aids user so that they do not have to start over and select their preferred language at the beginning, but rather if they are having challenges for example English they may switch to Marshallese or Spanish. We will use the translations provided by the State for all static text, drop-down menus and associated options, and conditional statements for accommodating any updates to the pre-configured Spanish version. The State will also provide the translation to Marshallese. Our solution is scalable and can easily be configured to accommodate additional languages; we will follow the change control process to add or remove other languages, would that need arise in the future. See section 1.2.2.2.	NextGen out-of-box includes an English and Spanish versions for the Customer Portal. On each page of the Customer Portal, the user is able to change between languages. This aids user so that they do not have to start over and select their preferred language at the beginning, but rather if they are having challenges for example English they may switch to Marshallese or Spanish. We will use the translations provided by the State for all static text, drop-down menus and associated options, and conditional statements for accommodating any updates to the pre-configured Spanish version. The State will also provide the translation to Marshallese. Our solution is scalable and can easily be configured to accommodate additional languages beyond English, Spanish and Marshallese; we will follow the change control process to add or remove other languages, would that need arise in the future. See section 1.2.2.2.
FR1.64	The System will allow users to update their username and password for those accounts that have not been flagged as potential or actual cases of fraud or abuse		Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. The current version of NextGen does not prevent a Customer Portal user from changing his/her password if there is an existing fraud investigation or if an individual has been determined to	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. The current version of NextGen does not prevent a Customer Portal user from changing his/her password if there is an existing fraud investigation or if an individual has been determined to be fraudulent.

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
						be fraudulent. We will configure the Customer Portal to prevent any updates to username and password. Our proposed solution does not recommend updating the username but should the State have a business reason for updating the username, our solution can be configured to achieve that functionality.	We will configure the Customer Portal to prevent any updates to username and password for individuals that have pending fraud investigations. Our proposed solution does not recommend updating the username but should the State have a business reason for updating the username, we will configure our solution can be configured to achieve that functionality.
FR3.7	The System will present the history of any disability to the Applicant including, but not limited to: a. Whether the Applicant has previously been evaluated for a disability b. History of closures to benefits, especially recent closures c. Information regarding treatment compliance (e.g., proof of compliance)	2	Y	L	Phase 1	NextGen solution will satisfy this requirement by leveraging State's existing tools/software/solution. NextGen Customer Portal can be leveraged to display historical data for particular records, such as disabilities.	NextGen solution will satisfy this requirement by leveraging State's existing tools/software/solution. NextGen Customer Portal will be leveraged and extended to display disability-related details spanning evaluation history, benefit history and treatment compliance can be leveraged to display historical data for particular records, such as disabilities.
FR3.17	The System will flag information for review by the Eligibility Worker if the results of the verifications are different than what is reported by the Applicant (If the person is only applying for programs that are not administered by IE-BM (WIC, VA Benefits, Child Care) the data will be flagged and sent to the appropriate system.)	2, 3, 4	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. The Alerts module in NextGen can be configured to inform workers when verification data received through an interface does not match what is currently known to the system.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. The Alerts module in NextGen can be configured We will configure the Alerts module to inform workers when verification data received through an interface does not match what is currently known to the system.

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
FR3.19	The System will generate a formal notification, reporting each Program for which the Applicant has submitted an application (or for all DHS/DWS Programs) and send the notification to the Applicant via their preferred method of written contact	2, 3, 4	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen notices can be configured to include a Notice of Application Receipt.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. ~~NextGen notices can be configured to include a Notice of Application Receipt.~~ We will configure the Notice of Application Receipt to be generated upon receipt that will identify the specific programs for which the Application applied. The notification will be sent via the preferred contact method.
FR3.22	The System will cancel the appointment scheduled if the Applicant has withdrawn all of their Program specific applications	2, 21	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen can be configured to cancel appointments when the application is withdrawn.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. ~~NextGen can be configured to cancel appointments when the application is withdrawn.~~ When the user records that a client has withdrawn an application, the system will evaluate if an appointment has been scheduled and cancel the appointment.
FR3.29	The System will send a State-defined message to the Applicant using email or SMS/text based on their preferred method of communication if an application remains in "draft" state for a predefined time period	2	Y	L	Phase 1	NextGen solution will satisfy this requirement by leveraging State's existing tools/software/solution. NextGen supports client alerts which can be expanded to include alerts via Text Message.	NextGen solution will satisfy this requirement by leveraging State's existing tools/software/solution. ~~NextGen supports client alerts which can be expanded to include alerts via Text Message.~~ We will extend NextGen's core notification functionality to include the generation of an email or text message for Customer Portal-based applications that are in draft status for a fixed duration.
FR3.35	The System will provide the capability to capture multiple addresses for	all	Y	L̶ C	Phase 1	NextGen solution will satisfy this requirement by leveraging State's existing tools/software/solution.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
	each person and select different mailing address for notices, correspondence and other materials by type and/or by period of time					NextGen supports a single mailing address per household which can get updated over time. The system can be customized to handle more complex logic.	standards. ~~NextGen solution will satisfy this requirement by leveraging State's existing tools/software/solution.~~ NextGen supports ~~a~~ household, authorized representative, legal representative (for hearings and appeals), providers (for disability reviews), and worker office ~~single~~ mailing addresses ~~per household.~~ NextGen also captures residential address and living facility addresses for those individuals that are living in a facility. For each of the above address types, NextGen maintains one current address and this history of any address updates. For system-generated notices, the notice logic will determine which address to use to send the correspondence. For user generated notices, the user will select the appropriate address or have the ability to enter a new address that is not stored in the system. ~~which can get updated over time. The system can be customized to handle more complex logic.~~
FR3.48	The System will support users submitting the required approvals (consents) to share their information between Programs	2	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards.NextGen solution provides Statement of understanding and the Affidavit (I agree to) that clients review and accept before submitting any applications. This Affidavit can be customized to include Arkansas Specific Verbiage.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards.NextGen solution provides Statement of understanding and the Affidavit (I agree to) that clients review and accept before submitting any applications. Deloitte will update the Affidavit language to Arkansas-specific language. ~~This Affidavit can be customized to include Arkansas Specific Verbiage.~~
FR3.53	The System will archive or remove applications in	2, 3, 4	Y	C	Phase 1	NextGen solution will be configured to satisfy this	NextGen solution will be configured to satisfy this requirement and is

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
	un-submitted, approved or denied status in accordance with record retention and other state policies					requirement and is compliant with DHS Technology standards. NextGen's File Repository can be configured to purge/archive documents after a certain amount of time per program policies.	compliant with DHS Technology standards. Deloitte's NextGen solution will be configured to include two (2) batch jobs, one for purge and one for archival, that will remove or archive applications and associated application databased on Arkansas record retention policies. ~~NextGen's File Repository can be configured to purge/archive documents after a certain amount of time per program policies.~~
FR3.66	The System will display the application information in the same sequence as on the paper application in order to facilitate data verification and entry	4	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen contains a robust driver-flow to facilitate the data entry of any paper forms. This driver flow can be tweak, if required, to more closely match the paper application.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen contains a robust driver-flow to facilitate the data entry of application information ~~of any paper forms.~~ We designed the driver flow based on caseworkers input with the intention of collecting information once and reusing many times in order to reduce data entry and enhance data quality. It contains dynamic queueing that drives users to specific screens/questions that are needed in order to determine the system needs to determine eligibility while skipping those that are not required (e.g., if the client has no job no employment details will be requested). Individual demographic details are collected upfront for all members of the household as well as authorized representative information. Affollowed by a series of question pages for income, resources, expenses that the user enters to denote which circumstances are applicable to each

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
							individual. This then drives the collection of further details. Deloitte will configure the application driver flow for other individual details pages (e.g., living arrangement, and education, incarceration) based on fit gap activities. Note that application information is collected in NextGen cross-program (i.e., based on an integrated program application). ~~This driver flow can be tweak, if required, to more closely match the paper application.~~
FR3.71	The System will display a list of Applicants for whom the individual can act as an Authorized Representative. An Authorized Representative is an individual empowered to act on behalf of another Applicant	all	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. In the Customer Portal, a Community Partner may complete applications for more than one unrelated applicant. This feature can be expanded to other Authorized Representative types. See section 1.4.5.2	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. In the Customer Portal, a Community Partner may complete applications for more than one unrelated applicant. This feature will ~~can~~ be expanded for ~~to other~~ Authorized Representative types. See section 1.4.5.2
FR6.24	The System will produce a report of all Clients who are eligible for HCBS Waivers and the date and time of their eligibility. This report will include all Clients for whom a HCBS Waivers enrollment has not yet occurred (i.e. those waiting for a program slot)	8	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. The current version of NextGen's HHSInteractive analytics solution will support report creation and generation. We will create a report of all Clients who are eligible for HCBS Waivers but have not yet enrolled. The report will list the individuals and the date/time associated with their eligibility. We assume that HCBS waiver enrollment information will be provided through an enrollment inbound interface from	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. The current version of NextGen's HHSInteractive analytics solution will support report creation and generation. We will create a report of all Clients who are eligible for HCBS Waivers but have not yet enrolled. The report will list the individuals and the date/time associated with their eligibility. We assume that HCBS waiver enrollment information will be provided through an enrollment inbound interface from the MMIS to be loaded into the system. The

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
						the MMIS. The information received can be entered into NextGen.	~~information received can be entered into NextGen.~~
FR6.26	The System will update the required annual review date to be the date of placement into a HCBS Waivers program	8	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen sets the annual review dates for all programs of assistance. Based on the date of placement received and entered into the system, NextGen can be configured to set the annual review dates to align with the date of placement.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen sets the annual review dates for all programs of assistance. Based on the date of placement received and entered into the system, NextGen will ~~can~~ be configured to set the annual review dates to align with the date of placement.
FR7.7	The System will allow the authorized staff person to withdraw the issuance and will reflect issuances that are withdrawn via the IE-BM System and via the EBT system	10	Y	C	Phase 2	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen can be configured to allow authorized case workers the ability to withdraw issuances prior to them being sent in the batch file. Withdrawn issuances are stored in the database so a record of them is maintained. For regular payments, NextGen can be configured to receive a Debit file from the EBT system. The handling of this Debit file can be either automated or manual, and this will be agreed upon during design sessions. Debit file transaction history is made available in the EBT system. For manual issuances, authorized personnel have the ability to manually cancel an issuance prior to the batch file transaction to the EBT vendor. This	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen will ~~can~~ be configured to allow authorized case workers the ability to withdraw issuances prior to them being sent in the batch file. Withdrawn issuances are stored in the database so a record of them is maintained. For regular payments, NextGen will ~~can~~ be configured to receive a Debit file from the EBT system. The handling of this Debit file can be either automated or manual, and this will be agreed upon during design sessions. Debit file transaction history is made available in the EBT system. For manual issuances, authorized personnel have the ability to manually cancel an issuance prior to the batch file transaction to the EBT vendor. This cancellation is stored within the NextGen database.

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
						cancellation is stored within the NextGen database.	
FR8.8	The System will validate information based on available real-time and stored data sources	11	Clarification	N	Phase 1	NextGen solution will be customized to satisfy this requirementNextGen supports real-time eligibility through the Customer Portal for MAGI Medicaid applications where the individual has successfully cleared identity proofing and is able to use their information to call the real-time data verification services. If the verification of data is successful, NextGen can make a real-time determination and pass that information to the worker portal. If not enough sufficient information is provided to verify the client's identity, their information, or their eligibility determination, the redetermination is sent to the Inbox for standard processing.	NextGen solution will be customized to satisfy this requirementNextGen supports real-time eligibility through the Customer Portal for MAGI Medicaid applications where the individual has successfully cleared identity proofing and is able to use their information to call the real-time data verification services. If the verification of data is successful, NextGen will can make a real-time determination and pass that information to the worker portal. If not enough sufficient information is provided to verify the client's identity, their information, or their eligibility determination, the redetermination is sent to the Inbox for standard processing. For non-MAGI Medicaid applications, NextGen will validate user entered information and alert the user to any invalid data or potential discrepancies with stored data sources.
FR8.14	The System will use bar coding and Optical Character Recognition (OCR) to read the completed redetermination application and populate information whenever possible	11	Clarification	N	Phase 1	NextGen solution will be customized to satisfy this requirement. NextGen will be customized so that the notices that require action by the user include bar code functionality. This barcode contains information that ties the notice to the client and case. Once returned, the barcode is scanned by the Scan Center and the information is sent to NextGen through XMLs. Paper applications can be designed to have fields that are OCR-	NextGen solution will be customized to satisfy this requirement. NextGen will be customized so that the notices that require action by the user include bar code functionality. This barcode contains information that ties the notice to the client and case. Once returned, the barcode is scanned by the Scan Center and the information is sent to NextGen through XMLs. Paper redetermination applications will can be designed to have fields that are OCR-readable by the Scan Center so that the data can be passesd into

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
						readable by the Scan Center so that the data can be passed into NextGen to assist with expedited processing determination and other indexing.	NextGen to assist with expedited processing determination and other indexing.
FR8.27	The System will allow the Client to see a list of, and review, past applications and/or redetermination requests	11	Y	C	Phase 1	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. The Customer Portal dashboard stores all previously submitted applications, redeterminations, and change requests. The amount of time these are stored on the Client's dashboard can be configured.	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. The Customer Portal dashboard stores all previously submitted applications, redeterminations, and change requests. The amount of time these are stored on the Client's dashboard is based on a configurable duration can be configured.
FR8.37	The System will track cases for which a redetermination application has been submitted but a required interview has not been conducted	11, 12	Y	C	Phase 1	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. The current version of NextGen tracks redetermination applications that require an interview, and it prevents authorization of the case until the application has been completed. If the client does not comply with the redetermination interview requirements, negative action is taken on the case. These cases can also be tracked through an ad hoc query if desired, or can be configured to display on the worker/supervisor dashboards for easy viewing and tracking.	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. The current version of NextGen tracks redetermination applications that require an interview, and it prevents authorization of the case until the application has been completed. If the client does not comply with the redetermination interview requirements, negative action is taken on the case. These cases will can also be tracked through an ad hoc query identifying redetermination interviews by interview status (yet to be conducted, not conducted due to a no show by the client, rescheduled). if desired, or can be configured to display on the worker/supervisor dashboards for easy viewing and tracking.
FR10.1	The System will determine that a medical	17	Y	C	Phase 1	NextGen solution will be configured to satisfy this	NextGen solution will be configured to satisfy this requirement and is

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
	review of disability is required based on the Program to which the Applicant has applied. These Programs include but are not limited to: a. Aid to Disabled b. Aid to the Blind c. AFDC MN – establishing parental deprivation d. TEA – exemption from work requirement e. TEFRA f. Long Term Care g. Home Care Services h. Assisted Living i. Autism Waiver j. TEFRA Waiver k. Workers with Disabilities l. Program of All Inclusive Care for the Elderly					requirement and is compliant with DHS Technology standards. Our proposed solution will determine MRT review for the listed programs. Our solution is scalable and can be configured to accommodate additional programs; we will follow the change control process to add or remove other languages, would that need arise in the future. Our solution's eligibility module will determine if MRT review is needed depending on the information collected on the MRT screen. If review is needed, then a new task is created for the MRT reviewer and the eligibility determination will remain pending until MRT review is complete. See section 1.11.1.1.	compliant with DHS Technology standards. Our proposed solution will determine MRT review for the listed programs. Our solution is scalable and can be configured to accommodate additional programs; we will follow the change control process to add or remove other programs languages, would that need arise in the future. Our solution's eligibility module will determine if MRT review is needed depending on the information collected on the MRT screen. If review is needed, then a new task is created for the MRT reviewer and the eligibility determination will remain pending until MRT review is complete. See section 1.11.1.1.
FR11.31	The System will flag a case for review if an error is identified by the Federal oversight officer and adjustments are required	19	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. Federal oversight officers will be configured to access the NextGen audits module providing they have the appropriate credentials through the State security team to access NextGen. Once they are granted access to the system, the Federal oversight officers will be given the privileges of an appeals worker. If the Federal oversight officer indicates adjustments are	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. Federal oversight officers will be configured to access the NextGen audits module providing they have the appropriate credentials through the State security team to access NextGen. Once they are granted access to the system, the Federal oversight officers will be given the privileges of an appeals worker. If the Federal oversight officer indicates adjustments are needed, cases may be flagged for review and correction.

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
						needed, cases may be flagged for review and correction. Response to these errors can be managed through alerts and tasks distributed to workers per State needs. The system can be enhanced to include access for the Federal oversight officers to create tasks and alerts against the cases that require review and correction.	Response to these errors will ~~can~~ be managed through alerts and tasks distributed to workers per State needs. ~~The system can be enhanced to include access for the Federal oversight officers to create tasks and alerts against the cases that require review and correction.~~
FR11.53	The System will provide a report of the status of each Appeal	20	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen's reporting capabilities can also be configured to provide a report of the status of each appeal. Since details about appeal statuses are stored in the NextGen database, this information is easily able to be queried to produce a report. This report can be generated either as an ad hoc report, or as a scheduled report for retrieval by authorized staff. See section 1.12.3.5	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen's reporting capabilities will ~~can also~~ be configured to provide a report of the status of each appeal. Since details about appeal statuses are stored in the NextGen database, this information is easily able to be queried to produce a report. Users will be able to generate the report as ~~This report can be generated either as~~ an ad hoc report, or as a scheduled report for retrieval by authorized staff. See section 1.12.3.5
FR12.20	The System will alert the assigned Worker's supervisor for review and possible reassignment if the current Worker is unable to complete the action within a predetermined time frame, per State policy	22	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. An alert can be configured to notify supervisors for when assigned work efforts remain unprocessed past their due date.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. An alert will ~~can~~ be configured to notify supervisors for when assigned work efforts remain unprocessed past their due date.
FR12.21	The System will support simultaneous updates of Client data	all	Y	C	Phase 1	NextGen solution will be configured to satisfy this	NextGen solution will be configured to satisfy this requirement and is

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
						requirement and is compliant with DHS Technology standards. NextGen only allows one user to edit the same case data at a time to prevent data conflicts. If required by the State, this restriction can be relaxed.	compliant with DHS Technology standards. NextGen ~~only~~ allows one online user to edit the ~~same~~ case data while also allowing batch jobs to make updates to the same case. ~~at a time to prevent data conflicts.~~ The ~~sIf required by the State, this restriction can be relaxed.~~
FR12.22	The System will have the ability to re-assign work automatically, based on State policy	22	Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. This can be accomplished thru a batch job.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. NextGen assigns work based on a user's profile amongst other characteristics (e.g., priority of task). We will configure a new batch job to automatically reassign work for up to 5 conditions (e.g., a user's role or unit changes, a user to whom work has already been assigned goes on leave, or a user leaves employment). ~~This can be accomplished thru a batch job.~~
FR12.33	The System will electronically deliver a notification that an appointment has been cancelled to attendees listed	22	Y	C	Phase 1	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. NextGen solution can be configured to send an email to attendees when an appointment has been cancelled.	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. NextGen solution will ~~can~~ be configured to send a notification, based on the preferred communication method, ~~an email~~ to external attendees when an appointment has been cancelled.
FR13.25	The System will be capable of running dashboards, summary reports and detailed reports with the capability		Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. As referenced throughout section 1.14.1, the system is capable of	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. As referenced throughout section 1.14.1, our HHSInteractive analytics

Req. #	Requirement Description	Use Case #	Req. Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
	to drill down/roll-up between the reports					running dashboard and reports with drill down/roll-up capabilities between them.	platform includes ~~the system is capable of running~~ dashboard and reports with drill down/roll-up capabilities ~~between them.~~
FR13.39	The System will be able to produce outreach reports (hot spotters by geography)		Y	C	Phase 1	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. HHSInteractive can be leveraged to produce hot spotter reports. We will support generating reports in up to 5 categories of hot spot reports, for example re-applications, instances of frequent overpayments, and occurrence of missed appointment/interview.	NextGen solution will be configured to satisfy this requirement and is compliant with DHS Technology standards. HHSInteractive will ~~can~~ be leveraged to produce hot spotter reports. We will support generating reports in up to 5 categories of hot spot reports, for example re-applications, instances of frequent overpayments, and occurrence of missed appointment/interview.
FR13.44	The System will allow users to sort the data provided		Y	C	Phase 1	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. Data in interactive formats can be sorted by the user. See section 1.14.2.1	NextGen solution satisfies this requirement with no configuration or customization and is compliant with DHS Technology standards. Our reporting solution provides users with the ability to sort attributes in ascending or descending order. ~~Data in interactive formats can be sorted by the user~~ See section 1.14.2.1

Figure 28. Detailed Responses to Technical Requirements with "can" and "has capability to."

Req #	Requirement Description	Requirement Met	Solution Method	Proposed Phase	Suggested Clarifying Comments	Revised Clarifying Comments
G1.51	The System will use standard web browser-based Thin-Client Technology that supports centralized software distribution and implementation. This must be available on commonly used browsers including, but not limited to, Chrome, Safari, Firefox and Microsoft Internet Explorer.	Yes	C	Phase 1	NextGen solution satisfies this requirement and is compliant with DHS Technology standards. Customer portal can be accessed by standard browsers: Chrome, IE, Firefox and Safari. Worker Portal can be accessed by standard browsers: Chrome, IE and Firefox.	NextGen solution satisfies this requirement and is compliant with DHS Technology standards. Users will access the Customer Portal ~~Customer portal can be accessed~~ by standard browsers: Chrome, IE, Firefox and Safari. Worker Portal can be accessed by standard browsers: Chrome, IE and Firefox.
G1.52	The System will maintain compatibility with the three (3) most current versions of each browser, provide data over a web browser interface (i.e., HTML over HTTP) and will include the capability to encrypt the data communicated over the network via SSL (HTML over HTTPS).	Yes	C	Phase 1	NextGen solution satisfies this requirement and is compliant with DHS Technology standards. Customer portal can be accessed by standard browsers: Chrome, IE, Firefox and Safari. Worker Portal can be accessed by standard browsers: Chrome, IE and Firefox.	NextGen solution satisfies this requirement and is compliant with DHS Technology standards. Users will access the Customer Portal ~~Customer portal can be accessed~~ by standard browsers: Chrome, IE, Firefox and Safari. Worker Portal can be accessed by standard browsers: Chrome, IE and Firefox.
G1.54	The System will provide the capability for remote access in compliance with existing State/Federal connectivity/security policies.	Yes	C	Phase 1	NextGen solution satisfies this requirement and is compliant with DHS Technology standards. NextGen can be accessed by internal users once they are authenticated to the internal network.	NextGen solution satisfies this requirement and is compliant with DHS Technology standards. Internal users will access NextGen ~~can be accessed by internal users~~ once they are authenticated to the internal network.

Figure 29. Detailed Responses to Technical Requirements with "will.

10. The clarifying comment for requirement FR3.7 states that the proposed solution will meet the requirement by leveraging existing State tools/software/solution. Please provide additional detail about how this requirement will be met and the specific State assets that will be leveraged.

NextGen stores historical data related to client data, previous eligibility runs, and benefit determination and actions (such as approvals, denials, closures), and meets the functionality required for FR3.7a and FR3.7b. However, NextGen does not include data related to proof of treatment compliance. To meet FR3.7c, NextGen interfaces with the State's document management system, DocuShare, to access documents related to proof of treatment compliance to be used if necessary for eligibility determinations and inclusion in case data.

11. The proposed solution appears to allow the Worker to override eligibility determinations. Please describe how this works. Can this be restricted by user roles?

NextGen override functionality provides the state with a configurable, on demand function to override an eligibility determination made by the system. This feature enables the state to address situations in the future when emergency policy changes may not have been incorporated yet into the system. While it is rarely used, it provides flexibility to the State.

The override screen, shown in the following figure, provides the capability to override the overall benefit determination as well as individual determinations regarding who should be counted as part of the benefit group. For specific programs, additional override details may require, such as the benefit amount for Food Stamps. For documentation purposes, NextGen forces the worker to capture why they are performing the override, and this information, along with the override details, are stored in the database.

Figure 30. Override Details View.

After completing the override, the worker must re-run eligibility for the new eligibility determination to factor in the information provided by the worker and to correctly set the benefit periods, statuses, and set all required interfaces and notices triggers based on the overridden determination.

The access to the override screen is configurable based on user roles. It is up to the State to determine if override capability should be provided to all eligibility workers, or if only a smaller subset of users, such as supervisors, should have override capabilities. The access configuration for the override functionality will be determined during the design sessions and documented in the security role mapping matrix.

In an override situation, NextGen provides audit of the actions performed and history of the case.

12. The State's required HCBS process is to have information from the IE-BM solution go to the State's MMIS. Please confirm that Deloitte understands the State's requirements and describe how the interface will be utilized.

Yes, Deloitte understands the State's requirement to have information from IE-BM solution go to the State's MMIS as part of the HCBS process. Our solution has built-in processes to create triggers for actions (such as case worker/system certifying a Medicaid determination, updates to certain demographic information etc.) that need to be sent to MMIS. These triggers will then be processed

and the latest information pertaining to an individual/recipient will be sent to the State's MMIS system through a nightly batch process which is in-built and production proven from our various IE implementations. The file format, data fields and schedule for this batch job will be reviewed and approved during the requirements and design sessions with the State.

Additionally, based on Deloitte's experience with previous implementations, HCBS enrollment information along with placement date is received through a third party system such as MMIS as an inbound interface file. This information will then be added or updated in the IE-BM system and is used to determine eligibility and to set the renewal date. Eligibility information along with the necessary demographic information is then shared with the State's MMIS system through the nightly MMIS outbound interface file.

13. Please specify the data fields the proposed solution will require the Consumer to verify during redetermination.

NextGen pre-populates both the online form and the paper renewal with the information we have on file about the case/client. This features saves both the client and the worker time when completing the renewal.

During the redetermination process, the rules engine checks all non-financial and financial verifications required in the system to make sure that data has been appropriately verified. For existing information that remains unchanged during the redetermination, the system will only request verification if the worker indicates that current verification is insufficient. All newly added information during a renewal must be verified as it would during the initial application process. For unverified information during redeterminations, the system generates and sends a Verification Checklist to the customer.

During the design phase, we will work with DHS to configure the verification rules based on your state policy. We have provided a sample of verifications requested during the redetermination process below. These verifications are a representative sample from a recent implementation. Some fields are only required if the customer has reported relevant data. As stated above, NextGen only requires verification for existing case data during the redetermination process if insufficient verification is indicated by the worker.

Non-Financial Verifications

- 40 work quarters
- Citizenship
- Identity
- Relationship
- Residency
- Date of Birth
- Level of Care
- Third Party Resource/Liability
- Household status
- Disability
- Tax Dependent

- TANF ADA Compliance Checklist 505
- TANF Family Service Plan Work plan 196A
- TANF Domestic Violence Assessment F194
- Food Stamp Work Requirement
- Alien Sponsor
- Lawbreaker
- Medicaid Signature Form

- Proof of termination of parental rights
- Report the Birth of Newborn
- Work Study Program Verification
- Work Activity Verification
- Application for Other Benefits
- Good cause for non-cooperation with Child Support
- TANF Work Program Exemption

- Student Status
- Education - school
- School attendance
- Proof of application of SSN
- Immunization
- Immunization Exempt
- Special Needs
- Immigration Status date
- Initial Date of Entry
- Good cause for partial work participation hours completed
- Notice of requirement to cooperate and rights to claim Good Cause Form 138

- Identity for Authorized Representative/ Protective Payee
- Prenatal Care Verification
- Good cause verification for non-compliance
- Pregnancy
- Out of State Benefit Verification
- EMA Verification
- Alien/Immigrant Status
- Work Plan
- Food Stamps Work Program Exemption

- Rights and Responsibilities Form 297A
- ADA/ Section 504
- Notice of Family Cap rule form 786
- Expense Statement Form 354
- SSN
- Declaration of Citizenship Form 216
- TANF Family Service Plan PRP 196

Financial Verifications

- Before Tax Deduction
- Burial Resource
- Child Support Expense
- Dependent Care Expense
- Earned Income
- In kind support and maintenance
- Life insurance
- Liquid Resources

- Loss of employment
- Medical Expense
- Medicare Claim
- Property for Sale
- Real Property
- Earned Income
- Self-employment Income
- Shelter Expense
- Transfer of Resources

- Trust
- Unearned Income
- Unusual Property
- Utility
- Vehicle
- Liquid Resources
- Self-employment Expense
- Loss of Unearned Income

14. Please provide additional detail about the process described in the clarifying comment to functional requirement 9.4. What are the two web services? How did you arrive at that number?

Our proposed NextGen solution will perform data exchanges with the Federal, State and Trading Partners listed in the following figure. These data exchanges will be used to validate, send and receive information across various sources.

Data Exchanges			
Federal		**State/ Trading Partners**	
• CMS (Medicare Part A and B, FFM, FDSH) • Social Security Administration-SSA (SDX, BENDEX, 40 Quarters, SOLQ, SASRO, SVES)	• Internal Revenue Services (IRS) • Food and Nutrition Service –FNS (eDRS, Treasury Offset Program (TOP)	• Medicaid Management System -MMIS • Electronic Benefit Transfer (EBT) • WISE- Work Participation	• EMPI • CA IAM • Asset Verification System (Accuity) • DocuShare • GIS Address Validation

Data Exchanges

• DHS - Systematic Alien Verification for Entitlements (SAVE)	• Public Assistance Reporting Information System (PARIS) • National Directory of New Hires (NDNH) • US Census Bureau	• SPIRIT (WIC Clinic Management Information System) • Child Reporting and Information System (CHRIS) • Child Support System (OCSE) • Overpayment Accounting Services • Information System (OASIS) • Division of Workforce Services (Wage/Unemployment — ESD)	• Correspondence Print Vendor • Department of Public Safety/Corrections • Department of Health • Department of Motor Vehicles • Department of Labor • SSA- Birth Registry • Statewide Accounting System (AASIS)

Figure 31. Federal, State and Trading Partners.

Our proposed scope accounts for configuring up to 2 additional web services beyond the list identified above. Specifications and details of these services will be documented during the requirements and design meetings as needed.

15. Tableau, Cognos and HHSInteractive are all mentioned as part of the proposed solution. Please provide detailed information about how each product will be used and which functional requirements will be met through the use of each.

HHSInteractive is Deloitte's packaged enterprise analytics platform, enabled by Cognos and Tableau capabilities, designed to help users drive business decisions based on real-time data. It is a leading marketplace solution that aligns with our IE implementations and is offered as part of the HHS NextGen 2.0 solution. HHSInteractive's data services layer leverages Tableau to create the visual dashboards and ad hoc reporting and Cognos for canned reports as shown in the following figure. HHSInteractive provides DHS the ability to access, interact and analyze data to answer critical business questions and support data-driven decisions. Once logged into HHSInteractive, users, based on security roles, will have access to view canned reports, to create ad hoc reports and to review dashboards.
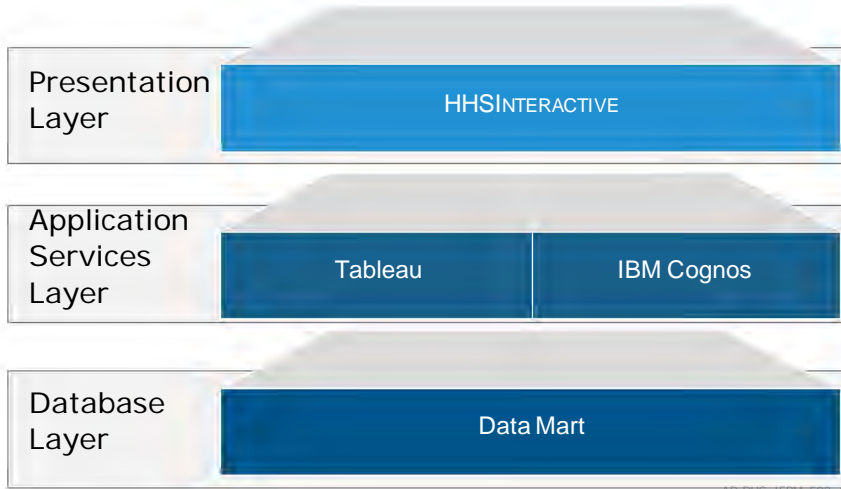
Figure 32. Reporting in HHSInteractive

HHSInteractive is a full scale, enterprise reporting platform that provides organizations with a myriad of out of the box reporting and analytic capabilities ranging from traditional reporting and ad hoc to interactive dashboards, GIS, and predictive analytics.

It empowers stakeholders with hundreds of out of the box key performance indicators organized around core HHS programs such as Child Care, Child Welfare, Medicaid, TANF, SNAP, Substance Abuse, Long Term Care and CHIP. HHSInteractive integrates and connects siloed data across your organization into a production-proven data model to help build a single version of the truth. Once the data has been integrated, custom visualizations are implemented allowing users to interact, analyze and understand their data. HHSInteractive provides easy to use interactive dashboards at the executive, program and operational levels in addition to canned reports.

Executive Analytics

Executive Analytics consolidates data across the HHS enterprise to allow users to analyze an array of key indicators to enhance strategic decision making.

Program Analytics

Program Analytics provides insight into a wide array of HHS programs including MA, TANF, SNAP, Child Welfare, and Child Care to enhance decision making.

Operations Analytics

Operations Analytics provides detailed data analysis and insight into multiple HHS operations to allow users to monitor and analyze day to day performance.

AR DHS_IEBM-504

Figure 33. Performance Indicators.

For example, rather than simply having a monthly report detailing current SNAP enrollments that has to be manipulated in Excel, HHSInteractive's dashboard shows users real time data of all the current SNAP enrollments and provides trend analysis. The user can then drill into particular segments of the data to glean more insights.
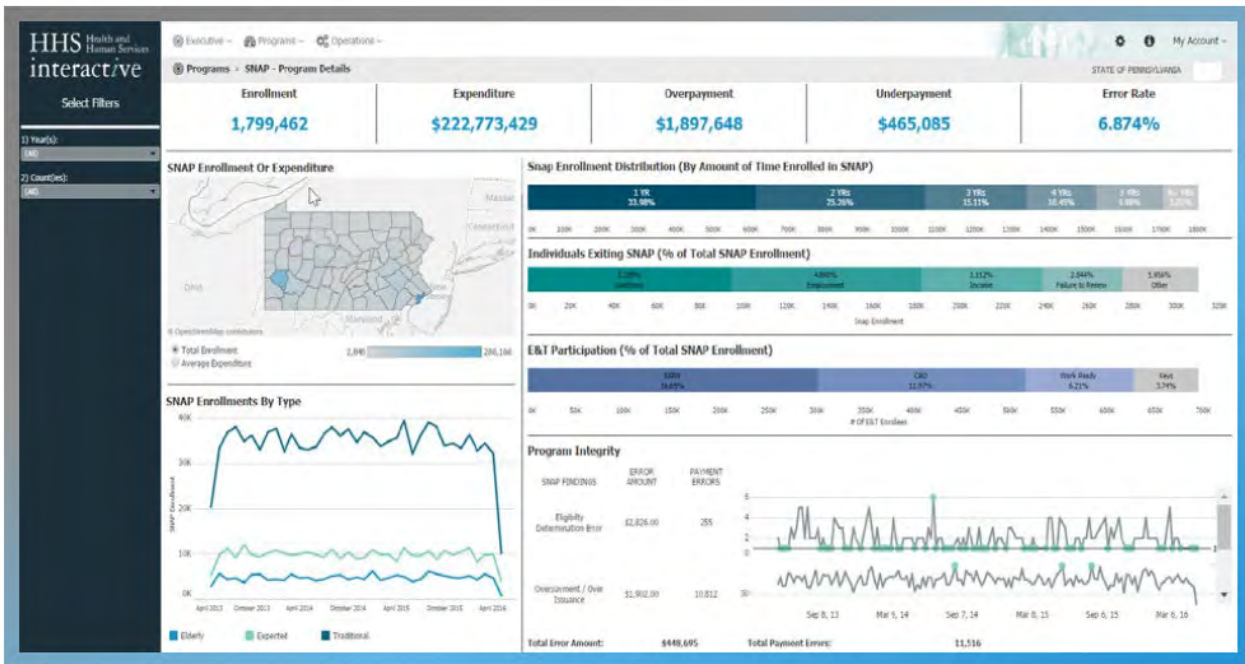
Figure 34. Illustration of the SNAP Program Details from our HHSInteractive Solution.

Our HHSInteractive solution will meet the Arkansas reporting requirements as indicated in Section 13 of T-6 – Functional Requirements Traceability Matrix.

16. Please provide a list of established reports that are available out-of-the-box from the proposed solution.

The following figure contains the list of out-of-the box dashboards and reports (by frequency) that are available from the NextGen solution. Deloitte will provide these analytics as part of the proposed scope of reports as defined in our proposal response.

Dashboards	Indicators	Key Questions Addressed
Medicaid - Enrollment Details	Total MA Enrollments # of Individuals Eligible Due to MA Expansion # of Individuals Entering MA # of Individuals Existing MA # of Individuals Eligible in MA by County Map	How has MA expansion impacted the number of individuals enrolled in Medicaid? How many individuals are currently enrolled in MA? Are my MA enrollments trending upwards or downwards? What factors are impacting MA enrollments? What counties have the highest vs. lowest MA enrollments? What is the trend in MA enrollments across a series of socioeconomic factors (e.g., gender, race, income)
Medicaid - Demographic Details	Population Distribution by County # of Individuals with TPL Resources # of MA Enrollments by Ethnicity # of MA Enrollments by Age # of MA Enrollments by Race # of MA Enrollments by Gender # of MA Enrollments by Marital Status	What is the trend in MA enrollments across a series of socioeconomic factors (gender, race, income, etc.)

Dashboards	Indicators	Key Questions Addressed
	# of MA Enrollments by Income (in comparison to FPL)	
	# of MA Enrollments by Housing Status (homeless vs. not homeless)	
	# of MA Enrollments by Parental Status	
SNAP Program Details	Total SNAP Enrollments	What is the SNAP Error rate?
	Total SNAP Expenditures	What is the SNAP Overpayment amount?
	Total SNAP Overpayments	What is the SNAP Underpayment amount?
	Total SNAP Underpayments	How many SNAP errors took place during a given time period?
	SNAP Error Rate	Are SNAP errors increasing or decreasing over time?
	Total SNAP Enrollments by County	How many individuals are currently receiving SNAP benefits?
	Total SNAP Expenditures by County	How long (in years) have SNAP recipients been receiving benefits?
	Distribution of SNAP Enrollments by Length of Time in the Program	Are more individuals entering or exiting the program over time?
	% of Individuals Exiting the SNAP program	
	% of SNAP recipients who participate in Employment and Training activities	
	Trend in SNAP Eligibility Determination Errors by number of errors and dollar amount	
	Trend in SNAP Overpayments by number of errors and dollar amount	
	Trend in SNAP Underpayments by number of errors and dollar amount	
TANF Overview	Total TANF Enrollments	Are more individuals entering or exiting the TANF program?
	Total TANF Expenditures	Am I in compliance with my federally mandated work participation requirements?
	# of Individuals who are eligible for E&T	What percentage of individuals receiving TANF assistance are required (eligible) to participate in Employment and Training programs? i.e. They have no good cause exemptions
	Work Participation Rate	
	TANF Re-Entry Rate	
	Total TANF Enrollments by County	
	Average TANF Expenditures by County	Which contractors or programs are meeting or exceeding their work participation requirements?
	TANF Enrollments by Project/ Program	What percentage of TANF recipients are allocated to a given contractor or program?
	% of enrollments by TANF Clock (# of years on TANF)	
	# of Individuals who re-enter TANF after 1 year	How many individuals are re-entering TANF after exiting? What percentage of these individuals are returning within one year?
	# of Individuals who re-enter TANF within 1 year	How many individuals are currently enrolled on TANF and what are total expenditures?
TANF Work Participation Details	TANF Work Participation Rate	How many TANF recipients is a given contractor serving?
	# of Individuals who are out of compliance	What is the performance for a given contractor in terms of job placement and work participation?
	# of Individuals who returned to work within 30 Days	Should I reallocate TANF recipients to a different contractor in the same geographical region?
	Work Participation Rate by Contractor	
	# of Individuals exiting for employment by Contractor	What percentage of individuals are out of compliance for E&T?
	# of Individuals re-entering TANF within 1 year by Contractor	What are the reasons why a given individual is out of compliance?

Figure 35. NextGen Out-of-the Box Dashboards.

Reports	Report Name
Daily	Applications with Outstanding Verification
	Pending Applications
	Daily EBT Issuance Register
	EBT Claim Payment Error/Exception
	Employment Services Support Services Issuance to Client
	Case Reviews Progress
	Unassigned Tasks
	Outstanding Tasks
	Completed Tasks
Monthly	Medicaid Monthly Reinstatement by Assistance Group Type
	Medicaid Monthly Auto Closure by Assistance Group Type
	Medicaid Monthly Suspension by Assistance Group Type
	Monthly SNAP Overissuance Claim Report FNS209
	Medicaid Newborn Assistance Group Authorization Timeliness
	Caseload Activity Report
	Detailed SNAP Assistance Group Closures
Quarterly or Annual	SNAP Participation by Race FNS 101
	SNAP Issued Summary FNS 388
	Quarterly SNAP Overissuance Claim Report FNS209
	FNS 366B

Figure 36. NextGen Out-of-the Box Reports.

17. Please confirm that the proposed solution will support Microsoft Edge.

Yes, the proposed solution will support Microsoft Edge.

18. Please confirm that the proposed solution will comply with the requirement for 99.75% up time.

Yes, our proposed solution will comply with the system availability requirement of 99.75% up time, excluding maintenance windows. We understand the mission-critical nature of DHS's business processes in a 24x7x365 environment and are committed to meet the State's uptime requirement. We leverage our Information Technology Infrastructure Library (ITIL) based approach to maximize availability by:

1. Coordinating planned outages

2. Mitigating risk of unplanned outages e.g. proactive utilization and capacity monitoring

3. Standardized incident response process

19. What is the duration of the anticipated daily, weekly and monthly maintenance window?

The maintenance windows are established and managed in cooperation with the State infrastructure and platform teams, and when applicable, other third parties. For Arkansas, we would work with DIS, OST, and DHHS to identify maintenance window requirements necessary to support foundational platform and infrastructure ongoing maintenance.

If DHS selects the proposed AWS hosting solution, the AWS Systems Manager Maintenance Windows let you define a schedule for when to perform potentially disruptive actions on your

instances such as patching an operating system (OS), updating drivers, or installing software. Each Maintenance Window has a schedule, a duration, a set of registered targets, and a set of registered tasks.

Although maintenance windows vary in the NextGen States we currently support, a typical maintenance window is as follows:

Window	Duration (Approx.)	Activities
Daily	8 hours	Batch execution and daily incremental backups (No downtime required for these activities)
Weekly	6 hours	Critical OS Patches; Critical Product Patches; Weekly Full Backups (no downtime required); Weekly Code Deployment (if needed)
Monthly	12 Hours	Anti-virus Scans; High, Medium and Low OS and Product Patches; Firmware upgrades; Drive upgrades; Monthly Code Deployment

Figure 37. Typical Maintenance Schedule.

20. Please confirm technical requirements 4.35 and 4.36 shall be met by the proposed solution.

NextGen's integration components enable data exchange through web services as well as through traditional file-based integration mechanisms with legacy systems that may not yet support web service integration. We use these components to meet technical requirements G4.35 and G4.36 by providing standards based integration that is seamless.

Requirement 4.35

Yes, we believe we can meet this requirement. We marked this requirement as "clarification" so that we can confirm once we get more information regarding the exact telephony setup at DHS. In order to support the ability to dial a phone number directly from data within the System based on user request, we assume the State (or telephony vendor) will provide us with a URL which we can embed in our system to trigger the call in the telephony software (likely via VoIP). In order to provide the capability to automatically bring up the caller's record upon the receipt of an incoming call, we assume the State (or telephony vendor) will provide the required desktop software to facilitate the "screen pop." We will provide a web service which can be called by the software to retrieve and display the required case/client data.

The exact architecture, integration points and implementation approach will be confirmed once we have the opportunity to discuss this requirement further with the State and the telephony vendor (if applicable).

Requirement 4.36

Yes, we will meet this requirement. NextGen sends and email to an employee with an Outlook calendar invitation when an appointment is created for that employee. The solution will be configured to also trigger an email when a previously scheduled appointment is updated or cancelled on an Employee's calendar within NextGen. The synchronization is from the NextGen solution to Outlook only. Synchronization from Outlook to NextGen is not included as part of the proposed solution configuration.

21. The clarifying comment to technical requirement 4.30 states that message logging is limited to certain interfaces. Please provide additional detail about how the full requirement will be met.

NextGen will be integrated with Splunk to assist the State in enabling recording of auditable events in a standard format so that the interpretation of information becomes easier, events are analyzed in an efficient manner, and designated personnel are notified promptly to triage the event(s) and take required actions.

The data is presented in the form of reports or dashboards that allow administrators to make effective use of the information presented. A search or pivot on the NextGen-Splunk platform can be saved as a report. Reports can be run on an ad hoc basis, or can be scheduled to run at regular intervals.

WP & CP - Trading Partner Web Service Stats

Duration | Environment

Worker Portal

Service Name	Avg. Response Time (ms)	Number of hits
<ns5:updateClientService xmlns:ns5="nsupdateClientService">	620.20	238
DIS_CheckInUniversal	2606.17	9506
DIS_GetFileById	2254.38	39190
DIS_UpdateDocInfo	1479.84	43
DOL_UIBenefit	242.39	1901
DOL_WageInquiry	279.89	5805
FDSHSSACOMPOSITE	443.06	9277
GammisParticipation	1558.94	51
PCS_FinancialInformation	693.07	709
SSA_SOLQ	319.10	10628

« prev 1 2 next »

Customer Portal

Service Name	Avg. Response Time (ms)	Number of hits
DOLWPWebService	421.67	793
DcAutoAppRegistrationService	3082.45	3305
PendingVerificationServicePortType	699.25	163025
SSAComposite	438.63	1242
SelfServiceIntegration	663.96	394220
SelfServiceNoticesIntegrationService	206.28	101247
SilverPopOptInEmail	239.82	421
UploadPdfXmlService	296.37	7965

AR DHS_IEBM-5503(F)

Figure 38. Splunk report: Count of web service hits and response times.

While it is possible to log all messaging events, in practice implementations typically limit logging to key interfaces only because the size of the logs will grow significantly if all XMLs are logged in the Enterprise Service Bus. This level of logging requires frequent archiving and an increase in the storage costs. If the State requires comprehensive logging of all messages, real time and batch, we

will work with the State to define archival and logging processes to make efficient use the existing resources and minimize operational costs associated with such activities.

22. DHS anticipates becoming the State's primary connections to the SSA. Explain how the vendor will migrate the ownership of this interface from the mainframe?

Deloitte brings experience to implement interfaces built through multiple NextGen deployments of a similar nature, but also the ability to reuse components that have been fine-tuned over the years. It exchanges information with a broad array of trading partners at the federal, state and commercial entity levels with little to no manual intervention.

Historically, State legacy systems often suffer from lack of interoperable standards in interfacing with Federal interfaces like SOLQ-I/SVES and SDX/BENDEX. As a result they do not have the ability to process the data from external systems without manual intervention. We eliminate this problem by using our NextGen Integration Layer. NextGen has been refined to use interoperable standards and as a result it is capable of consuming the interface responses and updating system data automatically. The system is made capable of triggering automated processes as a response to the system updates obviating the need for worker intervention.

There are several SSA interfaces like SDX, BENDEX, SOLQI, SVES etc. To migrate the ownership of SSA interface from the mainframe Deloitte will leverage Fuse as the ESB for both real time and batch integrations. This will allow us to maintain a single primary standards based connection to the SSA. Once the connection is established, we will use our integration framework to distribute the files and messages to the connecting systems to meet the State's requirement around SSA.

23. Please clarify what field changes outlined in technical requirement 5.4 require development. What can be changed without development?

NextGen solution is highly extensible and configurable. It uses an open source J2EE based framework that provides flexibility and maintainability through extensive use of design patterns, standard APIs, and technologies such as Java Server Pages (JSP), Enterprise Java Beans (EJB), and Extensible Markup Language (XML)-based web services. Use of a standardized tag set, rather than embedding Java code directly in web pages, leads to more maintainable code and enables separation of concerns between the development of the system code and user interface.

NextGen provides screens that are highly re-configurable, with an ability to reposition and rename field labels/data fields, remove or "turn-off" unused fields, maintain data, and allow addition of custom-defined fields. From a screen development perspective, NextGen contains accelerator tools to confirm that standards are followed and development time is minimized. For example, a screen tool builder tool is available which contains application code for standardized UI components, integration with other functional areas and placeholders for screen-specific code.

Renaming of fields and removal of fields can be done by using this tool for configuration. Program specific fields can also be configured using the screen builder tool. If new custom fields need to be defined or fields need to be repositioned it may require new development. During the requirements validation sessions and design sessions we will work closely with the State to define field specific requirements and include the required changes in our final solution.

The following figure provides a quick overview of our user interface elements that can be configured based on State's requirements.
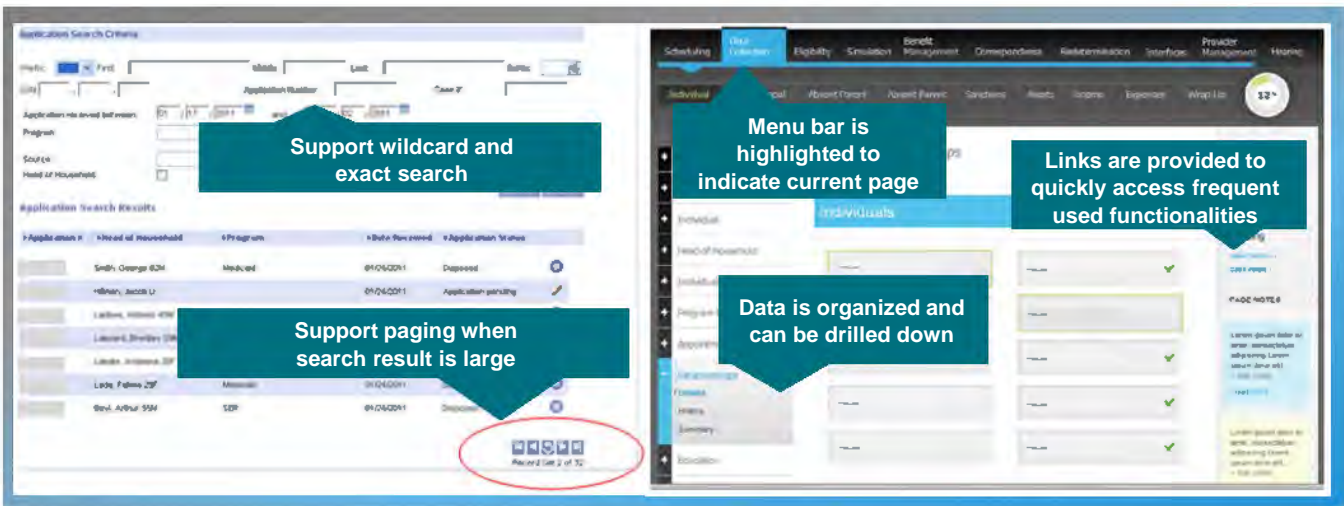
AR DHS_IEBM-5075_2

Figure 39. User interface elements that facilitate the user experience and navigation ease.

24. Please confirm that technical requirement T1.1.14, T1.1.15, T1.1.16, T1.1.17, and T1.1.18 shall be met by the proposed solution.

As Stated in the RFP response, Deloitte requires additional clarification on these requirements before listing them as "Yes." Our solution meets the requirements listed in the following figure but the requirement descriptions are fairly broad and require clarification with the State. We have listed additional details for each requirement in the following figure.

T1.1.14	The Portal Component will provide survey engine capabilities.	Our solution supports standards based integration with a survey tool (e.g. Survey Monkey). Based on the detailed survey engine requirements we will work with the State to develop the survey engine capabilities requested.
T1.1.15	The Portal Component will provide chat and instant messaging (IM) support.	We will work closely with the State to finalize detailed Chat and IM requirements and confirm the use cases for customer portal. In order to meet this requirement, we assume the State has (or will procure) a product to facilitate the interaction with the worker once the chat/IM session is activated via the customer portal. This type of capability may be available through your existing telephony platform.
T1.1.16	The Portal Component will provide the capability to consume externally available mapping Web services.	Using MVC pattern, W3C standards, and HTML technologies, NextGen provides web portal capabilities. We will work with the State to define the complete list of web services that are required.
T1.1.17	The Portal Component will provide portlet capabilities.	Our solution supports setting up portlets. We will work with the State to define the detailed requirements around portlets and finalize the design during the JAD sessions
T1.1.18	The Portal Component will provide inter-portlet communications that are robust, scalable and reliable.	Our solution provides robust, reliable and scalable inter-portlet communication. We will work with the State to define the detailed requirements for inter-portlet communication and finalize the design during the JAD sessions.

Figure 40. Additional Technical Requirement Details.

25. Page 124 of the Technical Requirements Approach template (and requirement 3.2.2.1) states that DocuShare will be utilized to send notices. Please provide

DocuShare will be used to store generated notices, not sent notifications. We would like to clarify our proposal as follows:

When a notice is triggered, the NextGen correspondence module will generate the notice using the OpenText Exstream product. After notice generation, the notice will be stored in DocuShare where it can be retrieved via the worker portal or through the customer portal (for an authorized client).

Clients who create an account via the customer portal can opt-in to receive paperless communication and select preferred communication method. Upon generation of a notice, NextGen will send a notification to clients via email or SMS to alert them that a new notice is available which they can securely access through the customer portal.

26. Discuss the mobile application architecture. How will it be integrated and supported?

Per the RFP, two specific capabilities were requested to be supported via mobile devices: (1) the customer portal for DHS clients and (2) the reporting and visualization solution for workers.

Client Portal Mobile Application Architecture

Deloitte's Customer Portal is built using responsive web architecture allowing users access to the portal through various devices such as a tablets, smart phones, Kiosks, personnel computers, and public computers with the same level of functionality. This approach results in a consistent user experience and streamlined maintenance as it is a single Web site, single URL, no redirects. Furthermore, no additional integration and support is needed other than the regular maintenance of the Customer Portal. The following figure illustrates the responsive web architecture of our Customer Portal along with the components contributing to responsive behavior.
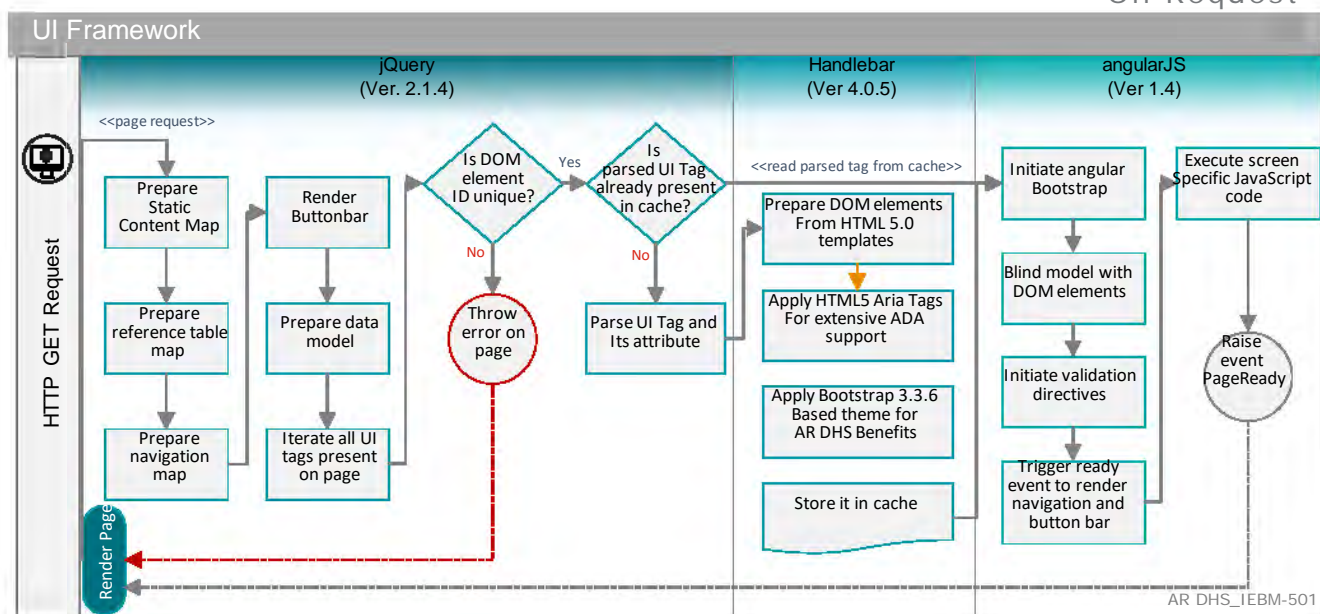
Figure 41. Responsive web architecture of our Customer Portal.

Reporting and Visualization Mobile Architecture

In addition, our module for reporting and visualization called HHSInteractive is also available to DHS staff via mobile devices including tablets to allow access to dashboarding and data visualizations. HHSInteractive uses Tableau for visualization and this tool is accessible via devices powered by iOS, Android, Microsoft and Google mobile operating systems. Users may view dashboards and reports via mobile devices and dynamically adjust to fit the device's screen size.

27. Please confirm management and ownership of DHS' DocuShare solution is within the scope of your proposal.

We will work closely with the State to satisfy the requirements stated in Template T-8, Tab T3.3 by leveraging the existing DocuShare implementation. We will also establish the necessary integration required to meet these requirements by using open standards that are compliant with DHS' technology guidelines. While the management and ownership of day to day operations like patching, upgrades etc. is not in the requested RTM scope we are open to further discussions on this topic to provide the management, functional and technical support requested by the State.

28. Please detail how implementation requirement 1.42 will be met.

This requirement was incorrectly marked as "Clarification" in our response. We would like to clarify that we consider this requirement to be "Yes."

Deloitte agrees to meet implementation requirement 1.42 and will provide all system training materials to DHS and those materials will become the property of DHS and may be modified and duplicated by DHS. These training materials are included as deliverables and will follow the approved deliverable review process for submission.

29. Page 131 of the Implementation Approach template states that the MDM will be used to verify data. Please detail how the MDM tool will be used to verify data?

The Master Data Management (MDM) solution is used to setup and implement data governance policies for centralized data management of data shared across Arkansas systems (e.g. citizen demographic records and addresses). The tool also helps organizational data stewards compare, review, and resolve potential data issues. Deloitte's solution proposes the MDM tool to maintain the Demographic and Address Information in the system. Individuals are cleared against the information maintained in the MDM solution to confirm that duplicates are not introduced.

The Deloitte NextGen solution combines the JBoss Fuse ESB solution with the MDM tool, to establish a central state hub. The MDM tool provides a central indexing service which is published to multiple source systems (e.g., IE-BM, EEF, MMIS) using the ESB. The use of the ESB allows exposing the indexing service to multiple systems using minimal custom development and helps enforce established data governance standards.

MDM is used as the source of information for Clients and Providers. It is used to search for clients and providers by the applications and the systems can use this data to populate the transaction systems. MDM stores client information that includes Client Demographics, Address and other details. It also integrates with Address cleansing mechanism to have correct address stored within itself. It receives data from multiple systems. Based on JAD and design sessions with you, we define the criteria of which systems are trusted in a hierarchical order. This establishes a trusted data is stored in MDM from different systems. As the data in MDM becomes trust worthy it can be

consumed and used for verifications of data by the target systems. MDM is integrated with IE-BM and other programs which call MDM for performing file clearance. File clearance gives the applications the data which is present in MDM and this data is verified before it is stored in transactional systems.

Our implementation approach includes partnering with the State to define hardware specifications for the MDM solution, configure and support Informatica Multi-Domain MDM and other required platform services and assess and enhance the search capabilities used to identify potential duplicates early in the Master Data Management process. Additionally we partner with the assigned Data Steward to create new workflows to standardize, cleanse and enrich source system data as required to meet MDM data standards, Identify duplicate records and, when necessary, manually resolve them into a single global record, with a unique global identifier and monitor MDM Process and Master Data quality key performance indicators (KPI's) to ensure the efficiency and effectiveness of the solution. We also Implement automated data integration between the MDM service and source systems to eliminate manual processes in each source system to propagate updates resulting from changes to Master Data (e.g., attributes, merge, unmerge).

30. Please provide a testing plan from another State implementation that includes a detailed defect remediation plan and definition of each type of defect.

Deloitte has included samples of a Test Plan and a Software Problem Resolution Plan from a recent successful integrated eligibility implementation. The Software Problem Resolution Plan includes the defect remediation plan as well as definitions of each type of defect.

31. Arkansas does not have a sufficiently capable Learning Management System (LMS) which Deloitte can leverage. Discuss alternative approaches that Deloitte will employ to address this gap.

Deloitte will implement Moodle, an open-source learning platform to address this gap. Moodle is an open source software package used to deliver and manage online training. It is straight forward to set-up and configure and can be used to deploy courseware, host classroom materials, post classroom training schedules, track training course registration, monitor training course completion and assessments and administer training surveys and evaluations. As part of the training approach, Deloitte will work with Arkansas to confirm this approach addresses the gap and provides the capability to manage end user training. Deloitte will be responsible for installing and configuring Moodle and the tool will be accessible through the duration of end user training.

32. In other states where you have replaced Cúram, what was your roll-out timeline? Which programs and functionality were included in each phase?

The following figure provides a summary of the states where we have replaced Cúram. As per your request, we have also included information about the roll-out timeline and programs and functionality included in each phase.

State	Roll-Out Timeline	Functionality/Programs Included in Each Phase
State of Maryland *Cúram was used in Maryland for the HIX which we subsequently replaced.*	24 Months to Statewide (2012-2014)	Full health benefits exchange functionality supporting the following programs: Medicaid, CHIP and QHP

State	Roll-Out Timeline	Functionality/Programs Included in Each Phase
State of New Mexico The State started development of a Cúram based IE system which they abandoned and replaced with our IE system.	22 Months to Pilot (September 2011 – July 2013) 28 Months to Statewide (September 2011 – January 2014)	Full integrated eligibility functionality supporting the following programs (starting at pilot): Medicaid, SNAP, TANF and LIHEAP
State of Louisiana We are currently replacing the State's Cúram based systems for Child Welfare Intake and Investigation and Disaster SNAP.	Child Welfare: 11 Months to Statewide Planned (May 2017 – April 2018) Disaster SNAP: 20 Months to Pilot Currently Planned (April 2017 – Nov 2018) and 23 Months to Statewide Planned (April 2017 – Feb 2019)	Child Welfare: Supports Intake and Investigation for Child Welfare Disaster SNAP: Full integrated eligibility functionality for Disaster SNAP (being implemented concurrently with Cash and SNAP programs).

Figure 42. Roll-out timeline, Programs, and Functionality included in Each Phase.

33. Discuss your definition of warranty and what work would be considered warranty fixes.

We define warranty as our obligation to correct defects within the IE-BM application when the IE-BM application is not functioning in material conformance with the approved design within the warranty period. The work to remediate these defects and perform these fixes is generally covered by warranty. Should we be invited to negotiate with the State, we will work to formalize warranty terms and any related assumptions in a manner that is mutually agreeable to both parties.

34. What deliverables are you suggesting combining or reducing to work products?

We would like to clarify that we are **not** suggesting any deliverables to be combined or reduced to work products, at this point. During start of the project, we would like to discuss what could be combined considering the final project schedule, state staff availability and similarity of deliverables. As we proposed in Section 14.2 Issues Risks, Challenges and Potential Risks, of Template 11 – Implementation Requirements Approach document, Pages 254 and 255, we will take up this exercise of finalizing the project deliverables as part of the project initiation.

The RFP has categorized all the deliverables as:

1. Recurring deliverables (produced on a recurring basis throughout the Project)

2. Once for the entire Project

3. Once for the initial release and updated for subsequent releases

4. Separate deliverables produced for each major release

The RFP has further stated in Table 15, Page 83/146, some deliverables are produced once, and updated only if required during subsequent releases.

1. The RFP also grouped all the deliverables as:

2. Project Management and Monitoring

3. Planning

4. Technical Environment Specification

5. Design, Development and Implementation

6. Data Conversion

7. Testing

8. Organizational Change Management, End User Training and Knowledge Transfer

9. Pilot, System Roll-Out and Go-Live

10. Warranty Support

Our proposal is fully compliant with this requirement and we will produce all the deliverables as requested. In "Tab-14 Work Plan – Table 14-4 Proposed Submission Dates for Deliverables," we identified all the deliverables for each IE-BM release and provided targeted submission dates. In review of the requested deliverables, though some deliverables are identified as "Once (with updates only if required during subsequent releases)" in the RFP, in our proposal we confirmed that some of these deliverables are required for both IE-BM releases. For all such deliverables, we provided a target submission date in our proposal.

For your convenience of review, please see the following Table 14-4, from our Proposal, with additional columns that identify optional deliverables we are proposing to deliver for all IE-BM releases.

Group	#	ID	Title	Release 1 Submission Date	Release 2 Submission Date	Is the deliverable optional (required on need basis only) for subsequent releases?	Are we delivering the deliverable for Release 2?	Frequency
Project Management and Monitoring	1	I.1.1	Completed Project Establishment Checklist	11/17/2017	N/A	Yes	No	Once
	2	I.1.2	Integrated Project Management Plan	1/26/2018	6/29/2018	Yes	Yes	Once for Initial Release and Updated for all subsequent Releases
	3	I.1.3	Project Schedule	12/1/2017	5/18/2018	Yes	Yes	Once for Initial Release and Updated for all subsequent Releases
	4	I.1.4	Project Status Reporting Artifacts	Weekly and monthly from 1/2/18-7/24/20		No	Yes	Weekly and Monthly from Project Initiation to Project Close
	5	I.1.5	Completed Release and Project Close-Out Check-List	5/24/19;	4/24/2020	No	Yes	Once for Every Release and Final Project Close-Out
Planning	6	I.2.1	Overall SDLC Approach Plan	1/26/2018	N/A	Yes	No	Once (with updates only if required during subsequent releases)
	7	I.2.2	System Architecture	2/23/2018	N/A	Yes	No	Once (with updates only if required during subsequent releases)
	8	I.2.3	System Security Plan	3/16/2018	8/23/2019	Yes	Yes	Once for Initial Release and Updated for all subsequent Releases
	9	I.2.4	Technology Environments Specification and Infrastructure Plan	3/16/2018	8/23/2019	Yes	Yes	Once for Initial Release and Updated for all subsequent Releases
	10	I.2.5	Organizational Change Management and Stakeholder Communication Plan	4/20/2018	2/8/2019	Yes	Yes	Once for Initial Release and Updated for all subsequent Releases
	11	I.2.6	Data Conversion Plan	4/13/2018	11/1/2019	No	Yes	Once for Initial Release and Updated for all subsequent Releases

Group	#	ID	Title	Release 1 Submission Date	Release 2 Submission Date	Is the deliverable optional (required on need basis only) for subsequent releases?	Are we delivering the deliverable for Release 2?	Frequency
	12	I.2.7	Master Test Plan	4/20/2018	2/1/2019	No	Yes	Once for Initial Release and Updated for all subsequent Releases
	13	I.2.8	Training and Knowledge Transfer Plan	5/4/2018	3/1/2019	Yes	Yes	Once for Initial Release and Updated for all subsequent Releases
	14	I.2.9	Roll-Out Plan	2/1/2019	12/13/2019	No	Yes	Once for Initial Release and Updated for all subsequent Releases
	15	I.2.10	Deployment Plan	2/1/2019	12/13/2019	Yes	Yes	Once for Initial Release and Updated for all subsequent Releases
	16	I.2.11	Systems Operations, Support and Transition Plan	2/1/2019	12/13/2019	No	Yes	Once for Initial Release and Updated for all subsequent Releases
Technology Environment Specifications	17	I.3.1	Technology Environments Specifications	4/20/2018	9/20/2019	Yes	Yes	Once for the initial release and updated for subsequent releases
Design, Development and Implementation (DDI)	18	1.4.1	Requirements Validation and Updates to Requirements Traceability Matrices and Use Cases	2/23/2018	8/24/2018	No	Yes	Once for Initial Release and Updated for all subsequent Releases
	19	1.4.2	Functional Design Document (FDD)	3/30/2018	10/26/2018	No	Yes	Once for Initial Release and Updated for all subsequent Releases
	20	1.4.3	Technical Design Document (TDD)	4/27/2018	12/7/2018	No	Yes	Once for Initial Release and Updated for all subsequent Releases
	21	1.4.4	Data Integration and Interface Control Document (ICD)	3/30/2018	10/26/2018	No	Yes	Once for the initial release and updated for subsequent releases
	22	1.4.5	Updated and Completed Detailed Functional and	8/31/2018	5/31/2019	No	Yes	Once for the initial release and updated for subsequent releases

Group	#	ID	Title	Release 1 Submission Date	Release 2 Submission Date	Is the deliverable optional (required on need basis only) for subsequent releases?	Are we delivering the deliverable for Release 2?	Frequency
			Technical Requirements Traceability Matrix					
Data Conversion	23	I.5.1	Data Conversion Testing Report and Results	8/31/2018	5/31/2019	No	Yes	Once for Every Release
Testing	24	I.6.1	Completed System Integration Test Readiness Checklist	5/4/2018	2/1/2019	No	Yes	Once for Every Release
	25	I.6.2	System Integration Testing (SIT) Report and Results	11/2/2018	9/6/2019	No	Yes	Once for Every Release
	26	I.6.3	Completed UAT Readiness Checklist	7/27/2018	4/26/2019	No	Yes	Once for Every Release
	27	I.6.4	UAT Report and Results	2/1/2019	1/6/2020	No	Yes	Once for Every Release
Organizational Change Management (OCM), End User Training and Knowledge Transfer (KT) Tasks	28	I.7.1	Training and Knowledge Transfer Materials	7/6/18; 8/10/18; 8/17/18; 8/24/18	4/26/19; 5/24/19; 5/31/19	No	Yes	Once for Every Release
		I.7.1	Instructor's Manual, Student Manual, and Desk References	7/6/2018	4/26/2019	No	Yes	Once for Every Release
		I.7.1	Online User Aids	7/6/2018	4/26/2019	No	Yes	Once for Every Release
		I.7.1	Curriculum for Using Online User Aids	8/10/2018	5/31/2019	No	Yes	Once for Every Release
		I.7.1	Web-based Tutorials	8/17/2018	5/24/2019	No	Yes	Once for Every Release
		I.7.1	How Do I's	8/24/2018	5/31/2019	No	Yes	Once for Every Release
		I.7.1	Additional Practice Exercises/Other Training Aids	8/24/2018	5/31/2019	No	Yes	Once for Every Release
	29	I.7.2	Training and Knowledge Transfer Completion Report	2/8/2019	1/10/2020	No	Yes	Once for Every Release
	30	I.7.3	OCM Executive Briefing	10/12/18; 1/11/19; 4/12/19, 7/12/19	10/11/19, 1/10/20; 4/10/20; 7/10/20; 10/9/20	No	Yes	Quarterly and as requested

Group	#	ID	Title	Release 1 Submission Date	Release 2 Submission Date	Is the deliverable optional (required on need basis only) for subsequent releases?	Are we delivering the deliverable for Release 2?	Frequency
Pilot, Roll-Out and Go-Live	31	I.8.1	Pilot Deployment Report and Signoff	4/26/2019	3/13/2020	No	Yes	Once for Every Release
	32	I.8.2	Formal System Acceptance and Final Go-Live Report	8/30/2019	7/31/2020	No	Yes	Once for Every Release
EEF M&O Transition Planning and Services	34	O.1.1	EEF Platform M&O Transition Plan	1/26/2018	N/A	N/A	No	Once and updated as needed or requested by DHS
	35	O.1.2	Weekly Transition Status Report	Every Wednesday of the week, starting from 1/1/18 - 4/6/18 (EEF M&O), 11/8/18 - 3/6/19 (Release 1), 8/5/19 -2/7/20 (Release 2)		No	Yes	Weekly during transition activities
	36	O.1.3	Applications M&O Plan	4/2/2018	N/A	Yes	No	Once
	37	O1.4	EEF M&O Readiness Checklist and Report	3/30/2018	N/A	Yes	No	Once
Provide M&O Services, Status Reporting and Quality Assurance	38	O.2.1	Monthly Status Report and Service Level Agreement Reporting Submission and Review	On the last Friday of the month from 4/2/18 - 3/22/19 (EEF), 3/4/19-2/28/20 (Release 1), 2/3/20 - 1/22/21 (Release 2)		No	Yes	Monthly
DDI to M&O Transition Services	39	O.3.1	IE-BM DDI team to M&O team Transition Plan	2/1/2019	1/3/2020	Yes	Yes	Once per release/ updated as needed or requested by DHS
	40	O.3.2	Updated Application Maintenance and Operations Plan	8/16/2019	7/17/2020	Yes	Yes	Once and updated for each release
	41	O.3.3	Transition Readiness Checklist	8/2/2019	7/6/2020	No	Yes	Once per IE-BM release
Enhancements and Modifications	42	O.4.1	Enhancement Requirements and Cost Estimates	10/26/2018	7/26/2019	No	Yes	Once per release

Group	#	ID	Title	Release 1 Submission Date	Release 2 Submission Date	Is the deliverable optional (required on need basis only) for subsequent releases?	Are we delivering the deliverable for Release 2?	Frequency
	43	O.4.2	Completed Enhancement Check-List	Submitted for each release between 3/4/19 - 1/31/20		Yes	Yes	Once per release
M&O Turnover Services	44	O.5.1	M&O Turn-Over Plan		3/16/2020	Yes	Yes	Once and updated as needed or requested by DHS
	45	O.5.2	M&O Turn-Over Assessment Report		Submitted on the last Friday of the month from 6/1/20 - 12/31/20	Yes	Yes	Monthly during transition activities
Provide Hosted Private Cloud Services (DHS Optional Deliverable)	46	O.6.1	Monthly Status Report and Service Level Agreement Reporting Submission and Review	On the last Friday of the month from 4/2/18 - 3/22/19 (EEF), 3/4/19-2/28/20 (Release 1), 2/3/20 - 1/22/21 (Release 2)		No	Yes	Monthly
Steady State (Warranty Period)	33	1.9.1	Completion of Warranty Activities Report	7/30/2021	6/24/2022	No	Yes	Once for Every Release

Figure 43. Table 14-4 from our Proposal, with Additional Columns that Identify Optional Deliverables We are Proposing to Deliver for all IE-BM Releases.

35. Are any of the resources involved in the projects described within this section those proposed for Arkansas? *[In reference to Transition Services from Incumbent Vendor: Template T-12, Tab O1. EEF M&O Transition and Template T-13, Section 1.]*

Yes. The majority of our proposed team participated on one or more projects where Deloitte supported takeover and transition of an IE&E from another vendor. For example, the proposed Operations Manager who would lead the takeover, Harikumar Kallumkal, was a key contributor to a successful takeover of IE BM system in Florida. He remained involved with the IE BM Program for several years and helped build a new DSNAP system to be more responsive to disaster relief efforts resulting from hurricanes. The Project Manager, Prasad Yarlagedda, participated in the transition of the Texas IE BM system and led the New Mexico IE BM system replacement of a Curam platform the State had planned to use for enterprise case management. The Technical Lead, Hemang Dholakia, has extensive experience facilitating takeover and transition of infrastructure services, including cutover of legacy interfaces, network, and shared computing components. The Senior Change Management Advisor, Libby Bacon, has assisted multiple States with transition and was a key contributor to our successful replacement of Delaware's Curam solution. In addition to the proposed staff highlighted, the balance of the team has direct and relevant experience supporting IE BM transition and takeover.

36. Please confirm that the M&O requirement 02.4 will be met by vendor staff. Please confirm that the proposed product is Jira Service Desk.

Yes, the vendor staff will perform scheduling and management of releases to help ensure minimal impact to users using JIRA Service Desk.

The components listed in the following table are used by NextGen to provide comprehensive Release and Configuration Management services across the application stack. JIRA Service desk, also listed in the following table, will be used for all client ticket interactions.

Components	Product	Description
Build engine	Apache ANT	Build scripts for deployments
Source Code Management	Apache Subversion (SVN)	Source Code repository
Code Coverage	Atlassian Clover	Code coverage tool for Java
Tracking	Atlassian JIRA	For tracking work items
Build engine	Jenkins	Build Engine to build and deploy code
Code Review	Atlassian Crucible	For automated Java code reviews
Source Code Management	Atlassian Fisheye	Visualize and report on activity and search for commits, files, revisions, or teammates across the source code repository
JIRA Add on for traceability	Go2Group	Go2Group Synapse RT
Collaboration Software	Jama	To manage testing and traceability
Change management	Deloitte CMT – ChangeScout	Deloitte tool for change management
Code Quality	SONAR Qube	For code quality checks
Service Desk	Jira Service Desk	For client ticket interactions
Project Management	Deloitte PMC	For Project management related artifacts
JIRA – SQL Integration	Kinto Soft SQL for JIRA - JQL for the industry	SQL Integration for JIRA
JIRA-XLSX Integration	Midori Global Consulting Kft	Excel Plugin for JIRA (XLSX)

Components	Product	Description
Automation	CHEF	For Infrastructure automation for propagating configuration changes across environments

Figure 44. Configuration Management tools used by NextGen.

37. Aside from software that DHS is purchasing, upon termination of the M&O services, to which software does the State retain the license?

Our proposed solution, HHS NextGen 2.0 is a non-proprietary product fully owned by the State for royalty free use upon termination with no ongoing license fees. This approach is different from proprietary solutions such as Cúram, etc.

The proposed solution uses a combination of licensed COTS products and subscriptions (e.g. JIRA) to be purchased by the State. The State would retain the licenses even if they are resold through Deloitte. Should DHS elect to use AWS hosting services, then upon termination DHS would have the option of retaining hosting services through AWS directly.

38. The proposed work plan outlines tasks for the equivalent of 36 FTEs required for the State. This is far larger than offered by State. How do you propose addressing this gap and mitigating the risk?

A common theme and critical success factor in our recent successful Integrated Eligibility projects like the Arkansas IE-BM effort is sufficient resourcing by both State and Deloitte staff in all key areas of the project. Sufficient resourcing by the State helps to make sure the system supports the State's needs from the requirements through implementation and transition, and ultimately facilitates user adoption.

For the IE-BM project, we took the following factors into consideration for estimating the required levels of State staff participation to successfully execute the project:

- Project duration of 36 months using multiple releases.

- Pilot and phased rollout strategy for each release.

- State staffing levels to support project needs including project management and planning, requirement validation, design, data conversion, user-acceptance testing, training and knowledge transfer and deliverable reviews throughout the project.

- State staffing levels to support technical aspects of the project including architecture reviews, environment build-outs, and ongoing infrastructure monitoring and support.

Based on this, we estimated State staff requirement to be approximately 36 FTEs (on average) throughout the project. We recognize our estimate for State staff requirement is significantly higher than specified in the RFP on page 63, section 3.6.1.1 during some of the project phases. However, this level of support is very consistent with our experiences on similar IE-BM projects in other States, including the four successful statewide implementations we completed in 2017.

Our clients are often faced with the challenges of how to appropriately resource similar projects. These clients have engaged alternative staffing strategies to address staffing shortages. Our clients have utilized approaches in which they can deploy staff augmentation resources both through contracting and resource sharing from other departments and even other agencies to fulfill resource gaps. This includes

backfilling existing operations positions with contractors while shifting the operations personnel to project positions. Likewise, our clients supplement the resourcing for project specific activities like project management support, user-acceptance testing, facilitate and/or training delivery and infrastructure build-outs and related monitoring with third party resources. We have worked closely with numerous clients like DHS to augment their teams and operations staff in these areas. We believe it is important that State resources are engaged to support areas of the project that have a direct input into the end product (including requirements, design and UAT execution) so that you get a solution that meets your needs and expectations. There is a greater risk of unique business needs being misunderstood if these areas do not have direct, experienced State staff engaged.

In the event resourcing levels cannot be provided at the suggested levels, we will work with the State to address any possible options, including timeline and release strategies. The timeline options would need to be discussed in the context of the guidelines provided in the RFP in "Section 3.9 Proposed Project Work Plan", Pages 120/146 & 121/146.

Attachments

Sample Plans

As mentioned in question 31, the following pages consist of Test Plan and Software Problem Resolution Plan samples from a recent successful integrated eligibility implementation.

14.1 Master Test Plan

Deloitte.

Document Control Information

Document Information

Document Identification	14.1 Master Test Plan
Document Name	Master Test Plan
Project Name	████ ██████ ███████████████████ ██
Client	████ ██████
Document Author	██████████████
Document Version	Combined 1.4
Document Status	Revised Deliverable
Date Released	October 22, 2015

Document Edit History

Version	Date	Additions/Modifications	Prepared/Revised by
1.0	11-04-2014	Initial Master Test Plan Deliverable	████████████
1.1	12-01-2014	Revised Master Test Plan based on State Comments and Walkthrough Meeting.	███████
2.0	01-13-2015	Added content for the Conversion Test Plan and Interface Test Plan	███████
2.1	02-04-2015	Added updates based on State comments.	████████████
3.0	02-13-2015	Revised Master Test Plan based on State Comments Added content for the Performance, Volume and Stress Test Plan Added content for the User Acceptance Test Support Plan	███████
Combined 1.1	03-10-2015	Made updates based on combined comments and the 3/9 meeting with the State	███████
Combined 1.2	07-13-2015	Revised Master Test Plan to update cross-browser strategy, and process/schedule refinements to String, System Integration, Performance and Conversion testing.	███████
Combined 1.3	08-04-2015	Revised Master Test Plan to incorporate State comments.	███████
Combined 1.4	10-20-2015	Revised Master Test Plan to incorporate State comments and resolutions resulting from the meeting on 9/11/15	███████

Deloitte.

Table of Contents

1   Introduction

1.1   Purpose

The purpose of the Master Test Plan is to describe the testing portion of the System Development Life Cycle (SDLC). It is created to inform project managers, testers, developers, and other stakeholders about the testing process. The test process defines the testing objective, methods of testing and processes for conducting various testing activities.

This document describes how testing will be executed for each release of software for the ▮▮▮ project. The Master Test Plan outlines the scope of the overall testing effort, the test phases required for the project, the Test team organization and the roles/responsibilities of the team involved. The detailed Test Plans for each type of testing are also included in the Master Test Plan.

1.2   Scope

The following table summarizes the 'Master Test Plan' deliverable scope as documented in the requirements of the ▮▮▮

▮▮▮ Requirements (Request for Proposal – ▮▮▮ Section 4.7.12.1)	Detailed Document Scope
• The Master Test Plan shall address the vendor's test strategy and outline the plan for all levels of testing. The vendor shall address, at a minimum, the following: • Approach to testing including testing philosophy, test data, test standards, verification approach, approach to non-testable requirements, test phases, test techniques and methods, and results documentation (including traceability).	• Approach - Approach (Section 2) • Testing Philosophy - Testing Philosophy (Section 2.1) • Test Data - Prepare Data (Section 4.3) • Test Standards – Approach (Section 2) • Verification approach – Test Scope and Verification Approach (Section 2.2) • Approach to non-testable requirements – Non-testable Requirements (Section 2.2.2) • Test phases – Test Phases (Section 5) • Test techniques and methods – High Level Test Plan (Section 4.1.1) • Results documentation (including traceability) – Communication Methods (Section 2.7.1) and Traceability Management (Section 4.1.3)
• Testing processes including test preparations, orientation and kickoff, test execution, test monitoring, test status meetings and reporting, etc.	• Testing Processes including Test Preparations, orientation and kickoff – High Level Test Plan (Section 4.1.1) • Test execution – Test Execution (Section 4.4.1) • Test monitoring, test status meetings and reporting – Communication Methods (Section 2.7.1)
• Approach to creating and maintaining the test environments for all testing described in this ▮▮▮	• Approach to creating and maintaining the test environments for all testing described in this ▮▮▮ – Test Environments (Section 3.2)
• Plan for training testing staff, including State staff, and providing orientation and kickoff for testing	• Plan for training testing staff, including State staff, and providing orientation and kickoff for testing – Test Training Strategy (Section 3.1.3)
• Documentation of the resources required to execute the conversion plan including roles and responsibilities for both State and vendor staff	• Documentation of the resources required to execute the conversion plan including roles and responsibilities for both State and vendor staff – 14.1.5 Conversion Test Plan (Section 5.7)

Requirements (Request for Proposal – ██████ Section 4.7.12.1)	Detailed Document Scope
• Testing defect management and prioritization including the role of the vendor and State teams	• Testing defect management and prioritization including the role of the vendor and State teams – Defect Management (Section 4.4.2)
• Testing lab schedule	• Testing lab schedule – Test Schedule (Section 2.5)

1.2.1 Associated Requirements

State Responsibility

• Review and accept or reject the Master Test Plan
• Provide direction and clarification to the vendor
• Provide use of State test labs

Vendor Responsibility

• Submit a strategy for each type of testing included below
• Plan for creating test and maintaining environments for all levels of testing
• Identify tools and reports that will be used to support all testing efforts
• Define and update Master Test Plan and resources

1.3 Associated Deliverables

This document references the following deliverables and work products:

• 1.2: Revised Project Management Plan

• 2.1: Weekly Project Status Reports

• 4.1: Configuration Management Plan

• 5.1: Requirements Analysis Plan and Documentation

• 5.2: Requirements Traceability Matrix

• 5.3: Requirement Change Control Plan

• 6.3: Business Rules Plan

• 7.1: Detailed System Design Session Plan

• 7.2: Detailed System Design Document

• 7.3: Business Rules Design

• 7.4: Interface Detailed Design

• 7.5: Forms, Templates, and Notices Detailed Design

• 7.6: Alerts Detailed Design

• 7.7: Reports Detailed Design

• 7.8: Detailed Data Model

• 8.1: Security Design Document and Implementation Plan

- 8.2: User Access Security Plan

- 8.3: User Authentication Security Plan

- 8.4: Privileged User Authentication Security Plan

- Work Product: System Security Plan (SSP)

- 10.1: Master Training Plan

- 10.2: State Project Staff Preparation

- 11.1: Data Conversion and Migration Plan

- 11.2: Data Cleanup Plan

- 12.1: Software Development Plan

- 12.3: Development Library

- 13.1: System Integration Plan

- 14.2: System Test Scripts

- 14.3: Testing Results Reporting

- 14.4: User Acceptance Testing Readiness Report

- 17.1: Software Problem Resolution Plan

1.4   Deliverable Acceptance Criteria

Standard deliverable acceptance criteria are defined as part of the 1.2 Revised Project Management Plan deliverable, Deliverable Approval section. In addition, the State will provide acceptance for this Deliverable if it conforms to or performs in accordance with the Acceptance Criteria as defined in the ▉▉▉▉▉ This document does not have additional acceptance criteria.

1.5   Deliverable Reviewer and Approver

Given the content of this deliverable, it is suggested that persons with the following subject matter expertise provide input to the review and/or approval:

- Project Management and State representatives

- Test Management

- Project Systems Analysts to review Functional content, User Acceptance, and Conversion

- Project Technical Analysts to review Unit, Conversion, and Performance

2 Test Approach

Deloitte uses our integrated Enterprise Value Delivery (EVD) for System Integration (SI) Methodology. Our methodology establishes a consistent delivery approach for custom software development projects that apply to various industries. It improves adoption and effectiveness through change management (CM) and structured learning programs.
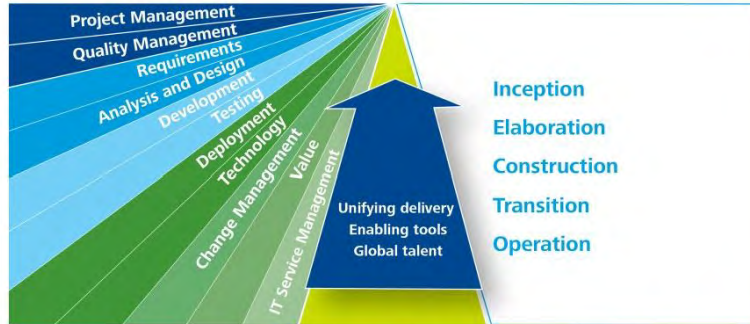
Enterprise Value Delivery for Systems Integration

Approach Highlights

Deloitte's EVD for SI approach includes:

- A robust, repeatable, and predictable delivery model.
- Methodology that has been used on projects across all industries and sectors.
- Mature, repeatable processes and disciplines that span the entire systems development life cycle enabling a Capability Maturity Model Integration (CMMI) L3 maturity rating.

Deloitte's EVD for SI methodology provides a complete set of processes, templates, and accelerators to meet the ▮▮▮▮▮ ▮▮▮▮▮▮ project needs. It embeds best practices in public sector from our collective experiences with a focus on higher quality, lower risk, and predictability in the delivery of the solution. Deloitte's solution provides a comprehensive SDLC approach that uniquely combines flexible, reusable service-oriented capabilities, technical frameworks, tools, and accelators.

Our approach is based on the Software Engineering Institute's (SEI) CMMI and Project Management Body of Knowledge (PMBOK) and supports all activities that are executed during the project life cycle.

Our approach helps leverage existing proven assets to accelerate the testing of the NextGen solution. Testing is a planned series of checks and reviews to verify that the system is constructed in accordance with approved requirements and that it supports the intended development of test cases and test scripts. These test artifacts are traced back to requirements to make sure that the system meets the design, functional requirements, and technical requirements. Test cycles are planned to cover components developed in each area including implementation of EMPI, Customer Portal, the incorporation of programs into the Rules Based Engine, and the complete development of core eligibility functions in the ▮▮▮ solution. Various testing methods to accomplish these efforts include manual testing, automation of functional tests, and generation of virtual users to simulate load in an environment that matches production. Focused efforts around data conversion and interface testing are also critical to verify the transition and integration of data between the various components delivery of the solution in a manner that maximizes quality, adheres to a realistic schedule, and reduces performance risk. The Test Plan is intended to define and communicate the approach and activities to meet the following test goals:

- Define the overall test process and approach including test phases, activities, and environments
- Develop test work products and deliverables that support traceability throughout the SDLC
- Explain the approach to planning and sequencing testing tasks and activities
- Focus testing effort on high volume and/or critical functionality
- Define the role, training, and participation of the State within the testing process
- Confirm requirements are satisfied by system functionality
- Verify system components perform as defined by design documents
- Describe the mechanism for regression testing of existing functionality after new or modified functionality is implemented

- Define a collaborative approach to successfully test with each system interface partner

2.1 Testing Philosophy

Our testing philosophy consists of the following guiding principles, based on industry best practices as well as numerous system implementations similar to ▮▮▮▮

- **Plan and execute test early.** Up-front planning in collaboration with the State facilitates starting to test on time and staying on schedule. This especially holds true for coordinated testing efforts between Deloitte and the State for integration and User Acceptance Test phases. It is less costly to fix errors early on in the Systems Development Life Cycle rather than later. Plan to String Test each logical group of functions after Unit Testing, which allows us to complete subsystem testing prior to System Integration Testing.

- **Clearly define and measure testing entry and exit criteria.** For each test phase clearly define the objectives of each test phase/cycle and measure against entry and exit criteria to address objectives. By defining the scope and approaches for testing, testers can achieve a comprehensive test of the overall solution.

- **Define and/or update test cases during design activities.** Create test cases while executing design activities in order to validate that there is a direct correlation between business requirements and test cases. Considerable coordination between the Test, Requirements, Design, and State teams is necessary to determine complete functional and technical coverage. The traceability between test cases and requirements and design elements is established using the Rational tool suite.

- **Arrange what is tested and in what order.** Determine the critical, significant, or highly integrated requirements and address as early as possible to provide the time needed to resolve possible issues.

- **Test with appropriate user involvement.** Users not only take ownership of the system but also have the business expertise and are in the necessary position to determine and validate that the application conforms to the business requirements. End users are incorporated into requirements and design sessions and ultimately have significant input on test case coverage.

- **Automate testing where possible.** Use automated testing tools to increase testing execution speed and accuracy within the testing levels. Automation testing is especially used for smoke testing, regression efforts, and data creation. By leveraging regression suites from similar eligibility systems, the Deloitte Test team has access and the ability to begin to build the framework and scripts to determine system consistency.

- **Exercise end-to-end business process lifecycles early and often.** Structure testing to support end-to-end business process testing and execute early and often to increase test exposure across the system. So as to determine the preparedness for User Acceptance Testing, complete test cases that simulate how the application is actually used are executed throughout the various testing levels.

2.2 Test Scope and Verification Approach

The Test Plan scope consists of the functional and technical requirements that are used to verify the ▮▮ application at various points throughout the SDLC and the design documents used to describe how the system fulfils the requirement.

The Deloitte Test team coordinates with functional and technical project team members and testing stakeholders to plan, conduct, and document testing for each code delivery. The Deloitte Test team prepares detailed test plans that define the test approach, schedule, resources, and details based on the

test phase and specific content. Status and proactive reporting and communication to management will be provided by the Deloitte Test team throughout the test effort.

2.2.1 Testable Requirements

The focus of the Master Test Plan is to validate the ▮▮▮▮ system using both functional and structural techniques. Functional testing is sometimes called black-box testing because the tester does not have working knowledge of the internal system logic. Structural testing is sometimes called white-box testing because the tester has knowledge of the internal system logic. The various test phases highlight these different testing techniques, for example unit testing and conversion testing are conducted by people with knowledge of the internal system logic, while String and System Integration Test leverage the black-box testing techniques.

2.2.2 Non-testable Requirements

As part of the test planning effort, the Deloitte Test Team designates whether each requirement is a testable system requirement within the scope of the Deloitte Test Team test validation efforts or a requirement that is verified through a different mechanism such as a static testing. Static testing is done using the documentation. The code is not performing during static testing. Dynamic testing needs the code to be in an executable state to conduct the tests.

The table below lists examples of requirements that should be verified and not validated by the Deloitte Test Team; therefore they are out of scope of the Master Test Plan deliverable:

Original Requirement ID	Requirement Description
F.19.5	Track issues from identification to resolution. Provide a repository of all test documentation including test scenarios and results.
F.18.1	Produce documentation for the ▮▮ system, as described in Activity 4.7.18, Documentation Services.
F.18.21	Provide version control for all documentation to maintain historical document archives
F.23.5	Require visitors to wear temporary identification, sign a logbook and be escorted when entering a Deloitte hosting facility used in the ▮▮▮▮▮▮▮▮▮▮ project
F.23.11	Secure Deloitte hosting facilities entry and control points used in the ▮▮▮▮▮ ▮▮▮ project

Table 1: Requirement Examples for Verification

The out of scope designation is updated in DOORS as part of the SIT plan activities.

2.3 Assumptions

This section provides a list of assumptions made by the project team while creating this Master Test Plan.

1. Test entrance and exit criteria are enforced across test phases.

2. Testing is planned according to defined requirement and design priorities as documented in the requirements management tool.

3. Cross-team testing dependencies and milestones are documented and communicated in the project schedule.

4. Testing for each design widget type will commence after the development is completed, rather than waiting for an entire subset of the system to be completed before initiating testing. Design widget types include Audit Event, Batch Schedule, Batch Storyboard, Business Rule, Conversion

Spec, Correspondence, Interface Spec, Process Flow, Report, Screenflow/Storyboard, Security Roles Matrix, System Security Plan, and Technical Spec.

5. The State and Trading Partners will provide an operational test environment that is connected to the █████ environment for each transactional application interface.

6. The State and Trading Partners will provide at least one knowledgeable team member (and backup) for each interface system during the testing time frame to support the Interface Test effort.

7. Security testing is a separate thread, covered by the Security Team. Functional testing of the security requirements are defined in this Master Test Plan.

8. User Acceptance Testing (UAT) is a separate thread planned and executed by the State. Deloitte UAT support activities are defined in this Master Test Plan.

9. 508 Compliance testing is accomplished by using the JAWS tool on the IE browser. 508 JAWS testing is necessary for █████ Customer Portal and Worker Portal functionality.

10. All Spanish translations for Customer Portal functionality will be provided by the State prior to the start of System Integration Test.

11. All foreign language translations for Notices will be provided by the State prior to the start of System Integration Test.

12. The test environments detailed in this Master Test Plan are available during the test time frames with sufficient storage to accommodate frequent backups and restores during testing.

13. The Deloitte Test Lead receives an inventory of build components and affirms readiness to accept the build prior to String and SIT deployments. The Technical Team will provide the build files to GTA for deployment on their environments.

14. Regression testing is automated where feasible based on code stability and relative importance and complexity of functionality.

15. Deloitte Test team members will provide State testers with training on the testing process and tools.

16. The State hosts production and production-like environments to support testing of converted data, interfaces and performance.

17. There will be no increase to the allotted time to test, unless agreed upon by both the State and Deloitte.

18. Adequate resources have been identified to test the release within the allotted time frame.

19. The schedule has been built to allow sufficient time for retests.

20. UAT Entrance and Exit Criteria details will be agreed upon by the State and Deloitte.

21. For Performance Test: the Rational Performance Tester testing product will be sufficient to perform the tests to reasonable simulate Production user behavior.

22. For Performance Test: the ██ software selected must be fully functional and working prior to performance testing.

23. For Performance Test: access to the environment where the testing tool resides must be available to the tester.

24. For Performance Test: performance testing will be conducted in a suitable environment, which will reflect production to achieve accurate and realistic test results.

25. For Performance Test: the server and network administrators will be available during performance test execution to gather system metrics.

26. For Performance Test: the functional and business process experts will provide the activity flows and transaction processes to be used in creating test scripts and will be utilized by the automated testing tool.

27. For Performance Test: functional and database experts will provide valid production extract data to be used by the performance tester to create realistic and accurate test results.

28. For Performance Test: functional and business process experts will provide expected user and transaction response times to create initial baseline metrics.

29. For Performance Test: the Deloitte Test team will have the ability to isolate sub-system components to identify and troubleshoot performance bottlenecks (Example: From the interface perspective, EDBC process is slow. From the web services perspective, address validation is not responding.)

30. For Performance Test: all code and configuration changes to be released to environments via existing release management process.

31. For Performance Test: depending on the identified bottleneck, the test scenarios/volumes will be re-run to measure improvements.

32. For Performance Test: performance testing will be conducted in Eastern Standard Time.

33. For Performance Test: testing also occurs during peak hours.

34. For Performance Test: interfaces to 3rd party systems will not be in scope for performance test.

35. For Performance Test: Both Deloitte and State are responsible for monitoring, reporting and meeting the performance standards for the components of ▮▮▮▮ solution that are hosted on V-Block and State existing infrastructure. This includes both the application infrastructure and the network infrastructure. Ex. Data Warehouse where application is hosted in State existing infrastructure whereas the Analytical Database is hosted in V-Block.

2.4 Constraints

This section provides a list of constraints that may cause a test limitation.

- Development activities determine the initial order in which items are tested in String Test.
- String Test cycles are dependent on the number and frequency of development code deliveries.
- Automated testing is limited to stable application components without Severity 1 or 2 defects.
- State user testing participation is dependent upon adequate stakeholder resource availability.
- Integrated interface testing is conducted based upon the readiness and availability of the Interface Partners.

2.5 Test Schedule

The major activities for each test phase include plan, script, prepare data and execute test scripts. The figure below provides the high level schedule for these activities organized by test phase (interface testing is included in String and System Integration Test). The core test lab hours are in alignment with the standard Deloitte project hours.

High Level Revised Test Schedule

	Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015	May 2015	Jun 2015	Jul 2015	Aug 2015	Sep 2015	Oct 2015	Nov 2015	Dec 2015	Jan 2016	Feb 2016	Mar 2016	Apr 2016
String Test	Planning	Scripting/Data Prep		Execution and Re-testing															
EMPI SIT	Planning					Scripting/Data Prep	Execution and Re-testing												
IES SIT	Planning					Scripting/Data Prep	Execution and Re-testing												
Conversion Test	Planning					Scripting/Data Prep	Execution and Re-testing												
Interface Test	Planning	Scripting/Data Prep	Execution and Re-testing																
Performance Test									Planning/Baseline			Execution and Re-testing							
EMPI UAT				Planning/Scripting/Data Prep						Execution and Re-testing									
IES UAT				Planning/Scripting/Data Prep						Execution and Re-testing									

Figure 1: High Level Test Schedule

Updated test schedule can be found in the Master Project Schedule submitted with the project Weekly Status Report deliverable.

2.6 Hand-off from Development to Test

Unit testing and String testing are essential tasks to confirm that high quality code is promoted to test environments for further integration testing. The Software Development Plan using the Enterprise Value Delivery for System Integration methodology details the scope of Unit/String testing, including the test approach, process, and testing tools that confirm Unit/String testing is strictly adhered to by the Development team. Quality assurance involves tasks such as periodic code reviews, Unit test and String test result reviews, and requirements traceability matrix reviews to confirm completeness, consistency, and traceability of the development artifacts. The Software Development Plan using the EVD for SI methodology details the quality assurance tasks performed during the development effort including the roles and responsibilities of different teams.

Prior to deployment of a development build to a test environment the Deloitte Test team is provided with the list of items included in the build and may schedule a walkthrough with the Development team to discuss the release, deployment details, and any open defects or workarounds.

Refer to Deliverable 12.1: Software Development Plan for more details on the code promotion and build process.

2.7 Communication

The Deloitte Test team will provide periodic and ongoing communication regarding test activities and status. The Deloitte Test team will use testing tools, primarily Rational Quality Manager (RQM), to develop status reports, test reports, test deliverables, and test traceability documentation for each applicable test phase. RQM supports real-time test status via configurable dashboard capabilities for test execution. Refer to Section 7 Appendix 7.5 Sample Test Report Listing for examples of predefined reports provided by RQM. RQM also supports customized reporting for test status information.

Rational Team Concert (RTC) is the repository for defects and supports dashboard features for defect tracking. RTC also supports configurable, automated e-mail notifications that can be configured as tasks are assigned to individuals.

The Deloitte Test team will also coordinate testing walkthroughs, checkpoints, and test status meetings related to test planning, test execution, and test deliverables.

2.7.1 Communication Methods

Participants	Form	Purpose	Occurrence	Inputs/Outputs
Deloitte Test Team **Deloitte Track Leads**	In-person Meeting & Dial-In	Defect Triage	Daily	Input: Defect extract from RTC related to String, Integration and Performance testing Output: Assigned defects in RTC
State PMO **IV&V**	Deliverable 14.3 Testing Results Reporting	The Deloitte Test Team provides System Integration Test execution metrics to the State PMO on a weekly basis during the System Integration Testing Phase. The following test metrics are provided: • Actual Scripts vs. Planned Scripts created • Actual Scripts vs. Planned Scripts executed • Test Script Execution Status (Pass/Fail) • Defects impacting SIT Scripts • Total Defects logged • Defects Status and Aging • Requirements Covered	Weekly	Input: Planned execution data, actual execution data from RQM, RTC, and DOORS Output: 14.3 Testing Results Reporting deliverable
State PMO **IV&V** **Deloitte Test Team (support)** **Deloitte Track Leads (support)** **UAT Testers** **State Test Team** **Interface Partners**	In-person Meeting & Dial-In	UAT Defect Triage	Daily	Input: Defect extract from RTC related to User Acceptance Testing Output: Assigned defects in RTC

Participants	Form	Purpose	Occurrence	Inputs/Outputs
State PMO **IV&V** **Trading Partners** **Deloitte Test Team** **Deloitte Track Leads** **Other State Identified Participation**	In-person Meeting or Conference Call	External dependencies need to be coordinated to manage the schedule. As implementation progresses, the system(s) under development may require coordination activities with external parties such as: • Synchronizing/staging test data between internal and external systems • Scheduling of external file transfers • Request for electronic transactions • Identifying and communicating environment availability • Security access to simulate functional test cases during testing	As needed	Input: Relevant external dependency information to prepare for and execute test activities Output: Meeting minutes

Table 2: Communication Methods

3 Test Resources

3.1 People

3.1.1 Deloitte Test Team Organization

The Deloitte Test team is organized according to key areas of testing expertise as illustrated below.
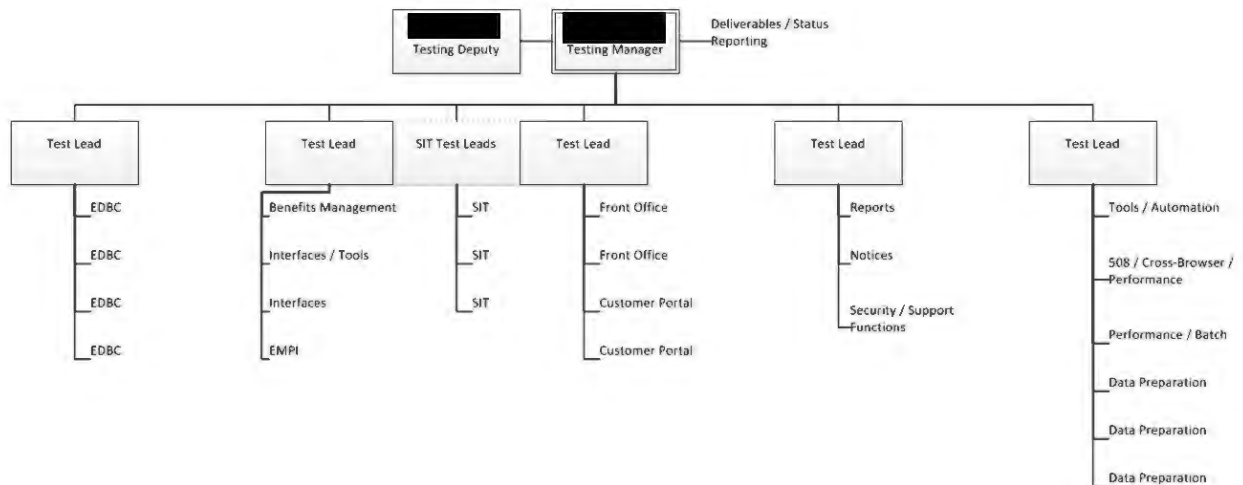
Figure 2: Deloitte Test Team Organization

The Deloitte Test team is supported by the Deloitte Application, Technical, and Conversion teams including track leads, analysts and developers. State counterparts to the Deloitte Test team include the State Test Lead, State Testers, State Business Analysts, and Subject Matters Experts (SMEs).

3.1.2 Roles and Responsibilities

Deloitte and State testing roles and major responsibilities are defined in the following table.

Role	Key Responsibilities
Deloitte Test Lead/ Deputy Test Lead	• Submit a strategy for Unit, System Integration, Interface, Performance, Regression, and Data Conversion testing • Work with client team and project managers to establish entry and exit criteria, resources, checkpoints, and a timeline for each test phase to be documented in the Master Test Plan/Project Work Plan • Deploy and manage the appropriate testing framework to meet the requirements including team members, testing tools, defect tracking and testing processes and scripts • Plan, deploy, and manage the testing effort • Review Master Test Plan, System Test Scripts, Testing Results Reporting, and User Acceptance Testing Readiness Report • Coordinate with Infrastructure and Technical teams for planning and allocating testing environments and tools • Identify test tools and report on the status of test execution and outstanding system problems identified • Implement and manage measurements and metrics to be applied against the system under test
Deloitte	• Design and develop high level and detailed test cases/scripts for specific tracks/subsystems

Role	Key Responsibilities
Senior Functional Tester	based on input from requirements, design, State stakeholders, and Deloitte Test team leads • Assist functional testers and perform content and peer review for test work products • Execute functional test cases to verify the functionality outlined in the requirements and design documents • Log defects for functionality that does not meet expected results • Perform manual smoke and regression tests to validate that new code releases do not break existing functionality • Support the State testers during User Acceptance Test
Deloitte Functional Testers	• Design and develop high level and detailed test cases/scripts based on input from requirements, design, State stakeholders, and Deloitte Test team leads • Execute functional test cases to verify the functionality outlined in the requirements and design documents • Log defects for functionality that does not meet expected results • Perform manual smoke and regression tests to validate that new code releases do not break existing functionality • Support the State testers during User Acceptance Test
Deloitte Automation Testers	• Design and develop high level and detailed test cases/scripts based on input from requirements, design, State stakeholders, and Deloitte Test team leads • Execute functional/technical test cases to verify the functionality outlined in the requirements and design documents • Log defects for functionality that does not meet expected results • Perform automated smoke and regression tests to validate that new code releases do not break existing functionality • Support the State testers during User Acceptance Test
Deloitte Technical Tester	• Design and develop high level and detailed test cases/scripts based on input from requirements, design, State stakeholders, and Deloitte Test team leads • Assist with data preparation as needed to support functional and technical testing • Execute technical test cases including batch and interfaces to verify the functionality outlined in the requirements and design documents • Log defects for functionality that does not meet expected results • Perform both manual and automated smoke and regression tests to validate that new code releases do not break existing functionality • Support the State testers during User Acceptance Test
Deloitte Performance Tester	• Create, maintain, and execute Performance, Volume, and Stress tests • Capture and communicate performance metrics findings to project management and the State • Log and report performance related defects
Deloitte Data Conversion Tester	• Verify the conversion of client and case data from legacy systems to ▮ • Create and execute a Conversion Test Plan that includes comprehensive testing of conversion steps i.e. legacy data extraction, validation, merge, translation, load, eligibility determination, benefit calculation and reconciliation of results with legacy system • Maintain code and processes for interim and planned conversions, batch jobs, interim conversion and historical data transfer from legacy system
State Test Lead	• Review and approve Master Test Plan and the subsequent Unit, System Integration, Interface, Performance, and Conversion Test Plans • Review and approve System Test Scripts, Testing Results Reporting, and User Acceptance Testing Readiness Report • Create the UAT Test Plan • Manage UAT activities • Participate in defect management and triage activities • Review and approve whether each phase of testing results are met • Provide input to Deloitte test lead on coordination and prioritization of test activities

Role	Key Responsibilities
	• Participate in Go/No Go decisions and evaluation of UAT entrance and exit criteria
State Tester	• Design and develop end-to-end business process scenarios that simulate how the application is actually used in the field • Develop User Acceptance Test cases/scripts • Execute User Acceptance Test cases and regression scripts to determine the system is deployment ready
State Technical Analysts/Personnel	• Review technical test plans, documentation and test work products including test plans, cases, and scripts • Support defect triage and resolution for technical defects
State Business Analysts and Subject Matter Experts	• Provide direction and clarification on the planning, writing, and execution of system test scripts • Review and approve the scripts developed by the Deloitte System Test team to determine traceability • Provide a point of view from an end user perspective • Support Deloitte testers when questions regarding functional gaps or policy clarifications arise

Table 3: Test Roles and Responsibilities

3.1.3 Test Training Strategy

Members of the Deloitte Test team will train members of the State Test team on the use of the Deloitte test process and tools based on their role and the applicable test phase as defined in the table below.

Role	Relevant Skill	Test Activities

State Test Lead	• ▮▮▮▮ design/functional knowledge
	  o SharePoint
	• Test process/test tool proficiency
	  o Rational DOORS
	  o Rational Quality Manager
	• User Acceptance Testing process knowledge
	• Defect management process knowledge
	  o Rational Team Concert
		• Review Unit, System Integration, Interface, Performance, and Conversion Test Plans
		• Develop User Acceptance Test Plan
		• Review and approve System Integration Test scripts
		• Review test traceability to requirements and designs
		• Participate in defect management activities

State Tester	• ▮▮▮▮ design/functional knowledge
	  o SharePoint
	• Test process/test tool proficiency
	  o Rational DOORS
	  o Rational Quality Manager
	• User Acceptance Testing process knowledge
	• Defect management process knowledge
	  o Rational Team Concert
		• Review System Integration Test cases and scripts
		• Develop and execute User Acceptance Test cases/scripts
		• Review test traceability to requirements and designs
		• Execute test scripts
		• Log defects

Role	Relevant Skill	Test Activities

State Technical Analysts/Personnel	• ▮▮▮ design/technical knowledge
	   o SharePoint
	• Test process/test tool proficiency
	   o Rational DOORS
	   o Rational Quality Manager
	• User Acceptance Testing process knowledge
	• Technical System Components, Architecture, Security knowledge
	• Defect management process knowledge
	   o Rational Team Concert
		• Review Unit, System Integration, Interface, Performance, and Conversion Test Plans
		• Review test traceability to technical requirements and designs
		• Review technical tests and participate in User Acceptance Test planning
		• Execute technical User Acceptance Tests and regression tests
		• Log and manage technical defects

State Business Analysts and Subject Matter Experts	• ▮▮▮ design/functional knowledge
	   o SharePoint
	• Test process/test tool proficiency
	   o Rational DOORS
	   o Rational Quality Manager
	• User Acceptance Testing process knowledge
	• Defect management process knowledge
	   o Rational Team Concert
		• Review System Integration Test cases and scripts
		• Review traceability to requirements and designs
		• Execute User Acceptance Test scripts
		• Log defects
		• Participate in defect triage

Table 4: Relevant Test Training for State Test team

The Deloitte Test team will collaborate with the State Test team to identify training needs and provide timely training for State testers participating in the development, review, or execution of the following:

- Test plans
- Test cases
- Test scripts
- Test data
- Defects

Refer to the 10.2 State Project Staff Preparation Plan deliverable for additional details regarding the means to identify, plan, and deliver training to State Test team members.

Training needs and activities associated with users of the ▮▮ system, including end users, help desk staff, IT staff, and other stakeholders, will be addressed in the 10.1 Master Training Plan deliverable and are not covered in this document.

3.2 Test Environments

The Deloitte Test Team coordinates with the Deloitte Technical Team, who prepares and maintains the Development and SIT test environments. GTA/IBM prepares and maintains the UAT and Production environments. Testing for each test phase will be conducted in the designated test environment.

3.2.1 Test Environment Details

Environment Name	Purpose	Setup Detail
Development	String Test Activities	Not full, production-level environment, the Development environment provides the Deloitte Test team with the necessary core features needed for string testing. The Deloitte environment provides the ability to test all ▮▮▮▮ functional tests including: • Execute Batch Jobs • Limited interfaces with Trading Partners • Simulated data exchange with Trading Partners • Execute Reporting capabilities • Generate/View Notices • Control Application Date/Time for 'Time Travel' tests
System Integration Test (SIT)	System Integration Test Activities Interface Test Activities Conversion Test Activities	System Integration Testing, along with interface testing, is performed in the SIT environment. This is a large integrated environment with a full size database to simulate production environments. Deloitte Test Lead determines the entrance of the code to the SIT environment. The code is stabilized. The Deloitte environment provides the ability to validate the ▮▮▮▮ functional and technical requirements including: • Execute Batch Jobs • Interface with Trading Partners • Execute Reporting capabilities • Generate/View Notices • Control Application Date/Time for 'Time Travel' tests • Validate scripts using masked converted data • Pass data between Customer Portal and Worker Portal and use in end-to-end business scenarios

Environment Name	Purpose	Setup Detail
User Acceptance Test	User Acceptance Test Activities	User acceptance testing is performed in an integrated clustered environment with a full-size database. This environment most closely simulates the production environment. The State environment provides the ability to validate the ▮▮▮▮▮ functional and technical requirements including: • Schedule and Execute Batch Jobs • Interface with Trading Partners • Execute Reporting capabilities • Generate/View Notices • Control Application Date/Time for 'Time Travel' tests • Validate scripts using converted data
Production	Performance, Volume, Stress Test Activities	This type of testing uses the load and stress testing environment dedicated solely to this testing effort. This is a large environment with a full size database to simulate the production environment.

Table 5: Test Environment Details

3.3   Test Software and Tools

The Deloitte Test team primarily uses the integrated suite of Rational tools to plan, conduct, and execute each test phase. Additional test software and tools are also used for specialized testing related to activities such as accessibility testing, web service testing, or developing test data. The table below provides a listing of key test tools and a description of their intended use and benefits.

3.3.1   Test Software and Tool Details

Tool	Use	Benefit
Adobe Reader	• Allows users to view, print, and comment on PDF documents	• Enables testers to view notices generated by the Adobe LiveCycle notices engine.
JAWS	• Facilitates accessibility and ADA compliance testing efforts through a screen reader capability	• Verifies the system is accessible to blind and visually impaired users
Rational DOORS	• Maps test cases to requirements • Maps test cases to design widgets	• Allows for traceability between Rational Quality Manager and Rational Team Concert functionalities
Rational Functional Tester	• Supports automated functional and regression testing • Enables testers to record scripts and perform GUI and data-driven testing	• Supports creation of reusable test assets including scripts and regression test data sets
Rational Performance Tester	• Generates production load on the system by simulating large numbers of concurrent users • Collects information from infrastructure components	• Reduces production performance problems • Contributes to efficiency through measurable and repeatable load generation

Tool	Use	Benefit
Rational Quality Manager	• Supports manual testing and integrates with other Rational tools to support traceability and the overall test process • Enables testers to execute automated testing, and log defects	• Provides centralized repository for test work products • Provides real-time test status reporting and dashboard capabilities
Rational Team Concert	• Tracks defects and changes from identification through resolution • Tracks software development activities from Requirements to Deployment	• Provides automated workflows to enforce consistent development processes and achieves an integrated, consolidated view across the project • Provides real-time reporting and metrics on software development activities
SoapUI	• Allows users to create and execute automated functional, regression, compliance, and load tests for Web services • Automatically generates MockServices and methods for a selected WSDL and enables users to populate it with pre-defined responses for requests	• Testers customize responses and define different responses for a given operation and use the scripting features to simulate desired behavior including fixed responses, random errors, dynamic results, etc.
SQL Developer	• Supports developers and technical users with a graphical user interface that enables users to create connections, manage objects, query/update data, import/export data, schema copy/compare, and process commands, etc.	• Provides powerful editors for working with SQL, PL/SQL, Stored Java Procedures, and XML • Allows users to run queries, generate execution plans, export data to the desired format (XML, Excel, HTML, PDF, etc.), execute, debug, test, and document database programs
Wave	• Enables evaluation of the accessibility of web pages • Includes a toolbar that presents web pages with embedded icons and indicators that present accessibility information	• Helps web developers make their web content more accessible by identifying accessibility errors

Table 6: Test Software and Tool Details

3.3.2 IBM Rational Suite as it Relates to Testing

The test process is executed using the Rational suite of integrated test tools. This web-based tool set manages traceability to requirements, design, test cases, test scripts, and defects. Rational enables Deloitte testers to define and execute manual and automated test plans that contain detailed test cases and test scripts. Defects encountered during test execution are tracked from inception through resolution. Rational Quality Manager (RQM) serves as the hub for test management and provides real-time test status and a customizable testing dashboard. The key capabilities of each Rational test tool and associated traceability are illustrated below.
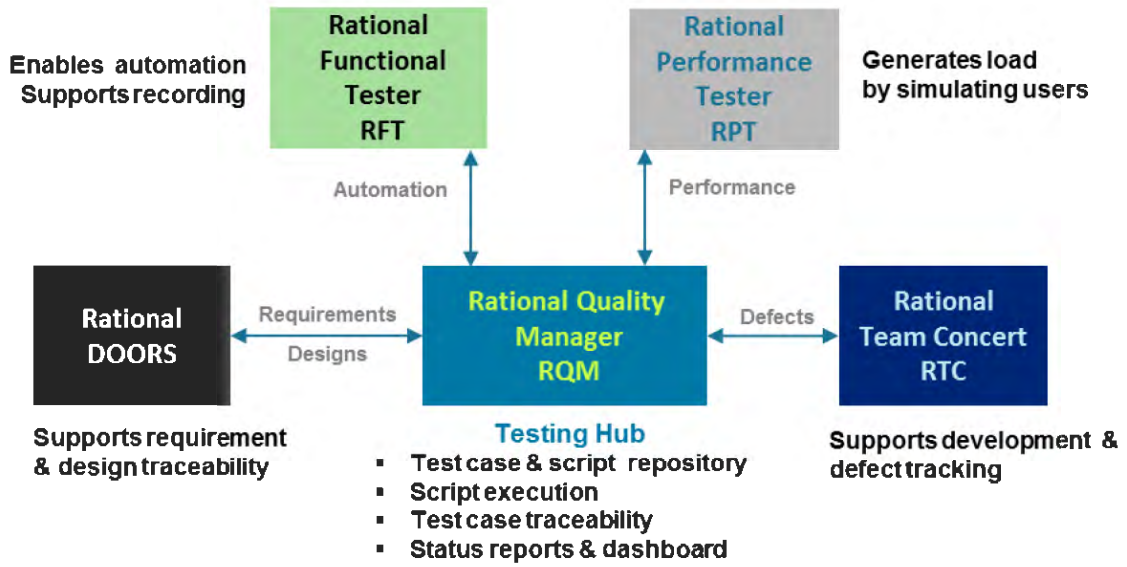
Figure 3: Rational Test Tools

4 Test Activities

The major testing activities conducted by the Deloitte Test team for each test phase include the following:

- Plan
- Script
- Prepare Data
- Execute

Each activity includes development of common work products using standardized templates and includes tasks for work product review and status reporting. The following sections describe each test activity in further detail.

4.1 Plan

The test planning effort requires high level planning to manage and coordinate the overall testing task and low level planning to scope and define individual test cases.

4.1.1 High Level Test Plan

The Deloitte Test team collaborates with other project team leads to plan each test phase and/or test cycle as described in the table below.

Step	Task	Comments
1. Schedule	Develop the overall test schedule using an inventory of items to be tested.	DOORS extract including requirements and design widgets.
2. Participants	Identify Deloitte Test team and other/external testing participants.	May include State SMEs, State or Deloitte team members to participate in test planning, document review, and test execution.
3. Training	Assess need for test participant training on test processes/tools.	Manage training dates via the project Work Plan.
4. Work Items	Create and assign test work items.	
5. Release	Obtain and confirm test/release content from Application team.	See Appendix 7.6 for RTC Release Notes sample.
6. Publish	Publish test schedule and communicate with participants.	This may include conducting planning meetings, test phase kickoffs, or walkthroughs.

Table 7: High Level Test Planning Steps

4.1.2 Low Level Test Plan

Most Deloitte Test team members are likely to participate in low level test planning activities. These activities are focused on test case development and include the following:

Step	Task	Comments

Step	Task	Comments
1. Review	Review test input including requirements, designs, work flow, etc.	Evaluate: • Existing Next Gen test cases • Recommendations from Application teams or business owners • Open defects • Items to include/exclude based on change requests, external dependencies, non-testable requirements, etc.
2. Test Case Matrix	Develop Test Case Matrix of input and output for business process/technical component.	Evaluate: • Common success/failure path(s) • Exception based scenarios • Test maximum/minimum allowable data • Test boundary conditions with maximum/minimum values
3. Test Cases	Select combinations of input and output to define as test cases.	• Use test case Excel template • Provide test case description and details • Trace requirements • Explain pre-steps, post-steps, dependencies, and items not tested • Identify required test data
4. Coverage	Review completed test cases and confirm requirements and/or application component test coverage.	• Review traceability using DOORS • Complete test case review checklist • Review test cases with appropriate stakeholders
5. Upload	Upload test cases to RQM.	RQM supports test case configuration management and versioning.

Table 8: Low Level Test Planning Steps

Refer to Appendices 7.2 and 7.3 for a sample Test Case Matrix and Test Case.

4.1.3   Traceability Management

The overall testing process is supported by traceability provided by the integrated suite of Rational tools used to manage the functional and technical SDLC activities of the ▮▮▮▮ project. Application teams develop and manage the traceability between requirements and designs during the Design phase. The Deloitte Test team utilizes that traceability as input when identifying test cases. Deloitte testers create bi-directional traceability using Rational Quality Manager (RQM) to link test cases to the associated requirement and design widget artifacts as illustrated in the figure below.

Figure 4: Test Case Traceability

Test case traceability is used to demonstrate that each requirement and design artifact has been tested in a minimum of one test phase. Depending on the nature of an artifact, it may be tested multiple times within a test phase or in multiple test phases. For example, an interface component will undergo testing at the unit level and may be included in integrated testing for String, System Integration, and User Acceptance Test.

4.1.4 Test Sequence

The Deloitte Test team will evaluate and prioritize testing based on an assessment of the relative importance of application functionality. Deloitte testers seek to develop tests for core and critical functionality early on to achieve thorough testing and establish a foundation for regression testing.

In preparation for System Integration Test, the Deloitte Test team will work with Application teams to identify the major business activities within each functional area or business process. Each business activity is assessed to identify processes and transactions that fit one or more of the following criteria:

- High business complexity
- High system complexity
- Critical activity
- High volume activity

Testing emphasis and coverage is higher for functionality that meets all or most of these criteria as compared to functionality that does not. For example, submitting an application may be deemed to satisfy each criterion and could be tested early on and in multiple test phases/cycles as a result. By comparison, generation of a simple, low volume notice may include Unit Test and String Test but relatively fewer cycles in SIT and UAT than the application.

4.2 Script

Test Scripts are developed manually using Excel for subsequent import to Rational Quality Manager or using an automated test tool such as Rational Functional Tester or Rational Performance Tester. A test script elaborates a defined test case by providing step by step instructions to execute the test. Each test script contains the following common elements:

Script Section	Script Element	Definition
Header	Test Plan ID	Rational Quality Manager Test Plan identifier
Header	Test Phase	Phase of testing the script is associated with
Header	Track	Primary track addressed by the Test Script as applicable based on test phase
Header	Test Case ID	Test Case identifier
Header	Test Case Description	Summary of the Test Case purpose
Header	Requirements	DOORS requirement ID used to establish traceability
Header	Design Widget	DOORS design widget ID used to establish traceability
Header	Test Script ID	Test Script identifier
Header	Test Script Description	Test Script Title
Detail	Test Step #	Test condition number
Detail	Execution Day/Month	Logical day and month (and year if necessary)
Detail	Input Data	Test data to be input or reviewed by tester. May include case or member related information as necessary.
Detail	Activity	Mechanism to group related steps such as search, import document, review application, etc.
Detail	Entry Page	Input screen or location for test action
Detail	Test Step Description	Concise description of test action to be taken, this includes validation of pre-requisite steps
Detail	Expected Results	Concise explanation of system response to test action
Detail	Created By	Test Script author
Detail	Comments	Tester comments including pass/fail and defect ID for failed steps for manual execution (Captured by RQM during execution in the tool)

Table 9: Test Script Elements

Each numbered step within a test script is developed based on detailed information specified within a design, requirement or other input. The script author clearly identifies the desired testing action and expected result. Test script expected results should be specific and concise (e.g., "Status displays Complete" or "Successful update message displays"). In instances where input data is variable, the script author seeks to define expected results as explicitly as possible.

At a minimum, a script should include a separate step for each action where a result can be observed. Steps may describe manual or automated actions (e.g., user interface navigation, data entry, batch job execution) and the resulting system behavior to confirm.

Where feasible, test scripts follow the convention to preview relevant existing data, perform test action(s), and review the resulting condition of the data. This confirms the test was set up properly prior to executing the test and provides an opportunity to correct improper data setup and potentially avoid creation of unnecessary defects.

String Test scripts are created to be modular and specific to single or small groups of application components. Test scripts may be executed in sequence to test larger groups of functionally related items in String Test or in subsequent test phases such as System Integration Test. It is therefore essential that each Test Case accurately define dependencies and pre/post steps for script execution.

Testers trace test cases/scripts to requirements and designs they are intended to validate. Each test script is evaluated by the script author and a reviewer using a test script checklist to assess script quality and adherence to standards. Successfully reviewed scripts are uploaded to Rational Quality Manager for execution. Rational Quality Manager supports configuration management and versioning of test scripts.

Each test script has a unique name/version and is traceable to requirements, designs, and defects through Rational Quality Manager. The types of errors each test is designed to uncover vary from technical to functional according to the test phase and design widget type. Refer to deliverable 14.2 System Test Scripts for additional test script details.

Refer to Appendix 7.4 for a sample Test Script.

4.2.1 Test Script Content for Design Widget Types

The Deloitte Test team will review the information provided in each design and the associated traced requirements to develop test cases and test scripts to validate the ▮▮▮▮ application. The table below provides a listing of each design widget type and a general description of test script content. Test script content will vary by test phase.

Design Widget Type	Test Script Content
Audit Event	- Transaction audit log events - NextGen actions including data transfer/associated errors - Server level audit log events - Action history (tested in conjunction with applicable screens/database tables)
Batch Schedule	Sequence of actual or simulated batch stream for various batch frequencies and batch parameters
Batch Storyboard	Processing logic, end of job summary, and error/exception handling per the design
Business Rule	- Develop payload for input/data set - Validate outputs as expected
Conversion Spec	To be addressed in 14.1.5 Conversion Test Plan
Correspondence	- User interface checklist - Standards, fonts, alignment, etc. - Content (spelling, grammar, language/translation) - Business logic - Reusable text block appropriate for notice type - Individual level data - Household level data - Save PDF version

Design Widget Type	Test Script Content

Interface Spec	• Interface designation details (including frequency, inbound/outbound, process flow, etc.)
	• Triggers
	• Security
	• Source/Target data elements (data, position, type and size, mandatory/optional, description)
	   o Header record
	   o Detail record
	   o Trailer record
	• Error handling

Process Flow	• Application process flow • Program-specific actions/activities • User roles/automated functionality

Report	• User interface checklist
	   o Standards, fonts, alignment, etc.
	   o Content (spelling and grammar)
	• Report control information
	   o Report logic/validation condition
	   o Report frequency, period, level, format, program, functional area, sort, security role
	• Report Details
	   o Fields, logic, source table name, source column name, filter condition
	• Report layout per design

Screenflow/Storyboard	• User interface checklist
	   o Standards, fonts, alignment, screen controls/buttons, navigation, etc.
	   o Content (spelling, grammar, language/translation)
	• Business logic
	   o Field Validation/Error Message
	   o CRUD (Create, Read, Update, Delete) database level field saves
	   o Display Logic (conditional field display)
	   o Reference table values
	• 508 Compliance
	   o JAWS screen reader test
	   o WAVE accessibility test
	• Spanish translation for customer portal
	• Help text
	• Driver flow based on program selection

Security Roles Matrix	• User role as mapped to business functions and screen level privileges (Create, Read, Update, Delete, etc.)
System Security Plan	• This testing is defined within the System Security Plan and addressed by the Security Team.
Technical Spec	• Alerts Matrix • Office Management Matrix • Role based security including validation of session timeout/expiration for Worker/Customer Portal • Validation for some Technical Specs are outside the scope of the Master Test Plan and will be identified as non-testable by the Deloitte Test team

Table 10: Test Script Content by Widget Type

4.2.2 Test Script Development

Test scripts are developed using the following steps:

Step	Task	Comments
1. Review	Review test case.	Refer to requirements or design as necessary.
2. Create	Create test script using Excel template or automated test tool.	For screens, define a navigation standard such as assuming the user has successfully logged into the system (via a separate log in script) and guide the user through each desired activity/expected result beginning navigation from the home page or other central location.
3. Define Steps	Provide step by step instructions including navigation, data entry, and screen control usage.	• Validate test data before and after test action • Incorporate positive /negative testing actions to confirm the system behaves as it should and does not perform actions it should not • UI/String Test scripts assess navigation, field protection, data validation, error messages, and UI standards
4. Coverage	Review completed test script and confirm requirements and/or application component test coverage.	• Author/reviewer complete test script review checklist • Review test script with appropriate stakeholders
5. Upload	Upload completed and reviewed test scripts to RQM.	RQM supports test script configuration management and versioning.

Table 11: Test Script Development Steps

4.3 Prepare Data

Test data preparation is performed by specialized Deloitte testers familiar with the system database structure and data model. Required test data is documented in each test case and created or generated in the applicable test environment. Deloitte testers strive to create data that is both functionally accurate and realistic. Whenever possible, application data entry or simulated input files are used to generate test data using the system.

It is permissible to create test data via direct database manipulation when the applicable system capability has not yet been developed. Data is backed up prior to test phase/cycle execution and may be restored or refreshed as necessary for each execution cycle. The Deloitte Test team will work to create a growing test data set to support ongoing regression testing.

System Integration Test (SIT) and User Acceptance Test (UAT) incorporate the use of converted data. Converted data used during SIT will be cleansed with data masking techniques to protect confidentiality of data.

4.4 Execute

Test execution includes smoke testing and regression testing as well as execution of test scripts, defect management activities and retesting of defect fixes.

4.4.1 Test Execution

Test execution for each test phase is managed using a checklist to validate required tasks are completed and testing activities occur in the proper sequence. The checklist tracks activities specific to each test phase including the following:

- Test entrance/exit criteria
- Test timeline communication/kick-off/walkthrough
- Test data management
- Test environment preparation and management (scheduled updates, downtime (backup, refresh), and other factors)
- Batch execution dependencies (full or partial batch schedule)
- Online parameters (system date, security, user log in credentials/security profiles, etc.)
- Test tool access
- Script management activities
- Test results documentation
- Known defects/workarounds and defect management

The Deloitte Test team begins each test execution with a Smoke Test to validate the application has been deployed correctly. Smoke Test evaluates major system capabilities such as navigation, inquire, and update functionality.

System parameters such as system date and batch related parameters are set and confirmed prior to script execution. Deloitte testers execute each test script manually or automatically and document actual test results. Deviations from expected results including screen shots are documented as defects in Rational Quality Manager (RQM) /Rational Team Concert (RTC).

Defects may be linked to multiple test scripts as necessary. RQM maintains the execution status (pass/fail/blocked/not run, etc.) of each test script. Defects corrected during the test execution cycle or test phase are subject to retest in lower environments prior to retest in the current environment.

4.4.2 Defect Management

Defects identified during test execution are logged using Rational Quality Manager (RQM) and managed using Rational Team Concert (RTC). RQM enables testers to log defects during test script execution and attach supporting documentation including screenshots. (Screenshots should not contain confidential information.) RQM traces defects to the related test script/case and supports overall traceability as illustrated below.
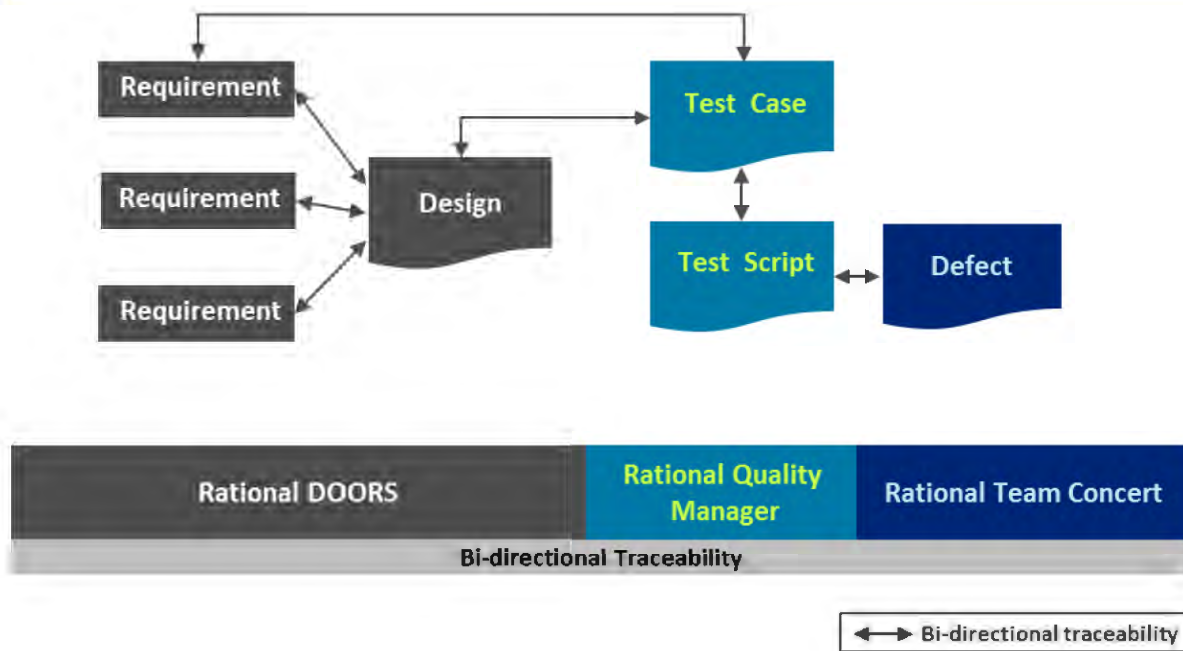
Figure 5: Defect Traceability to Test Scripts/Cases

Defect management and resolution includes the following key activities:

- A Deloitte tester logs a defect when the test result does not match the expected result.
- The Deloitte Test team lead reviews each defect to confirm it is properly documented and not associated with tester or script error.
- The Deloitte Test lead facilitates defect triage process/meetings.
- Functional and technical members of the Application team review and analyze assigned defects to identify requirement, design, code or other root causes of problems defined by Deliverable 17.1 Software Problem Resolution Plan. Other project stakeholders are consulted as necessary.
- When a defect resolution is identified and implemented, the Deloitte Test team retests the functionality based on the resolution (which may include updates to script/data, design, and/or code changes). Defect testing and associated regression tests are first conducted in lower test environments as necessary depending on the test phase where the defect was identified.
- The Deloitte Test team closes the defect if associated with a Deloitte test phase/environment or supports the State in retest of UAT defects.
- The Deloitte Test team communicates defect status information in the weekly status report or applicable test report deliverable.

Refer to the 17.1 Software Problem Resolution Plan deliverable for additional information about the defect management process.

5 Test Phases

5.1 Test Phase Overview

Software testing is conducted in multiple phases intended to validate that design and development activities meet ▮▮▮▮ requirements. Each major activity of the SDLC has a corresponding test phase with a specific purpose and scope as illustrated below.

Unit Test	String Test	System Integration Test	Interface Test	Performance, Volume, and Stress Test	Conversion Test	User Acceptance Test
• User Interface verification • Assess business layer with valid/invalid data • Assess data layer queries and updates	• Iterative validation of single or multiple, related modules • Uses realistic data to validate correct integration of UI, business and data layers	• Functional and technical end to end testing of requirements and business process traceability • Batch process and reports verification • Regression testing • Manual and automated testing	• Data exchange verification • Middleware testing through partner systems components • Interface testing incorporated into system test scripts	• Performance tests for response times, transaction rates, and time-sensitive requirements • Volume confirms system supports production load • Stress tests system behavior when resources are overloaded	• Testing to confirm converted and migrated data • Simulated testing to verify the actual conversion process • Converted data incorporated into system test scripts	• Scenario testing for end to end business processes • End user testing to simulate use of the application in the field • Phase owned by the State and validates deployment readiness

Concurrent Execution during SIT
Concurrent Execution during UAT

Figure 6: ▮▮ **Test Phases**

Individual test phases may be executed successively or concurrently with the goal of comprehensively testing the overall functional and technical behavior, interfaces, performance, and data conversion of the application. The scope of initial software testing phases is focused within a single development object or unit. Unit Test has a narrow scope and broad depth that seeks to exercise individual branches of logic within the object. Subsequent test phases widen scope incrementally to include interactions across modules, subsystems, and ultimately application-wide. The increase in scope has a corresponding decrease in depth of testing from evaluating multiple paths within a single object or related objects to major or critical paths across modules and subsystems as illustrated in the figure below.
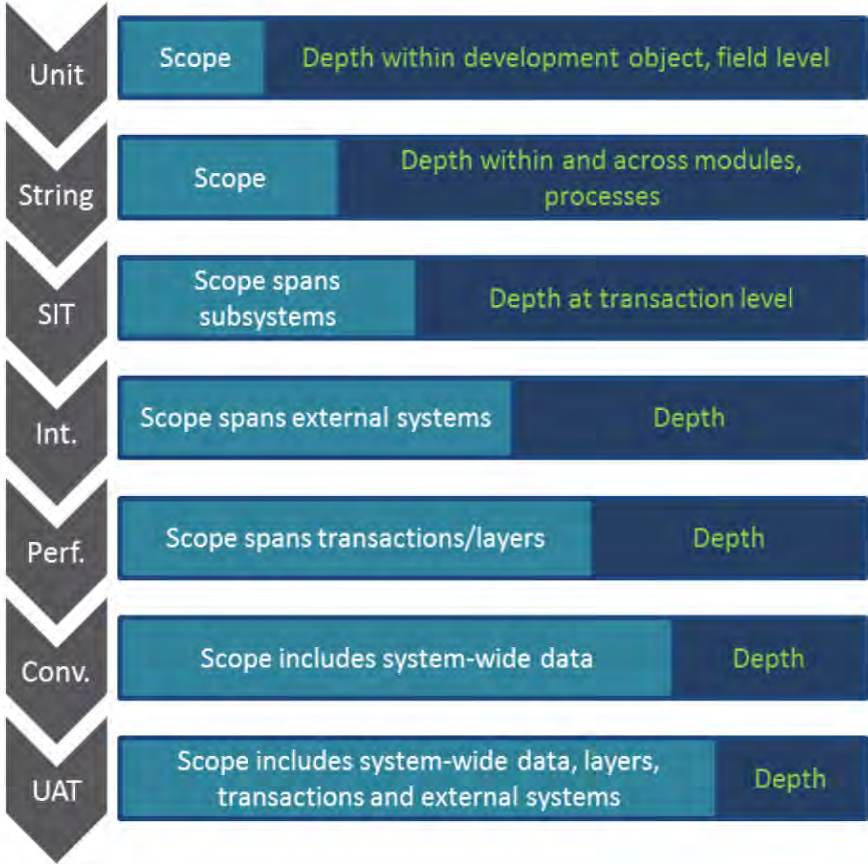
Figure 7: Test Phase Scope versus Depth

There are common elements and activities across each test phase including four major activities:

- Plan
- Script
- Prepare Data
- Execute

Each test phase targets specific types of errors with the goal of identifying as many defects as possible within the phase where they were introduced to minimize the effort and cost of defect correction. Standard parameters used to define each ▮▮ test phase include:

- Goal
- Scope/Coverage
- Entrance/Exit Criteria
- Specific Test Phase Activities
- Environment
- Tools
- Test Data
- Targeted Cycles
- Deloitte/State Test Roles

5.1.1 Smoke Testing

Smoke Test is the process of testing an environment after the software is built and deployed but before it is handed over to users of the environment to validate that the environment is operational.

Smoke Testing is an informal test where single or multiple systems are assembled and quickly tested to confirm they communicate properly with each other and with a subset of connected interfaces. This activity prevents deployment issues from going undetected and resulting in the need for unnecessary retesting, and can promote test efficiency by increasing the proportion of test scripts that can be executed in the first test cycle of a major phase of testing.

Once desired Smoke Test functionality is identified for a test phase, Smoke Testing may be conducted using several different methods:

- Manually execute tasks in a checklist

- Manually execute an Excel Test Script

- Manually or automatically execute a RQM Test Script

- Develop and execute a RFT Test Script

Automating RFT Test Scripts requires additional effort, but yields a more robust capability in terms of execution flexibility and test result output. The Deloitte Test team determines whether to automate a Test Script on a case by case basis.

5.1.2 Regression Testing

Regression testing is the selective retesting of a software system that has been modified to validate that any defects have been fixed, that no other previously working functions have failed as a result of the reparations, and that newly added features have not created problems with previous versions of the software. The emphasis is on performing tests not directly related to the areas being changed and to confirm they still perform as expected. Regression testing is performed within each test type/phase (after completing the planned Test Scripts and before the exit criteria review). The test cycles within each test phase describe when regression testing will be completed for ▇▇▇▇▇▇

Regression test scripts are identified during the test planning activities. The Test Team works with the State and Deloitte Application Team to determine the sequencing of Test Scripts (see section 4.1.3 Test Sequence of this document). As a part of this exercise, level one tests are deemed candidates for regression testing and will be executed as time permits.

The Test Scripts that serve as input to each test phase have individual pass or fail outcomes. Test Scripts that fail are retested until each associated defect has been successfully retested. Test Scripts that pass are eligible for inclusion in regression testing. The goal for regression testing is identify, execute, and maintain a growing subset of Test Scripts that exercise core functionality appropriate for each test phase. Core coverage generally means that the primary success path (happy path) through major components/processes has been addressed. Exception-based Test Scripts are included in regression testing on a limited basis. The Test Team will leverage existing NextGen Test Scripts as a starting point and build upon them to create the ▇▇▇▇▇▇ Regression Test Suite.

It is not feasible to re-execute or automate all Test Scripts for each test phase; therefore, a defined set of regression Test Scripts may be supplemented, as necessary, by selective re-execution of existing Test Scripts for specific concerns.

Once desired regression functionality is identified for a test phase, regression testing may be conducted using several different methods:

- Manually re-execute an Excel Test Script

- Manually or automatically re-execute a RQM Test Script

- Develop and execute a RFT Test Script

The majority of regression Test Scripts will be developed and executed in RFT. Automating RFT Test Scripts requires additional effort, but yields a more robust capability in terms of execution flexibility and test result output. The Deloitte Test team determines whether to automate a Test Script on a case by case basis.

The Deloitte Test team develops and maintains a set of regression Test Scripts and the associated test data (which may include masked converted data) for each test phase. Regression Test Scripts are executed by the Deloitte Test Team in the appropriate test environment on an ongoing basis. Defects identified during regression testing are logged and managed in RTC. Regression Test Scripts are updated on an ongoing basis for maintenance and warranty purposes.

5.1.3 User Access and Role-Based Testing

Functional user access and role-based testing is included in the String and System Integration Test Cases/Scripts. The Deloitte Test Team leverages the security requirements and the Security Roles Matrix to write the Test Cases and Scripts for user access and role-based testing. The Security Roles Matrix defines the user role, business function and screen level privileges for each type of ▮▮▮ user. Security testing related to web application vulnerability testing, application source code review and network vulnerability are out of scope for functional testing. The details for non-functional security testing can be found in deliverable 8.1 Security Design Document and Implementation Plan.

5.2 14.1.1 Unit Test Plan and Documentation

5.2.1 Unit Test Overview

Unit Test is the process of testing individual units of functionality. A unit can be defined as a task or the smallest testable part of an application. Unit tests verify that individual system components support the system functional and non-functional requirements as represented in the system designs. Unit Test is the first test phase that occurs for the ▮▮ application and is highly iterative and involves rapid code modifications.

Complete and thorough unit testing is an essential aspect of defect management, and saves considerable time and expense as defects found earlier in the SDLC are less costly and time-consuming to find and correct than defects found in late phases of the SDLC. Unit Test is planned, executed, and documented by the Development Team.

5.2.2 Unit Test Details

Unit Test is described in further detail in Deliverable 12.1: Software Development Plan.

5.3 String Test

5.3.1 String Test Overview

String Test is conducted by the Deloitte Test team for components that have successfully completed Unit Test. This test may include manual and automated testing of ■■ system component occurring in iterative test cycles for each development build. String Test is performed for all system component types such as screens, interfaces, etc. Screens are evaluated based on user interface standards, accessibility/508 compliance, browser compatibility, user access, and Spanish translation as applicable. Testers seek to use realistic data and evaluate functionality from both a business and technical standpoint including field level and database level validation.

String Test Summary	
Goal	Iterative validation of single or multiple, related modules within a full or partial subsystem using realistic data to validate correct integration of the user interface, business layer, and data layer
Scope/Coverage	All system component types including screens, batch, interface, reports (including analytic reports), forms, and notices
	User interface standards, field validation, tab order, query/update, etc.
	Navigation, driver flow, batch flow, interface processing, etc.
	Accessibility and ADA (508) compliance testing for Graphical User Interface (GUI)
	Positive and negative test scenarios for core and exception based scenarios tested based on criticality, complexity and transaction volume
	Boundary conditions and atypical/complex test data such as large households or members participating in multiple programs/work flows
	System transactions occurring over simulated past and future timeframes
	Spanish translation for Customer Portal components
	Security/access associated with role-based user security
	Browser compatibility testing using a military sampling algorithm to determine number of screens to verify acceptance quality limit (AQL). Based on a batch size of over 900 screens, 80 screens will be examined across each functional area including: • 33 Customer Portal screens • 47 Worker Portal screens The same sampling strategy was also applied to the number of browser versions tested. The lowest required versions along with the most commonly used browser versions from 2014 are included. The following browsers were tested during String Testing: • 5 versions of Google Chrome • 3 versions of Mozilla Firefox • 3 versions of Internet Explorer • 2 versions of Safari
Entrance Criteria	1. Requirements and design artifacts are approved, traced, and baselined
	2. Test tools are installed and configured including access/permissions for all stakeholders
	3. Test environment has been created, including all necessary applications,

String Test Summary	
	configuration, interfaces, and reports
	4. Successful Unit Test has completed
	5. String Test cases and scripts have been created, approved and traced to requirements/components where applicable
	6. String Test data has been developed as necessary including interface files
	7. Unit Test defects are addressed according to agreed upon thresholds for Priority/Severity; Open defects/ workarounds are accepted by the Test team
	8. Successful Smoke Test of deployment
String Test Activities	Test team executes manual and automated String Test scripts and documents results in the test tool
	Test team logs defects for test results that do not match expected results
	Test lead coordinates defect triage and facilitates triage meetings
	Test team retests development corrections
	Test lead defines level of automated/manual regression testing for each test cycle and requests data backup/restore as necessary
	Test team provides ongoing communication, status reporting and maintains test tool dashboard content
	Test team maintains a log of events associated with test execution
Exit Criteria	1. Planned test cases/scripts have been executed and documented in the test tool
	2. Defects are addressed according to agreed upon thresholds for Priority/Severity; Open defects/workarounds are accepted by Deloitte Test team.
Environment	Development
Tools	RQM, RFT, DOORS, RTC, JAWS, WAVE
Test Data	Relatively small volumes of data are system generated or manually created when necessary
Targeted Cycles	3 cycles per development build, additional as needed
	Cycle 1 – Execute Scripts
	Cycle 2 – Retest Corrections
	Cycle 3 – Regression
Deloitte Role	Identify functionality to test using requirements, designs, and input from functional and technical stakeholders
	Develop String test cases and scripts
	Execute String Testing
State Role	Provide direction and clarification to the vendor

Table 12: String Test Summary

5.3.2   String Test Details

Plan

The objective of this task is to plan the testing activities that are necessary for String Test. The following points are relevant to String Test planning:

- Update Project Work Plan.
    - String Test tasks
    - Related training tasks
    - Test cycles based on Application Team build delivery schedule
- Plan String Test cycles to include: planned test scripts, defects resolved by the Application Team, previously failed scripts, and a subset of regression test scripts. String test cycles are planned based on development builds.
- Create and assign test work items as they relate to String tasks in the Work Plan and detailed Test Case and Script creation and execution activities.
- Produce a weekly schedule of planned test case/script executions and refine it on a daily basis as needed, taking into consideration the dependencies and sequencing activities that need to occur as part of the script executions. This includes test scripts that require time manipulation of the system ('time travel').
- Identify and hire Test Team members.
- Enter String Test risks and issues in PMC per Risk and Issue Management Plans.
- Schedule and conduct the following meetings:
    - System Overview and Design Walkthrough
    - Daily defect triage meetings with the Application and Technical/Infrastructure teams to work through defects and questions that arise through the testing process via daily communications

Script

The objective of this task is to define test cases/scripts for String Test. The following points are relevant to String Test scripting:

- Review the following:
    - Existing Next Gen test cases
    - █████ requirements and detailed system design
    - Open defects
    - Items to include/exclude based on change requests, external dependencies, etc.
- Focus on the individual components and modules:
    - Common success/failure path(s)
    - Exception based scenarios
    - Test maximum/minimum allowable data
    - Test boundary conditions with maximum/minimum values
    - Most commonly used functionality
    - Highest volume related transactions

Prepare Data

The objective of this task is to prepare the test data needed to support String Test.

Testers may directly manipulate the Development database as necessary. The Deloitte Test team works with the Technical team to populate, copy, backup, refresh, and restore test data as necessary in the Development environment. Common tasks and schedule dependencies between the Deloitte Test team and the Technical team are documented and maintained in the project Work Plan.

The table below lists the String Test data requirements, the source of the data, and the point of contact.

Test Data requirement	Source	Point of contacts
User IDs/Logins	New User IDs/Logins	Deloitte Support Functions and Security Team Leads
Reference Table Data	Created by Application team	Deloitte Support Functions Track Lead
Interfaces Data	Mocked up/simulated interface files	Deloitte Interface Track Lead
Transactional Data	New data created in the Development environment	Deloitte Test Team Lead/Deputy Lead

Table 13: String Test Data

The Deloitte Test Team will work with the Technical Team Lead at the end of each test cycle to determine if a backup is necessary.

Execute

The Deloitte Test team begins each String Test execution cycle with a Smoke Test to validate the application has been deployed correctly. Smoke Test evaluates major system capabilities such as navigation, inquire, and update functionality. The Deloitte Test team also evaluates the entrance criteria for the String Test phase prior to test execution.

The Deloitte Test team executes the String scripts according to the plan. Defects identified during test execution are logged using Rational Quality Manager (RQM) and managed using Rational Team Concert (RTC). The Deloitte Test team facilitates a daily defect triage meeting to review the findings with the Application and Technical/Infrastructure teams.

5.4   14.1.2 System Integration Test Plan

5.4.1   System Integration Test Overview

System Integration Test is the process of testing functional/technical requirements to verify the application is performing to specification. In this type of testing, the Deloitte test team is verifying that the system under creation/modification is behaving as expected when it is connected or integrated with other existing or new systems.

System Integration Test (SIT) Summary	
Goal	Functionally and technically exercise the entire application using end-to-end

	scenarios that span system capabilities, business processes/functions, and interfaces
	Prioritize testing of functionality based on criticality, complexity and transaction volume using realistic and/or masked, converted data as available
	Develop regression strategy and reusable regression capabilities/assets for ongoing use
	Confirm the application is ready for User Acceptance Testing
Scope/Coverage	Positive and negative testing of system-wide functionality
	Core and exception business processes/transactions using end-to-end scenarios
	System transactions occurring over simulated past and future timeframes
	Multiple/simultaneous transactions (user and system initiated) from different processes/areas for the same case or member
	System modules including components such as screens, batch, interface, reports (including analytic reports), forms, and notices
	Security/access associated with role-based user security
Entrance Criteria	1. Requirements and design artifacts are approved, traced, and baselined
	2. Test strategy and schedule have been approved and communicated
	3. Test tools are installed and configured including access/permissions for all stakeholders
	4. Test environment has been created, including all necessary applications, configuration, interfaces, and reports
	5. SIT Test Cases/Scripts have been created and approved
	6. SIT Cases/Scripts have been traced to requirements/components
	7. SIT data has been developed as necessary including interface files
	8. Defects are addressed according to agreed upon thresholds for Priority/Severity; Open defects/ workarounds are accepted by the Test team; Thresholds will be defined by mutual agreement between the State and Deloitte.
	9. Successful Smoke Test of deployment
SIT Activities	Test team executes manual and automated SIT scripts and documents results in the applicable test tool
	Test team logs defects for test results that do not match expected results
	Test lead coordinates defect triage and facilitates triage meetings
	Test team retests development corrections
	Test lead defines level of automated/manual regression testing for each test cycle and requests data backup/restore as necessary
	Test team conducts knowledge sharing sessions and walk-throughs to review SIT and regression scripts/results with the UAT team to facilitate UAT preparation
	Test team provides ongoing communication, status reporting and maintains test tool dashboard content
	Test team maintains a log of events associated with test execution
	Test team generates User Acceptance Testing Readiness Report
Exit Criteria	1. Planned Test Cases/Scripts have been executed and documented in the test tool
	2. Defined SIT pass rate has been achieved

	3. Defects are addressed according to agreed upon thresholds for Priority/Severity; Open defects/ workarounds are accepted by Business Owners/Test team; Thresholds will be defined by mutual agreement between the State and Deloitte.
	4. User Acceptance Testing Readiness Report is approved
Environment	System Integration Test
Tools	RQM, RFT, DOORS, RTC
Test Data	Primarily system generated but manually created when necessary
	Partner provided incoming/outgoing files if available, otherwise simulated files
	Converted data masked/cleansed of PII as available
	Periodic data backup and restore used to execute regression testing
Targeted Cycles	EMPI SIT includes 6 targeted cycles with Cycle 6 defined as regression
	▆ SIT includes 5 targeted cycles with Cycle 5 defined as regression
Deloitte Role	Identify functionality being tested, based on the detail design and detail requirement sessions
	Identify tools to be used and reports to be created
	Document detailed steps required to conduct the system integration test including expected results
	Define and update System Integration Test Plan and resources
	Documentation of the System Integration Test Plan
	Execute Systems Integration Testing
	Update RTM
State Role	Provide direction and clarification to the vendor
	Review and accept or reject the System Integration Test Plan
	Review and accept or reject whether System Integration Test expected results are met
	Conduct focused exploratory testing, pending test progress and State and Deloitte staff availability

Table 14: System Integration Test Summary

5.4.2 System Integration Test Details

Given the execution of String Testing prior to System Integration Test, the plan is to use a big-bang approach to SIT. In this approach, all or most of the developed modules are coupled together to form a complete software process or major part of the process, and then tested.

Plan

The objective of this task is to plan the testing activities that are necessary for System Integration Test. The following points are relevant to SIT planning:

- Update Project Work Plan.
    - SIT tasks
    - Related training tasks

Test Phases
23-Oct-15

Page 42

▆▆ ▆▆ ▆▆▆
▆▆ ▆▆
14_1_COMBINED_v1_4.pdf

- o Test cycles
- Plan SIT Test cycles to include: planned SIT scripts, defects resolved by the Application Team, previously failed scripts, and a subset of regression test scripts.
  - o The following test cycles are planned for SIT for EMPI and ▮▮

Jun-15						Aug-15			Sep-15		Oct-15
29 - 30	1 - 2	6 - 10	13 - 17	20 - 24	27 - 31	3 - 7	10 - 28	31	1 - 18	21 - 30	1 - 16
EMPI Cycle 1		EMPI Cycle 2	EMPI Cycle 3	EMPI Cycle 4	EMPI Cycle 5	EMPI Cycle 6					
C 1 Scripts		C 2 Scripts C 1 Bug Fix/Retest Reg. Subset	C 3 Scripts C 1-2 Bug Fix/Retest Reg. Subset	C 4 Scripts C 1-3 Bug Fix/Retest Reg. Subset	C 5 Scripts C 1-4 Bug Fix/Retest Reg. Subset	EMPI Regression					
		▮ Cycle 1		▮ Cycle 2			▮ Cycle 3	▮ Cycle 4		▮ Cycle 5	
		C 1 Scripts		C 2 Scripts C 1 Bug Fixes/Retest Reg. Subset			C 3 Scripts C 1-2 Bug Fixes/Retest Reg. Subset	C 4 Scripts C 1-3 Bug Fixes/Retest Reg. Subset		▮ Regression Finalize/Prepare 14.4 UAT Readiness Report	

Figure 8: Planned System Integration Testing Cycles

- Create and assign test work items as they relate to SIT tasks in the Work Plan and detailed Test Case and Script creation and execution activities.
- Produce a weekly schedule of planned test case/script executions and refine it on a daily basis as needed, taking into consideration the dependencies and sequencing activities that need to occur as part of the script executions. This includes test scripts that require time manipulation of the system ('time travel').
- Identify and hire Test Team members.
- Enter SIT risks and issues in PMC per Risk and Issue Management Plans.
- Schedule and conduct the following meetings:
  - o Conduct Deloitte SIT Kick-Off
  - o Conduct System Overview and Design Walkthrough
  - o Conduct SIT Trading Partner Kick-Off
  - o Daily defect triage meetings with the Application, Conversion, Technical/Infrastructure and Training/Implementation teams to work through defects and questions that arise through the testing process via daily communications
  - o Open Defect Check-Point with the State prior to UAT

Script

The objective of this task is to write scripts for SIT. The following points are relevant to SIT scripting:

Review the following:

- o Existing Next Gen test cases
- o ▮▮▮ requirements and detailed system design
- o Open defects
- o Items to include/exclude based on change requests, external dependencies, etc.

Focus on the end-to-end business functionality and document the following:

  o Common success/failure path(s)

  o Exception based scenarios

  o Test maximum/minimum allowable data

  o Test boundary conditions with maximum/minimum values

  o Most commonly used functionality

  o Highest volume related transactions

Prepare Data

This section presents the test data needs to support System Integration Testing and should include test data needed for each external and internal interface and component.

Testers should avoid direct manipulation of the System Integration Test database except to set batch parameters or if necessary to support an exception based data scenario. The Deloitte Test team works with the Conversion and Technical teams to populate, copy, backup, refresh, and restore test data as necessary in the System Integration Test environment. Common tasks and schedule dependencies between the Deloitte Test team and the Conversion and/or Technical teams are documented and maintained in the project Work Plan.

System Integration Test data is subject to review prior to SIT execution. Test data successfully utilized during SIT and verified by Test Script expected results and backend database validation, as applicable, is eligible for inclusion in ongoing SIT regression activities and use in subsequent tests. Regression test data is documented at the case and member level using data logs and SQL statements/output, as applicable.

The table below lists the SIT data requirements, the source of the SIT data, and the point of contact for the external or internal interface or component for which the SIT data is needed.

Test Data requirement	Source	Point of contacts
User IDs/Logins	New User IDs/Logins	Deloitte Support Functions and Security Team Leads
Reference Table Data	Copied from lower test environment	Deloitte Support Functions Track Lead
Transactional Data	Masked converted production data	Deloitte Conversion Track Lead
Transactional Data	New data created in the SIT environment	Deloitte Test Team Lead/Deputy Lead

Table 15: System Integration Test Data

The Deloitte Test Team will work with the Technical Team Lead at the end of each test cycle to determine if a backup is necessary. Based on processes defined by the Technical team, a service request is entered to obtain a backup and also to request a restore to a given point in time.

Execute

The Deloitte Test team begins each SIT test execution cycle with a Smoke Test to validate the application has been deployed correctly. Smoke Test evaluates major system capabilities such as navigation, inquire, and update functionality. The Deloitte Test team also evaluates the entrance criteria for the SIT phase prior to the execution of Cycle 1 test execution.

The Deloitte Test team executes the SIT scripts according to the plan. Defects identified during test execution are logged using Rational Quality Manager (RQM) and managed using Rational Team Concert (RTC). The Deloitte Test team facilitates a daily defect triage meeting to review the findings with the Application, Conversion, Technical/Infrastructure and Training/Implementation teams. The Deloitte Test Lead will coordinate with interface partner test leads as necessary to triage defects.

5.5   14.1.3 Interface Test Plan

5.5.1   Interface Test Overview

Interface or web service testing validates the proper exchange of information between systems. This type of testing confirms that the functional modules operate effectively together and basic functional objectives are achieved. Interface or web service testing verifies middleware and the data exchanges through partner systems components. For inbound interfaces, detailed designs and sample input files are required from the owners of external systems. These sample input files should be provided in time for conducting system integration testing on schedule. The Deloitte Test team works in conjunction with the State for interface validation and coordination with partner systems of ▮▮ to test.

Interface Test Summary	
Goal	Validate the accurate exchange of information between the ▮▮ system and external interfacing systems
Scope/Coverage	Assess each interface or web service component including middleware and data exchanges through partner system components.
	Address functional and technical scenarios including error handling (such as receipt of no file, multiple files), validation of file layout, web service
	Collaborate with each interface/trading partner for coordinated test activities using manual or automated testing based on the interface partner availability and testing capability; Testing will include the exchange of mock and masked, converted data (SIT) and converted data (UAT)
Entrance Criteria	1. Requirements and design artifacts are approved, traced, and baselined
	2. Test strategy and schedule have been approved and communicated
	3. Test tools are installed and configured including access/permissions for all stakeholders
	4. Test environment has been created, including all necessary applications, configuration, interfaces, and reports
	5. For new interfaces, detailed designs and sample input files have been provided by external system owners
	6. Interface test cases and scripts have been created, approved and coordinated with Trading Partners as part of the System Integration Test Script deliverable
	7. Interface Test data has been obtained or developed if partner created files are unavailable due to partner resource limitations, development delays, or for federally defined interfaces
	8. Interface Partner code is complete and available for testing
	9. Defects are addressed according to agreed upon thresholds for Priority/Severity; Open defects/ workarounds are accepted by Business Owners/Test team;

Interface Test Summary	
	Thresholds will be defined by mutual agreement between the State and Deloitte.
	10. Designated testing and support resources are available for the test cycle
	11. Defect management process and defect triage meeting frequency is approved
	12. Successful Smoke Test of deployment
Interface Test Activities	Test team coordinates with each interface partner to determine mutual test capabilities and standardize test templates as feasible
	Test team executes manual and automated System Test scripts and documents results in the applicable test tool
	Test team logs defects for test results that do not match expected results
	Test lead coordinates defect triage and facilitates triage meetings
	Test team retests development corrections
	Test lead defines level of automated/manual regression testing for each test cycle and requests data backup/restore as necessary
	Test team generates Test Results Report for test cycle or the final User Acceptance Testing Readiness Report
	Test team provides ongoing communication, status reporting and maintains test tool dashboard content
Exit Criteria	1. Planned test cases/scripts have been executed and documented in the test tool
	2. Deferred test cases have been assigned to a subsequent test phase/cycle
	3. Defects are addressed according to agreed upon thresholds for Priority/Severity; Open defects/ workarounds are accepted by Business Owners/Test team; Thresholds will be defined by mutual agreement between the State and Deloitte.
Environment	System Integration - Full size database to simulate production environments
Tools	RQM, DOORS, RTC, and SoapUI
Test Data	Preferred method of data creation is to use the ▮ application to generate data
	Partner provided incoming/outgoing files are preferred; If unavailable simulated files will be created
	If available, converted data that has been masked/cleansed of PII may be incorporated into later Interface Test cycles
	Periodic data backup and restore will be used to execute regression testing
Targeted Cycles	As needed per SIT cycle
Deloitte Role	Identify functionality being tested, based on the detail design and detail requirement sessions
	Coordinate with State on questions and problems relating to interface testing of the ▮▮▮▮▮▮▮▮▮
	Identify tools to be used and reports to be created
	Identify State or outside resources required
	Develop pretesting communication and setup requirements for trading partners
	Document detailed steps required to conduct the interface test including expected results
	Define and update testing work plan and resources
	Deliver Interface Test Plan
	Execute Interface Testing
State Role	Provide direction and clarification to the vendor

Interface Test Summary
Coordinate support and outside resources required for interface testing
Review and accept or reject the Interface Test Plan
Review and accept or reject whether Interface Test expected results are met

Table 16: Interface Test Summary

5.5.2 Interface Test Details

Interface testing is incorporated throughout the testing process and is comprised of individual and joint activities performed by ▓▓▓ team members and interface trading partners. It is assumed that each interface partner will define and perform low level testing, including unit, string, and performance testing, for each of their interface components. The Deloitte Development team performs unit testing as part of the development process. Completed interface components are released for further testing by the Deloitte Test team. The Deloitte Test team performs business oriented and technical testing string and System Integration Test. The Deloitte Test team will coordinate with each individual interface partner to arrange joint testing of each interface.

One or more resources may be required from various ▓▓▓ and partner project teams to support the full scope of interface testing.

Interface testing is intended to support the achievement of the following interface testing goals:

- Provide a description of the overall Interface test process and approach
- Confirm requirements are satisfied by system functionality
- Verify application components perform as defined
- Define a collaborative approach to successfully test with each interface trading partner

In addition to following the Plan, Script, Prepare Data and Execute test activities defined in the Test Activities section of the Master Test Plan, the following activities are necessary for each Interface Trading Partner:

- Review the approved ▓▓▓ Master Test Plan or at a minimum the Interface Test Plan section of the document
- Participate in scheduling and scoping of joint ▓▓▓ and Partner test activities
- Utilize Excel-based ▓▓▓ testing work product templates
- Participate in test case creation and review for joint testing activities
- Participate in test data development and review for joint testing activities
- Participate in test script execution for joint testing activities
- Participate in test software problem identification and resolution for joint testing activities

Plan

The objective of this task is to plan the testing activities that are necessary for interface testing. The planning activities for interface testing include both the String Test activities and System Integration Test activities. The following points are relevant to interface test planning:

- State identifies the Test Lead point of contact and backup Test Lead point of contact for each Trading Partner

- Deloitte Test team schedules the necessary recurring meetings with Trading Partners throughout the testing timeline to support planning, scripting, data prepping and execution

- Deloitte Test team collaborates with the Trading Partner to identify Trading Partner test environment availability and connectivity constraints

- Deloitte Test team identifies which environment each interface will be tested in and when based on Trading Partner environment availability and connectivity constraints

- Deloitte Test team updates the Project Work Plan

  o Interface Trading Partner SIT test cycles

  o Related Interface Trading Partner overview/training tasks

- Deloitte Test team validates assumption that the Trading Partner will conduct their own Unit Testing and String Testing prior to SIT with the ███████ Test team

- Deloitte Test team provides and discusses ███ SIT cases (which require interface testing) with the respective Trading Partner

- Trading Partner provides the necessary information for the ███████ Test team to prepare and support a comprehensive end-to-end business scenario for their interfacing system

- Deloitte Test team estimates the ███████ work requested by the interface Trading Partners to confirm that the effort falls within the established project schedule

- Trading Partners and Deloitte Test team perform individual or joint test activities per the plan and schedule

- Trading Partners and Deloitte Test team to identify and communicate software problems to ███ ███ Test Lead and Trading Partner Test Lead as necessary

- Trading Partners and Deloitte Test team to retest and resolve software problems through individual and joint activity with Partner as necessary

- Deloitte Test team to report ongoing test status through the 14.3 Testing Results Report deliverable

Script

The Deloitte Test team develops specialized Test Scripts for each test phase related to interface testing per the following description: and recommend each partner executes a similar approach:

Test Phase	Interface Testing Description
Unit	Component level test performed for each individual unit that comprises an interface. Conducted by the Deloitte team or Interface Trading Partner that developed the interface.
String	Standalone ███████ test of each interface application component that supports incoming or outgoing data exchange. Test with partner provided interface files if available; develop mock files if necessary This test evaluates business logic and validation for Initial and regression testing of one or more components that process interface data for a functional area/business process. May include limited coordinated testing with partners based on their

Test Phases
23-Oct-15

Page 48

███ ████ ██████████

█████ ███
14_1_COMBINED_v1_4.pdf

Test Phase	Interface Testing Description
	availability.
System Integration Test	System Integration testing for each interface includes coordination with each partner as necessary to plan and conduct coordinated testing activities including exchange of incoming and outgoing interface files and database synchronization.
	End-to-end testing (initial and regression) of functional areas/business processes that interact with interface processing/data. Includes use of partner provided files and synchronized processing with partner as necessary.
	Also addresses component and system integration/replication points and includes use of central, county, and masked, converted data.

Table 17: Testing Types for Interface Testing

The Deloitte Test team provides SIT scripts as part of deliverable 14.2 System Test Scripts. Each Trading Partner must develop SIT scripts that comprehensively exercise interface related data within their system. The figure below describes the scope and boundaries for each of the respective interface test phases.
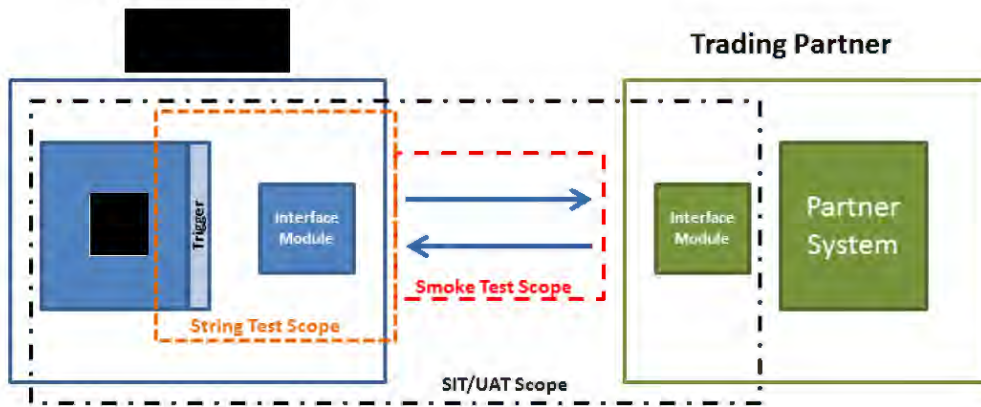

Figure 9: Interface Test Phase Scope and Boundaries

Prepare Data

▉▉▉▉ String Test execution takes place as part of development and relies heavily upon the development schedule to sequence the testing of each individual interface. String test utilizes SoapUI and manually generated mock data. No PHI or PII is used during the execution of string test.

System Integration Test will utilize data provided by external trading partners, masked converted data, and mock data generated manually and via SoapUI.

Certain data my require pre-population to ▉▉▉▉ database tables. For example, child care provider data will be provided to ▉▉ via the MAXSTAR interface. Provider data does not reside in SUCCESS so an initial load of Provider data must be obtained to test the Child Care eligibility process. The ▉▉▉▉ test team will coordinate the synchronization of data between the ▉▉▉▉ system and external trading partner systems as required to successfully execute interface System Integration Test conditions.

Execute

▆▆▆▆ System Integration Testing for interfaces will be executed in parallel with its corresponding functional area. For instance, if a file clearance interface is relevant to application registration; it will be tested with all other application registration components. This will occur in test cycles for the SIT test phase based on interface development timelines. If an interface is not developed by the time of its planned test date, it will be tested in the test cycle following development completion.

The table below highlights key interfaces to incorporate into System Integration tests by track:

Interface	Front Office	Customer Portal	Benefits Mgmt	Reports	Notices	EMPI	EDBC	Support Functions
$TARS						x	x	
ADOBE					x			
AVS	x							
BENDEX							x	
BOR							x	
DIS					x			
DOC							x	
DOE							x	
DOL	x	x					x	
DMS	x	x						
DSO			x					
EBTAS			x	x				
eDRS	x							
EMPI	x							
FDSH	x	x					x	
FFM	x						x	
GAMMIS							x	
Experian		x						
IRS							x	
IVR		x						
LIHEAP				x			x	
MAXSTAR							x	
NAC	x							
New Hire							x	
OSAH								x
PCS							x	
PeopleSoft			x					
SAVE	x							
SDX							x	
SHBP							x	
SHINES						x		
SOLQi	x						x	
SilverPop					x			
SVES						x	x	

Interface	Front Office	Customer Portal	Benefits Mgmt	Reports	Notices	EMPI	EDBC	Support Functions
TANF				x				
TOP			x	x				
Vital Records	x							
WIC							x	
Work Number	x	x					x	

<p align="center">**Table 18: Testing Tracks for Interface Testing**</p>

The ▮▮▮▮▮ Master Test Plan provides a description of each test activity in detail. Each Trading Partner is expected to have comparable testing processes. The ▮▮▮▮▮ Test team will work with each partner to perform joint testing activities in a manner that supports the activities above and accommodates partner testing activities to the extent that is feasible.

5.6   14.1.4 Performance, Volume and Stress Test Plan

5.6.1   Performance, Volume and Stress Test Overview

Performance, Volume, and Stress test will measure the stability and performance of the solution and its underlying architecture for the expected load on the system.

Performance, Volume, and Stress Test Summary	
Goal	The purpose of performance testing is to assess whether the system, as built and deployed, can maintain adequate throughput, satisfactory response, and timely completion of operation under different conditions of volume and stress over a designated period of time. Performance testing also determines whether, or at what point, extreme conditions are likely to cause a system failure.
Scope/Coverage	The areas included in performance testing are bounded to ▮▮▮▮▮
Entrance Criteria	1. Access to the performance testing environment where the testing tool resides must be available to the testers.
	2. Successful execution and completion of unit test scripts and system integration test scripts; this implies that the code/applications are stable enough to be loaded.
	3. ▮▮▮▮▮ (including EMPI) is deployed to the performance test environment.
	4. Performance test data prepared; this includes data, environment, and the boundary system and databases supporting the ▮▮▮▮▮ platform.
	5. Hardware and infrastructure applications are operational and production-ready state and all necessary connectivity to boundary systems are complete.
Performance, Volume, and Stress Test Activities	Perform System Analysis and Planning
	Create Test Scripts
	Define transaction mix
	Identify benchmarks
	Prepare data

Performance, Volume, and Stress Test Summary	
	Prepare environment
	Execute test scripts
	Monitor and record system performance during test script execution
	Analyze results
Exit Criteria	1. Planned test cases/scripts have been executed and documented in the test tool
	2. The necessary infrastructure, configuration and code changes have been made to meet the performance test requirements.
Environment	Performance Test
Tools	Rational Functional Tester, Rational Performance Tester, APM Tool, Rational Virtualization Server, Splunk, or comparable tools
Test Data	Primarily system generated but manually created when necessary
	Converted data masked/cleansed of PII as available
Targeted Cycles	Two sets of 6 cycles will be conducted on VBlock (State Network) to gather Performance testing results. Along with system performance cycles, scheduled runs for Pilot, Wave 1 and Wave 2 will be devised to give a complete coverage and confidence in system capacity.
Deloitte Role	Coordinate with State on questions and problems relating to performance and stress testing
	Validate performance expectations
	Prepare test requirements and environments in which the tests will be performed (except for stress testing, which will occur at the NADC)
	Document detailed steps required to conduct the performance and stress test including expected results
	Define and update testing work plan and resources
	Define system scalability capabilities if anticipated volumes are exceeded
	Deliver Performance, Volume and Stress Test Plan
	Execute Performance, Volume and Stress Testing
State Role	Provide direction and clarification to the vendor
	Attend deliverable walkthroughs to enhance understanding and facilitate the approval process
	Review and accept or reject the Performance, Volume and Stress Test Plan
	Review and accept or reject whether Performance, Volume and Stress Test expected results are met

Table 19: Performance, Volume and Stress Test Summary

5.6.2   Performance, Volume and Stress Test Details

As part of an ongoing performance test process, performance testing should be performed concurrent with System Integration Testing and User Acceptance Testing to allow time for tuning and retest of individual components should a bottleneck be identified.

Performance tests focus on throughput and time-to-completion. Throughput measures the amount of input processed or the number of transactions completed within a given time period. The time-to-completion refers to the length of time it takes any given input(s) or transaction(s) to complete.

Considerations for identifying potential performance bottlenecks include the following:

- Transaction throughput to perform a specific business function

- Potential online performance bottlenecks in the architecture when a high volume of concurrent users are present

- System reliability when usage exceeds target peak volumes

- Time to complete business functions for simulated virtual users

- Application configuration and technology infrastructure changes as necessary to achieve performance requirements with specific tuning recommendations for the ███████ environment

Deloitte leverages the statistics of current production usage provided by the State to help identify load percentages and transaction mixes for performance testing. The following tables provide representative counts related to production usage:

Description	Count
Total Workers	4,200
Concurrent Access	3,000
Total Case count - Active Cases from ███████ (not include ███████ B)	2,441,826
Cases processed per week	32,410

Table 20: Production Counts for SUCCESS

Description	Count
Total Workers	150 (Growth – 185 ███████
Concurrent Access	NA
Total Case count	180,000
Cases processed per week	3,500 New Applications 4,600 Renewals

Table 21: Production Counts for VIDA and P4HB

Description	Count
Citizen Accounts	2.8 Million
Concurrent Users	2200
Total Application Count	5,666,455 - AFB 3,994,304 - RMB 2,104,845 - RMC
Total Application per month	109,298
Apps Created per week	27,306
App per day	3,000 - AFB 3,000 - RMB 700 - RMC

Table 22: Production Counts for COMPASS

Plan

The following Performance test types are executed to analyze system performance and behavior.

Test	Objective
Load	The process of putting load on a system measuring its response. Load testing is performed to determine a system's behavior under both normal and anticipated peak load conditions and to gather system baseline metrics.
Endurance	Putting system under a consistent small load for large number of hours (12-24 hours) to identify memory leaks and identify exhaustion limits of the system
Scalability	Identify system performance using horizontal scalability by adding/removing vCPUs and changing the RAM allocation. This will be used to determine and analyze if we are observing the expected amount of additional transactional throughput.
Stress	Analyze system performance and behavior under conditions that overload its resources and cause the system to break.

Table 23: Performance Test Types and Objectives

As part of the planning activities for performance testing, an analysis of the system is conducted to capture the system baseline. The intent of this step is to understand the current configuration deployed into the performance environment. This step is critical to developing the performance test plan and is used to determine whether the system will perform to the requirements. An evaluation of the system, components, and environment, prior to testing, will lead to more realistic test conditions.

Once a baseline is established using production volume levels, a mix of ▆▆▆▆▆ transactions are defined, scripted and executed. The following transactions will be used for performance testing:

▆▆▆▆	Transaction	Details
EMPI	Create	New customer applies for benefits and is issued an EMPI number
	Update	Change status of case from Active to Closed
	Match	Match existing EMPI number
	Merge	Merge EMPI records for same individual
	Search	Search for EMPI number
Customer Portal	Login	Registered user logs into the customer portal
	Am I Eligible	Determine eligibility
	Apply for Benefits	Apply for Medicaid and FS Apply for Medicaid, FS, TANF and WIC
	Renew My Benefits	Renew applications for Medicaid only Renew applications for Food Stamps only
	Report My Changes	Report changes to household composition, income and address
	Check My Benefits	Issuance cycle, allotment amount, status of application, and notices
	Logout	Log out of Customer Portal
Worker Portal	Login	Registered user logs into the worker portal
	Application Registration	Register application Register individual Register program
	Application Clearance	Verify EMPI

	Transaction	Details
	Data Collection	Add person Add program Redetermination Case changes - household composition, income and address Intake of Medicaid and FS applications
	Eligibility Determination and Benefit Calculation	Run EDBC and Authorize
	Inquiry	Case Search by Case Number
	Renewals	Process renewal of Food Stamps applications
	Logout	Staff logs out of Worker Portal
	Reports	Application/case Claims Federal
Notices		Cost of living Notice of case action (approval, denial, change) Renewal Forms
Batch		Running Daily (EDBC), weekly, quarterly batches (COLA, Mass Update) on the system during a specified batch window

Table 24: ███████ Transactions used for Performance Testing

Script

To create effective performance test scripts, the Deloitte testers will script the "Main Flow" of different business processes which make up the transaction mix. The Main Flow closely simulates a production user's business experience and describes the steps used to complete a transaction from start to finish.

Prepare Data

To prepare test data for performance testing, Deloitte testers identify individual functional groups with common user activities. Identifying the consumers of system resources is important to create an overall picture of the 'levers' that can affect the system.

Testing emphasizes the following areas to identify transactions which are:

- Critical to daily business operations

- Frequently used/high-volume

- Demanding high-performance critical path

In addition to data preparation, environment setup will take place prior to the start of test execution. The step will confirm that necessary data has been loaded. The types of data that will need to be available are the reference data, page and page element details, etc.

Execute

Test scripts will be executed in the Performance environment using 6 different test cycles:

Stage	Function Tested	Scripts
Cycle 0	EMPI	Create Update Match Merge Search
Cycle 1	Customer Portal	Am I eligible Account Creation AFB (Multiple scenarios)
	Worker Portal	Application Registration • Register Application • Register program (SNAP, TANF) • Register Individual File Clearance with EMPI • Data Collection • Initiate Action (Intake) • Individual • Expense • Household Information • Non-Financial • Income
	EDBC (screens related to)	Cash, SNAP • Filing Unit (EDG) rules • Non-fin. Rules • Income budgeting • Resource • Income averaging All Medicaid • Filing Unit rules • Non-fin rules Screens • Eligibility Determination • EDBC Results • EDBC search • CASH, SNAP Budget • Individual Eligibility
Cycle 2	Customer Portal	CMB – Screens/Webservices
	Worker Portal	Application Registration • Maintain Application, individual, Program • Register program (MA, CC, WIC, LIHEAP) Data Collection • Initiate Action (Ongoing, Change) • Non-Custodial (AP) • Compliance / Penalty • Resource • ABD Medicaid • Service Plan and Assessment

Stage	Function Tested	Scripts
	EDBC (screens related to)	Cash, SNAP • Resource Test • Sanctions/Penalties • Overpayments • Supplements • Verifications • Disposition rules • Trigger Issuance Screens • Overpayment • Payee Assignment • Finalize Eligibility (Auth) • NOA reasons All Medicaid • Income Budgeting • Resource
Cycle 3	Customer Portal	RMB – Screens/Webservices RMC – Screens/Webservices
	Worker Portal	• Initiate Action (Renewal) • Inquiry • Investigation • Scheduling • WIC • LIHEAP • External Interfaces (Address validation, Income) • Pre-populate Customer • Portal data • Inbox • Work Program • Business Services for • PeachCare
	EDBC (screens related to)	Child Care • EDG/Eligibility rules • Income Budgeting • Certifications • Provider Assignment • Waivers All Medicaid • Authorization Eligibility and Disposition rules • WIC Screens • VCL Screens • Renewal Screens

Stage	Function Tested	Scripts
Cycle 4	Customer Portal	• Doc upload • Presumptive Eligibility • Spanish Translation • Real-time Eligibility • AFB(ACA) - Screens/Webservice • No-touch Eligibility • Community Partners and Providers • Integration with DIS and Adobe
	Worker Portal	• Case Notes – DIS • No touch processing
	EDBC	Screens • Override Screens • TANF Time Clock Screens • ABAWD Time Clock Screens Wrap-up Screens
Batch Execution		Execute high priority batches (FFM, Notices, COLA, Mass Update batches) and gauge system performance and time completion of the process to increase the system throughput for faster execution

Table 25: Performance Testing by Cycle

Performance monitors must be in place on the different components during performance testing to collect data and assess overall system performance. The following areas have been identified to assess overall system performance:

- Web/Application Server Testing Results
- Database Testing Results
- Server Resource Utilization

The following tables provide details of the proposed transaction mixes to execute/simulate production volumes and the increases suggested to stress the system:

Worker Portal						
Task	**Number of Workers Performing Action**					
Percentage Increase	Baseline	15	30	45	60	75
Login	115	132	150	167	184	201
Application Registration	426	490	554	618	682	746
Application Clearance	135	155	176	196	216	236
Data Collection	585	673	761	849	936	1024
Eligibility Determination and Benefit Calculation	325	374	423	471	520	569
Inquiry	275	316	358	399	440	481
Renewals	300	345	390	435	480	525
Reports	98	113	127	142	157	172
Notices	175	201	228	254	280	306
Logout	75	86	98	109	120	131
Total Transactions	2,509	2,885	3,265	3,640	4,015	4,391

Table 26: Worker Portal Transaction Mixes for Volume and Stress Testing

Customer Portal						
Task	Number of Users Performing Action					
Percentage Increase	Baseline	25	50	75	100	200
Login	240	300	360	422	480	720
Am I Eligible	390	487	585	682	780	1170
Apply for Benefits	600	750	900	1050	1200	1800
Renew My Benefits	600	750	900	1050	1200	1800
Report My Changes	230	288	345	402	460	690
Check My Benefits	470	588	705	822	940	1410
Logout	270	337	405	472	540	810
Total Transactions	2,800	3,500	4,200	4,900	5,600	8,400

Table 27: Customer Portal Transaction Mixes for Volume and Stress Testing

Transaction mix should be adjusted to production levels. For example:
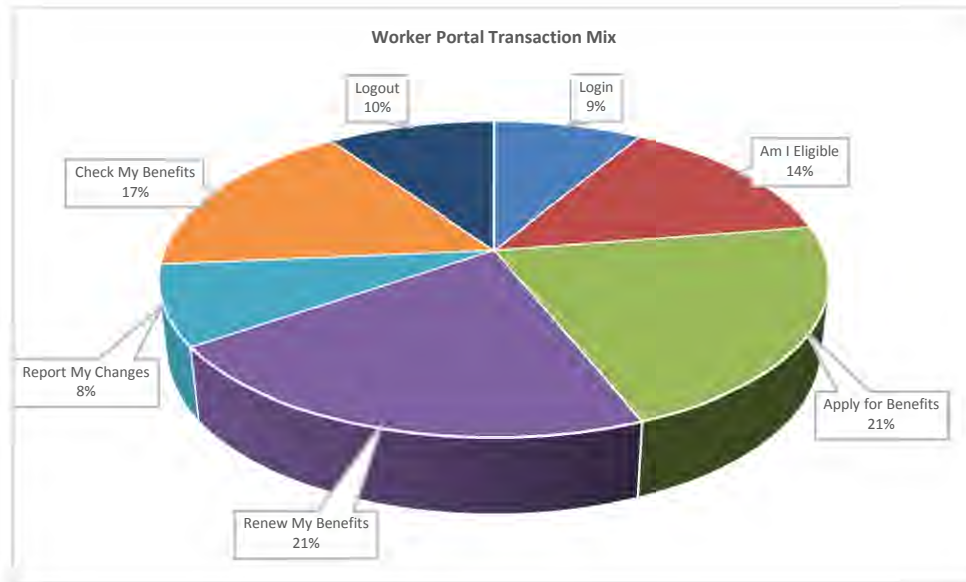
Figure 10: Suggested Worker Portal Transaction Mix
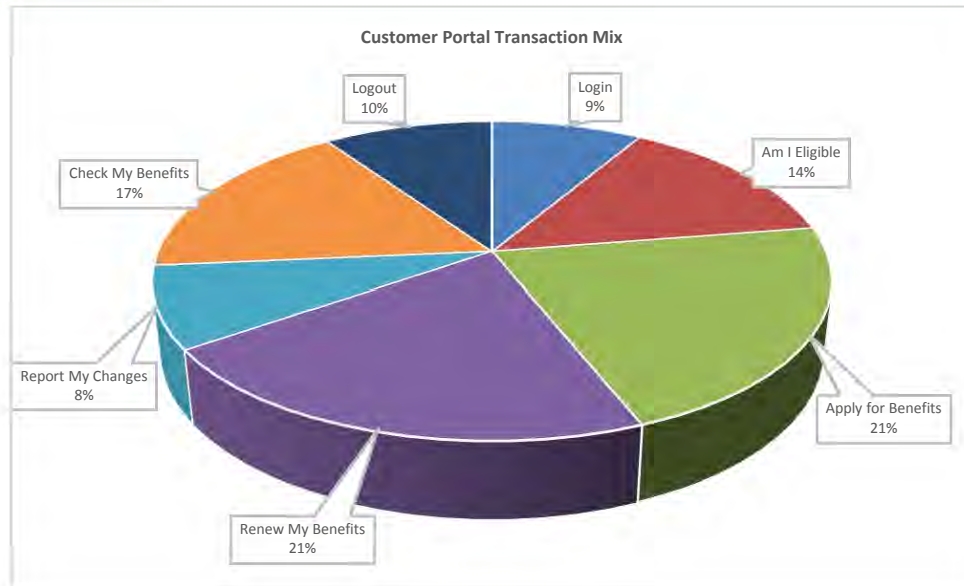
Figure 11: Suggested Customer Portal Transaction Mix

Analyze Results

Performance testing team will execute the test cases based on the transaction mix and the concurrent set of users identified in the Prepare Data section. The results of this execution will be analyzed using Splunk, an application performance management tool, Rational Performance Tester, Nimsoft or comparable tools and validated against the State's performance requirements captured during the requirements validation sessions. To analyze the results of the tests following reports will be generated:

1. Page Performance
2. Response vs Time Summary
3. Page Throughput
4. Server Health Summary
5. System Health Summary

In addition a performance test scorecard will be created to document the test results. A sample scorecard is shown below for reference:

Test Scenario #					
Objective					
Performance Issues					
Ramp-up/Throughput					
Transaction Response Time (Excluding Think Time)					
Transaction Name		Minimum	Average	Maximum	Pass/Fail
Transaction Throughput					
Expected Transaction Volume					
Actual Transaction Volume (LR Results)					
Infrastructure CPU Utilization					
Infrastructure Memory Usage					
Database					
Top 10 Slow performing SQL					
Top 10 Fast running SQL					
JAVA Application					
No. of transactions processes					
No. of errors					
Network					
F5 network Utilization					

Figure 12: Sample Performance Test Scorecard

The scorecard and reports listed above will be generated based on the following measurement and infrastructure assumptions:

- Measurement of page performance will be made on the same network segment as the web servers. Actual customer page performance may vary based on internet latency in their geography.

- Page display time will be measured under average load with average transaction sizes.

- The top 5% and bottom 5% of the sample group will be excluded from the test to eliminate test anomalies.

- State will be responsible for monitoring, reporting and meeting the performance standards for the components of ▮▮▮▮ solution that are hosted on State's existing infrastructure. This includes both the application infrastructure and the network infrastructure.

- Deloitte will be responsible for testing the following components of the ▮▮ Solution:
  - Worker Portal
  - Customer Portal
  - EMPI
  - Batches

- Testing of components hosted/managed by the State will be a State responsibility: Note: Deloitte will engage with the State to provide input into the State's testing for code we created associated with the components below.
  - WebMethods
  - Adobe AEM
  - Active Directory
  - eDirectory
  - Data Warehouse
  - OBIEE
- In addition State will be responsible for testing the network bandwidth to field offices, uplink bandwidths, and additional components hosted outside the VBlock (Switches, load balancers etc.)

Based on the scorecard and results recommendations for improving performance will be documented by each Tier using the format listed below:

Tier	Observation	Recommendation
Web		
EJB		
Database		
Interfaces		
Rules Engine (EDBC/OPA)		

Table 28: Format example for Performance Observations and Recommendations

These recommendations along with the identified benchmarks will be leveraged to improve the system performance to meet State's documented requirements for performance testing. In addition, performance test defects identified during this process will be documented in RTC and will follow the defect management process identified in Deliverable 17.1 Software Problem Resolution Plan

5.7   14.1.5 Conversion Test Plan

5.7.1   Conversion Test Overview

██████ and EMPI data conversion testing will include unit, string testing, system integration testing and dry run tests to verify that the data conversion routines perform as designed and in a timely manner. Testing with converted data will also occur in UAT as defined by the State UAT Plan. Collectively, these tests progressively validate that the conversion process works properly over the course of the conversion development and testing lifecycle. An overview of our overall testing approach and process is provided in the paragraphs that follow.

Summary	
Goal	Technically exercise the conversion software from end-to-end, including legacy data extraction, data load and data transformation into the EMPI and ██████
	Validate the completeness and accuracy of the converted data
	Test the EMPI and ██████ Application using masked, converted production data
Scope/Coverage	Execute the conversion process from end to end
	Validate the converted data via the EMPI, ██████ screens, legacy screens and SQL scripts
	Review the conversion validation reports and results reports
	Confirm the timing of the conversion process end to end
	Validate the data conversion ██████ screens and conversion data archival screens
Entrance Criteria	1. Requirements and design artifacts are approved, traced, and baselined
	2. Test strategy and schedule have been approved and communicated
	3. Conversion test environments have been created and configured with the ██████ application and EMPI
	4. Data masking process has been defined and implemented
	5. Test Cases/Scripts have been created and approved
	6. Test Cases/Scripts have been traced to requirements/components
	7. Defects are addressed according to the agreed upon thresholds for Priority/Severity; Open defects/ workarounds are accepted by the Test team; Thresholds will be defined by mutual agreement between the State and Deloitte.
	8. SFTP connectivity has been established to transmit legacy data to the data conversion purification environment
	9. County based data extract files containing production data have been provided according to the defined conversion schedule
Activities	The conversion team executes the data conversion process (legacy teams execute the source system data extracts)
	The conversion team provides the conversion validation reports and the conversion results reports
	The conversion team, the state and legacy systems' team members validate the converted data elements and log defects for test results that do not reconcile to the expected results
	The conversion team and the legacy systems' technical representatives resolve the conversion defects
	The conversion team, the state and legacy systems' team members validate defect corrections
	The conversion team, the state and legacy systems' team members provide ongoing communication and status reporting
Exit Criteria	1. Conversion process has been executed and validated end to end
	2. Converted data is validated - planned Test Cases/Scripts have been executed and validated
	3. Defects are addressed according to the agreed upon thresholds for Priority/Severity; Open defects/ workarounds are accepted by Business

	Owners/Test team; Thresholds will be defined by mutual agreement between the State and Deloitte.
Environments	Conversion Purification Environment
	Conversion SIT Environment
	▮▮▮▮ SIT Environment
	Conversion UAT Environment
Tools	DOORS, RTC, SQL Scripts, and Reports (Conversion Validation and Results Reports)
Test Data	Converted production data from SUCCESS, CRS, VIDA, P4HB and COMPASS
Targeted Cycles	Conversion is included in SIT and UAT test cycles as defined in Section 5.4.1. System Integration Test Overview and the UAT Plan
	3 EMPI dry runs
	3 Pilot dry runs
	3 Wave-1 dry runs
	3 Wave-2 dry runs
Deloitte Role	Execute conversion modules
	Validate conversion results
	Provide data conversion reports/results
	Analyze, review and provide recommendations based on data conversion results
	Update conversion modules based on conversion results
	Conduct testing activities according to the project schedule
	Address assigned issues and action items
	Provide status to project management
State Role	Provide clarification and recommendation on data conversion defects
	Validate converted data elements
	Review and validate data conversion reports (perform manual data cleansing as necessary per the conversion results reports)
	Organize data conversion meetings to resolve/address defects
	Provide a corresponding conversion production environment in the legacy systems to be converted to support the data conversion testing activities
	Provide technical and business support during test phases
	Review and approve conversion results
Legacy System Representatives Role	Execute and validate data extracts according to the defined conversion schedule
	Validate legacy system modifications
	Resolve and validate legacy system modifications defects and data extract defects
	Provide technical and functional support during test phases

Table 29: Conversion Test Summary

5.7.2 Conversion Test Details

5.7.2.1 Unit Test

During the course of development, the conversion team unit tests each script that is built for the loading and transformation of the legacy data. This is an isolated set of tests to validate that the script is correctly moving and transforming data from its respective source to target locations. Moreover, these tests are technical by nature as they are comprised of SQL queries to look at particular counts and validations within the data as opposed to being more functional oriented tests through the application. While the exact tests vary by script, the types of tests include:

- Verifying that the correct number of records are created in each table

- Verifying that there are no Primary Key constraint violation (e.g., the test will look for both cases when the value is missing and when two records have the same unique identifier)

- Verifying that direct-load fields are populated correctly

- Verifying that fields assigned default values are populated correctly

- Verifying that fields requiring transformation logic (reference values, derived values) are populated correctly

- Verifying that source data does not violate data type or data length constraints in the target database

5.7.2.2 String Test

Following the development and unit testing of the conversion modules, String Test will validate the interdependencies between the conversion modules and verifies that the conversion programs are integrated. It will focus on passing of data from the legacy systems, SUCCESS, VIDA, P4HB, CRS and COMPASS, to the conversion purification/staging environment, loading the data and transforming the data into the EMPI and ▉▉▉▉▉ It will focus less on the features of the conversion business requirements and more on the data hand-offs. At the end of the string test, the conversion process should be functioning from a technical standpoint.

5.7.2.3 System Integration Test (SIT)

5.7.2.3.1 Conversion Testing Activities in the SIT Conversion Environment

During the System Integration Test phase, front end and back end validation will be performed in the conversion system integration testing environment (▉▉▉▉▉ and EMPI) to confirm the accuracy of the converted data elements in the EMPI and ▉▉▉▉▉ application.

- The ▉▉▉▉▉ Worker Portal screens and the respective legacy system screens will be used to validate the conversion data elements. The data elements will be confirmed based on the data mappings and conversion rules referenced in the 11.1 Data Conversion and Migration Plan

- SQL scripts will be executed to validate the data loaded in the database for data elements that cannot be validated via the worker portal screens. Below is a list of tables that are targeted to be reviewed:
  o BI Tables (Benefit Issuance Tables)
  o BV Tables (Benefit Recovery/Claims Tables)
  o DC Tables (Data Collections Tables)
  o EMPI Tables
  o RT Tables (Reference Tables)
  o SH Tables (Appointment Tables)
  o WC Table (Work/Employment Services tables)

In addition to validating the data elements, the following will be performed and validated during the system integration test phase:

- Interim conversion process described in the 11.1 Data Conversion and Migration Plan will be tested, including the requests for a client/case interim conversion via the interim conversion screen from the Worker Portal, sending the requests to the respective legacy systems, receiving and processing the legacy systems extracts pertinent to the clients/cases requested to be converted

- Benefit mismatch process described in the 11.1 Data Conversion and Migration Plan will be performed

- Conversion Retroactive Medicaid screen and Conversion Data Archival screens referenced in the 11.1 Data Conversion and Migration Plan

After the system integration test conversion execution, there will be a series of reports generated that provide a broad look into the results of the conversion. The following conversion reports as described in the 11.1 Data Conversion and Migration Plan will be provided:

- Conversion Data Validation Summary and Detail Reports

- Conversion Results by System Report

- Conversion Data Validation Error Count Report

- Case Merge Summary and Detail Reports

- Benefit Mismatch Summary and Detail Reports

- EMPI Client Potential Client Duplicate Summary and Detail Reports

- Related Case-Client Elimination Report

The reports will be shared with State team members to reconcile discrepancies and perform any data cleanup, or extraction process issues that require resolution within the source system as well as identify changes needed in the conversion ETL modules.

5.7.2.3.2 *Conversion Testing Activities in the ▮▮▮▮ SIT Environment*
In addition to the testing activities that will occur in the conversion SIT environment, the converted data will be loaded into the ▮▮▮▮ system integration test environment where the ▮▮▮▮ test scripts will be executed against the converted data to validate the behavior of the system with the converted data. The testing will leverage a combination of newly entered data into the ▮▮ application and data from the conversion SIT environment. The types of tests will include:

- Accessing converted cases via the customer portal and worker portal screens to verify the ability to view and edit converted data, particularly to identify on-screen errors

- Verifying that ongoing eligibility and program enrollments are available and accurate in the worker portal

- Verifying that certain case management actions can be executed on converted cases such as running eligibility determination, creating enrollments, sending notices, and issuing benefits

5.7.2.4 Dry Runs

Conversion dry runs will be performed prior to the production pilot or wave rollouts to validate the conversion software and processes that are used in the live data conversion run. In preparation for each of the rollouts, three EMPI dry runs will be executed, three Wave-1 dry runs will be executed and three Wave-2 runs will be executed before the respective production Conversion runs.

Dry runs are an essential part of the conversion testing process as these allow the conversion team to simulate what occurs during a live production conversion run. In doing this, the conversion team works to identify and correct issues in the conversion process before serious implications occur. These runs are also essential to benchmark the performance of the conversion software and tune the performance if necessary. This is also a way to prepare State staff involved with the production data conversion so that the various activities of the conversion process are familiar to State stakeholders.

In summary, the objective of each dry run will be to highlight:

- Simulate the actual "live" environment

- The conversion procedures and steps developed, including any dependencies

- The conversion programs (data extraction, data cleansing, transformation, and loading)

- Software configurations

- Database configuration, size and conversion time estimates

- Monitor performance problems

- Sequence automated and manual conversion activities

- Highlight potential process issues associated with cut-over

5.7.2.5 Conversion Test Activities

Similar to the testing of the ▮▮▮▮ application, the conversion test phases will include the following major activities:

Test Activity	Description	Template
Plan	• Define overall test schedule, test objectives, and level of coordination • Develop Test Scenario Matrix and Individual Scenarios; Scenarios serve as an outline to a Test Script	• Test Calendar - Project/Visio • Test Scenario Matrix - Excel • Test Scenario – Excel
Script	• Develop Test Scripts based on requirements and design	• Test Script – Excel
Prepare Data	• Provide data extracts from CRS, SUCCESS, COMPASS, VIDA and P4HB • Provide converted data for SIT (masked) and converted data for UAT (refer to section 5.4.1 System Integration Test Overview)	• Data Extract Files
Execute	• Perform individual or joint test activities with legacy systems' team members per the plan and schedule • Identify and communicate test defects • Resolve and retest defects through individual and joint activity with legacy systems' team members • Report ongoing test status and metrics • Execute Data Conversion Validation and Results Reports – any data cleansing opportunities identified will be performed in the legacy production environment where automation is not feasible.	• Conversion Reports • Weekly Status Reports • RTC

Table 30: Conversion Testing Activities

5.7.2.6 Conversion Test Schedule

The figure below provides the high level schedule/timeframes for the various conversion test phases and also included in the project plan:

Test Phase	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
Unit Test	▓	▓	▓	▓	▓	▓																	
String Test							▓	▓	▓														
SIT										▓	▓												
EMPI Dry Run													▓	▓									
Pilot Dry Run															▓	▓							
Wave-1 Dry Run																		▓	▓				
Wave-2 Dry Run																					▓	▓	▓

Figure 13: Data Conversion Test Phases Timeline

6   User Acceptance Testing Support

6.1   User Acceptance Test (UAT) Support Overview

The State is responsible for all User Acceptance Test activities. Deloitte plays a support role in assisting the State with their planning, scripting, data preparation and execution UAT activities. The User Acceptance Test Support Details provides the activities that Deloitte does in order to support the State's UAT.

User Acceptance Test Summary	
Goal	Testing conducted by business users to confirm that the system meets business requirements and end-user expectations by validating end-to-end scenarios and critical business functions.
Scope/Coverage	Demonstrate that the system meets requirements and performs all system functions correctly including operational readiness and testing of the application and interfaces with converted data. Validate the following: • Adherence to approved requirements and design documentation; • Conversion of legacy data; • Completeness and accuracy of system documentation;
Entrance Criteria	1. A configuration management process has been established and documented to handle requested changes to project documentation.
	2. A release schedule has been established and documented. This schedule must include periodic planned builds for defect fixes while in test.
	3. Requirements and design artifacts are approved, traced, and baselined.
	4. The code migration process has been documented and approved.
	5. User Acceptance Testing Readiness Report is approved.
	6. No open severity 1 or 2 defects. Remaining defects have been jointly triaged by the State and Deloitte and the State and Deloitte have agreed upon a plan to address.
	7. Test environment has been created, including all necessary applications, fully converted EMPI and ▮ data, configuration, interfaces, and reports.
	8. The State has developed UAT data as necessary including interface files.
	9. Proper user ids and permissions required for testing have been created and verified.
	10. UAT Test Cases/Scripts have been created and approved by the State.
	11. Test cases have been traced to the requirements specification through the Requirements Traceability Matrix (RTM).
	12. Successful Smoke Test of deployment.
	13. Open severity 3 defects have a documented workaround that is acceptable to the business.
UAT Activities	State Test team executes UAT scripts and documents results in the test tool
	State Test team coordinates defect resolution and performs regression testing of defect corrections

User Acceptance Test Summary	
	State Test team coordinates changes to the UAT environment and works with the Technical team to confirm proper configuration management for the UAT environment
Exit Criteria	1. Updates to documentation have been completed or captured as defects.
	2. UAT Test Cases have been executed according to the test plan and any deviations are documented and approved.
	3. All required User Acceptance Test types have been completed.
	4. No open severity 1 or 2 defects. Remaining defects have been jointly triaged by the State and Deloitte and the State and Deloitte have agreed upon a plan to address.
	5. Open severity 3 defects have a documented workaround that is acceptable to the business.
	6. UAT results have been provided and reviewed by Stakeholders, as defined in the State UAT Plan.
	7. Joint discussions and decisions between the State and Deloitte have occurred to confirm any variance from the UAT Acceptance Criteria, as applicable.
	8. Sign-off has been obtained from designated stakeholders indicating test completion. This includes Go/No Go checklist, meetings, and decision.
Environment	User Acceptance Test
Tools	RQM, RFT, DOORS, RTC, Adobe
Test Data	Primarily system generated but manually created when necessary
	Partner provided incoming/outgoing files if available, otherwise simulated files
	Converted data
	Periodic data backup and restore used to execute regression testing
Targeted Cycles	To be determined by the State as part of UAT planning
Deloitte Role	Develop a plan to support the State's strategy
	Validate that all system test is complete and prepare UAT Readiness Report
	Co-facilitate presentation for approval to move to the UAT phase of the project
	Support UAT by: • Providing onsite trouble shooting, answering questions and reviewing outputs with the State • Resolving defects identified in UAT and regression test the system after defects are corrected • Maintaining a running log of defects and corrections • Coordinating the implementation of changes in the UAT test environment with the State • Ensuring proper configuration management of multiple UAT test environments
State Role	Develop the User Acceptance Test strategy
	Review and accept or reject UAT Readiness Report in order to initiate UAT
	Co-facilitate presentation for approval to move to the UAT phase of the project
	Create UAT testing scenarios and scripts
	Perform UAT testing
	Report status and results of UAT testing

Table 31: User Acceptance Test Summary

6.2 User Acceptance Test Support Details

6.2.1 Plan

The Deloitte team supports the State by conducting the following plan-related activities:

- Facilitate a series of UAT planning meetings with the State to aid in their preparation for UAT and share information about UAT best practices

- Share SIT lessons learned, for example data preparation strategies, time travel script execution, trading partner coordination, etc.

- Suggest milestone planning tasks to assist the State in UAT preparation

- Provide an overview of the System Integration Test Matrix content that may be leveraged for both SIT and UAT planning

  - Include business processes in terms of complexity, criticality, and frequency/volume of transactions to determine the appropriate level of testing

- Provide templates used for Test Matrix and Test Cases

- Review and provide feedback on the State's UAT Test Plan

- Review and provide feedback on a sampling of the State's UAT Matrix and Cases

- Provide test tool and process training as defined in section 3.1.3 Test Training Strategy

- Share SIT deployment smoke tests with the State

- Provide suggestions for UAT kick-off (Case/Script creation and Execution) content

- Provide clarifications needed about solution functionality

- Support UAT deployments according to plan (see sample schedule below) and ad hoc requests

  - The Build & Deploy Schedule is maintained in the 12.3 Development Library

Environment	Build & Deploy	Time	Database Changes	Database Meeting	Environment Availability
Development	Daily, Monday-Friday	12 pm EST	Tuesday &Thursdays with the build	Monday and Wednesday , 4 pm EST	Available and builds scheduled
Development Conversion	N/A	N/A	Tuesday &Thursdays with the build	Monday and Wednesday , 4 pm EST	Available and builds scheduled
String Testing	Tuesday and Thursday	12:30 pm EST	Tuesday &Thursdays with the build	N/A	First build scheduled for 1/27/15
SIT	Friday	12:30 pm EST	Friday with the Build	N/A	First build scheduled for 3/2/15
Training Environment - Dev	Monday	12:30 pm EST	Monday with the Build	N/A	First build scheduled for 2/9/15
Conversion Test	Monday	1 pm EST	Monday with the Build	N/A	First build scheduled for 2/9/15
UAT	Friday	1 pm EST	Friday with the Build	N/A	First build scheduled for 8/14/15

Figure 14: Sample Build & Deploy Schedule

6.2.2   Script

The Deloitte team supports the State by conducting the following script-related activities:

- Review and provide feedback on a sampling of the State's UAT Scripts

- Share insight into efficient ways to document traceability from requirements to each test script and document requirement coverage.

- Provide templates used for Test Scripts

6.2.3   Prepare Data

The Deloitte team supports the State by conducting the following data preparation activities:

- Collaborate with the State to provide a representative, production-like volume of converted or system-generated data in a UAT test environment that duplicates production to the greatest extent possible for each UAT release.

- Provide suggestions on data preparation (including desired types and volumes of test data/files), flashbacks, etc.

- Discuss how user ids/passwords were maintained through SIT

- Deloitte Conversion team provides assistance with use of converted data

- Infrastructure team supports the build process

6.2.4   Test Case Execution and Reporting

The Deloitte team supports the State by conducting the following test execution and reporting activities:

- Provide general troubleshooting during execution, for example on-site support, virtual support via teleconference, webex

- Participate in UAT software problem triage

- Resolve software problems and conduct re-test activities

- Demonstrate Rational tool reporting capabilities to the State for monitoring progress

- Conduct database flashbacks based on the schedule defined as part of the UAT Test Plan

- Deploy code to the UAT environment based on the build schedule

- Defined build to UAT is scheduled for xyz

- State may request changes to the regular build schedule via a service request to the Technical team

- Provide application code and database schemas to the State for deployment to the UAT environment

- Setup UAT testers in RTC and RQM

Deloitte collaborates with the State to prepare and conduct User Acceptance Test. Working together early and often to prepare for UAT promotes a comprehensive test that validates the system meets the requirements and designs agreed to by the State and Deloitte.

7 Appendix

7.1 Glossary of Test Terminology

The following is a listing of terms relevant to the Test Plan.

Term	Definition
Acceptance Testing	Formal testing conducted to determine whether or not a system or process satisfies its acceptance criteria.
Application Component	Development object created by the development team. Object is used synonymously.
Automated Test Tools	Software applications that support manual and/or automated testing and tracking of results and defects including Rational Quality Manager, Rational Functional Tester, and Rational Performance Tester.
Configuration Management	Configuration management (CM) is a field of management that focuses on establishing and maintaining consistency of a product's performance and its functional and physical attributes with its requirements, design, and operational information throughout its life.
Conversion Test	This test confirms that the legacy data was converted successfully. Conversion team/testers evaluate conversion at the database level in an isolated environment and during System Integration Test to verify ▇ correctly processes converted legacy data.
Defect	An error or unexpected result encountered during test execution. Defects are managed in Rational Team Concert.
Interface Test	Validate the accurate exchange of information between the ▇ system and external interfacing systems
Negative Testing	Testing which attempts to show that a module or program does not perform tasks that it should not perform.
Operational Readiness Test	Testing to confirm the application is configured and functioning correctly in the Production environment before end user begin using the application.
Performance, Volume, and Stress Test	Performance testing simulates application load using virtual users and batch jobs to measure response times, latency, transaction rates, throughput, and resource utilization. Load testing confirms system behavior under production volumes. Stress testing evaluates system behavior when resources are overloaded.
Positive Testing	Testing which attempts to show that a given module of an application does what it is supposed to do.
Rational Functional Tester	IBM Rational Functional Tester is an automated functional testing and regression testing tool. This software provides automated testing capabilities for functional, regression, GUI, and data-driven testing.
Rational Performance Tester	IBM Rational Performance Tester is a performance testing solution that identifies the presence and cause of system performance bottlenecks and reduces load testing complexity.
Rational Quality Manager	IBM Rational Quality Manager is a collaborative hub for business-driven software and systems quality across virtually any platform and type of testing. This tool support manual testing and integrates with other Rational tools to support traceability, execute automated testing, and log and manage defects.
Regression Testing	Selective retesting of a system or application component to verify that modifications have not caused unintended effects and that the system or application component still complies with its specified requirements.
Requirement	A statement that specifies a business need or capability the application must satisfy as discussed or elaborated during a JAD session.
Security Testing	A test of the system and application security to confirm user role-based security and privileges.
String Test	A low-level iterative test of single or multiple, related modules within a full or partial subsystem using realistic data to validate correct integration of the user interface, business layer, and data layer.
Software Development Life Cycle (SDLC)	The Software Development Life Cycle (SDLC) is a framework defining tasks performed at each step in the software development process including the following phases: Requirement Analysis, Design , Development, Unit Testing, Systems Integrated Testing, User Acceptance Testing, Deployment
System Integration Test	Testing conducted on a complete, integrated system to evaluate the system's compliance with its specified requirements.

Term	Definition
Test Case	The preferred terminology for a flow or sequence of related test events that will be developed into one or more detailed test scripts.
Test Case Matrix	An excel-based test work product used to identify combinations of testing variables including business or technical input and output. A test case matrix is used for planning and scoping purposes to identify how many test cases are needed.
Test Coverage	Test coverage is measured in terms of requirements and designs/components. Each requirement and each component will be tested by one or more test scripts in one or more test phases. Test script coverage is initially assessed by the Test team and may be confirmed by State SMEs/testers. Multiple test cases/scripts may be required to fully test a requirement or component.
Test Environment	A database with a collection of interrelated data stored electronically dedicated to the purpose of performing a particular test such as System Test. Test data in each test environment may be created or manipulated by testers.
Test Script	A set of detailed steps required to execute a test including numbered test conditions (or actions) along with expected results and supporting information including test date, data, and entry/navigation details.
Traceability	The ability to verify the history, location, or application of an item by means of documented recorded identification.
Unit Test	Testing of individual hardware or software units or groups of related units.
Weekly Test Report	The report includes: • Test metrics and results including identification of any remaining deficiencies, limitations, or constraints for the tests • Detailed results of the tests performed and test plans for the following week • Overview of the results and status of each test script • A State-accepted test log including a chronological record of the testing covered by the report Including dates, times, test phase and test script, and individuals who performed the activity

Table 32: Glossary of Test Terminology

7.2 Sample Test Case Matrix

Test Case Matrix Description	
System Design	ATM Design
Functional Area	ATM Machine
Author	
Create Date	1/2/2014
Change Log	Initial Draft

Test Case	Output	Input								
		Customer					Non-Customer			
		Withdrawal	Deposit	Check Balance	Transfer	No Fee	Withdrawal	Deposit	Check Balance	Fee
1	Customers receives cash amount. Non-Customer receives cash.	X				X	X			X
2	Customer makes deposit. Non-Customer rejected.		X					X		
3	Customer checks balance on savings and checking accounts. N...			X					X	

Figure 15: Sample Test Case Matrix

7.3 Sample Test Case

Test Case Description	
Test Case ID	ATM-01
Description	Customer and Non-Customer get cash from ATM
System Design	ATM Design
Functional Area	Check Balance Savings and Checking
Author	J. Smith
Create Date	1/2/2014
Change Log	Initial Draft

	Test Scenario Details	RQ ID
1	Customer makes withdrawal request from checking.	RQ1, RQ5, RQ7, RQ8, RQ9, RQ11
2	Customer receives cash, receipt and does not pay fee.	RQ 12, RQ 21
3	Non-Customer makes withdrawal request from savings.	RQ2, RQ5, RQ7, RQ8, RQ9,
4	Non-Customer savings withdrawal request is rejected.	RQ4
5	Non-Customer makes checking withdrawal request.	RQ10
6	Non-Customer receives cash, receipt and pays fee.	RQ12, RQ22

Test Considerations	
Pre-steps	Establish Checking Account; Receive ATM card
Post-steps	Batch Daily ATM transactions for reports
Not tested	N/A
Dependencies	Reports

	Required Test Data
1	Checking account with balance
2	Debit Card
3	Pin Number
4	

Figure 16: Sample Test Case

7.4 Sample Test Script

RQM File Path	Test Script Name	Test Objective	RQ	Step #	Execution Day/Month	Input data	Activity	Entry Page	Test Condition	Expected Results	Execution Status/Date	Comments
Sample/Test	ATM-01 Test Script	**Test Objective:** Allow Customer and Non-Customer to withdraw cash from an ATM machine. **Pre-Conditions:** Customer and Non-Customer access accounts with debit card and Pin Number. **Dependencies:** Daily transaction reports. **Test Data:** Checking account, Debit card, Pin number.	RQ1 RQ2 RQ4 RQ5 RQ7 RQ8 RQ9 RQ10 RQ11 RQ12 RQ21 RQ22	1	1	Cust 1	Customer Withdrawal	ATM Home Screen	Swipe debit card.	Receive Message: Enter Pin Number.	Pass	
				2	1	Cust 1	Customer Withdrawal	PIN Screen	Enter Pin Number (4) Press Enter	Receive Message: Please select transaction.	Pass	
				3	1	Cust 1	Customer Withdrawal	Menu Screen	Click on Withdrawal	Receive Message: Checking or Savings.	Pass	
				4	1	Cust 1	Customer Withdrawal	Menu Screen	Click on Checking	Receive Message: Would you like a receipt. Yes/No	Fail	Defect 99
				5	1	Cust 1	Customer Withdrawal	Message Screen	Click on Yes	Receive Message: Enter amount of withdrawal.	Pass	
				6	1	Cust 1	Customer Withdrawal	Message Screen	Enter $35 (4) Press Enter	Error Message: Withdrawal must be in increments of $10. Please re-enter	Pass	
				7	1	Cust 1	Customer	Menu	Re-enter $40 (4)	Message: Take cash.	Pass	

Figure 17: Sample Test Script

7.5 Sample Test Report Listing

Rational Quality Manager (RQM) supports generation of predefined and customizable test reports that help report test progress and monitor test status. The following reports are predefined in RQM.

Figure 18: Sample RQM Test Report Listing

RQM also includes numerous reports that detail test script execution, score card, summary, and test case information as illustrated below.

Figure 19: Additional listing of RQM Test Reports

7.6   Rational Team Concert Release Notes Sample

Type	Id	DeliverySprint	Team	Summary	Status	Complexit	Due Date	Design Type
Development Request	2753	1	Track/Customer Portal	AFB_103_SUBMIT_Types_Of_Proof_V1_0	Deliver to Stream	Medium	42354.5	Screen flow
Development Request	5435	1	Track/Customer Portal	AFB_27_PEOPLE_Caretaker	Deliver to Stream	Medium	42075.77	Screen flow
Development Request	5251	1	Track/Customer Portal	LDAP Integration- User Authentication	Deliver to Stream	Complex	42065.5	Other
Development Request	5428	1	Track/Database Management	DCR - EDBC Page Script (FW_PAGE_DITNR)	Deliver to Stream	Medium	42054.5	Screen flow
Development Request	5249	1	Track/Customer Portal	AFB_DEFECTS	Deliver to Stream	Medium	42047.5	Other
Development Request	2337	1	Track/Conversion	EMPI Transformation and Load Modules	Deliver to Stream	Medium	42046.5	ETL
Development Request	2371	1	Track/Conversion	Develop and Test Reference Table Mapping framework	Deliver to Stream	Medium	42046.5	ETL
Development Request	4313	1	Track/Interfaces	PARIS:Send PARIS match request:Interface-Batch	Deliver to Stream	Medium	42046.5	Batch Progr
Development Request	4314	1	Track/Interfaces	PARIS:Send PARIS match request:webMethods	Deliver to Stream	Medium	42046.5	webMethod
Development Request	4316	1	Track/Interfaces	PARIS:Receive PARIS Federal match data:Interface-Batch	Deliver to Stream	Medium	42046.5	Batch Progr
Development Request	4318	1	Track/Interfaces	PARIS:Receive PARIS Federal match data - Details:Screenflow	Deliver to Stream	Medium	42046.5	Screen flow
Development Request	4321	1	Track/Interfaces	PARIS:Receive PARIS Interstate match data:webMethods	Deliver to Stream	Medium	42046.5	webMethod
Development Request	4327	1	Track/Interfaces	PARIS:Receive PARIS VA match data - Detail:Screenflow	Deliver to Stream	Simple	42046.5	Screen flow
Development Request	4317	1	Track/Interfaces	PARIS:Receive PARIS Federal match data:webMethods	Deliver to Stream	Medium	42046.5	webMethod
Development Request	4322	1	Track/Interfaces	PARIS:Receive PARIS Interstate match data - Details:Screenflow	Deliver to Stream	Medium	42046.5	Screen flow
Development Request	4325	1	Track/Interfaces	PARIS:Receive PARIS VA match data:webMethods	Deliver to Stream	Simple	42046.5	webMethod
Development Request	4326	1	Track/Interfaces	PARIS:Receive PARIS match data - Summary:Screenflow	Deliver to Stream	Simple	42046.5	Screen flow
Development Request	4320	1	Track/Interfaces	PARIS:Receive PARIS Interstate match data:Interface-Batch	Deliver to Stream	Medium	42046.5	Batch Progr
Development Request	4324	1	Track/Interfaces	PARIS:Receive PARIS VA match data:Interface-Batch	Deliver to Stream	Simple	42046.5	Batch Progr
Development Request	4244	1	Track/Interfaces	Department of Education:Send active FS/TANF recipients to DOE	Deliver to Stream	Simple	42046	webMethods
Development Request	4347	1	Track/Interfaces	EBTAS:Receive address update file from EBTAS:Interface-Batch	Deliver to Stream	Complex	42046	Batch Progr
Development Request	4348	1	Track/Interfaces	EBTAS:Receive address update file from EBTAS:webMethods	Deliver to Stream	Complex	42046	webMethod
Development Request	4349	1	Track/Interfaces	EBTAS:Receive address update file from EBTAS - Detail:Screen	Deliver to Stream	Complex	42046	Screen flow

Figure 20: Sample RTC Release Notes

7.7   Testing Track Requirement

Original Requirement ID	Name	Original Requirement Category	Revised Requirement Category	Original Requirement Description	Description	Status	Description of Non-Testable Requirement Fulfillment
F.14.5	F.14.5	User Interface Requirements	Quality Assurance	Employ a heuristic evaluation approach to identify usability issues with the User Interface.		Validated without change	Deliverable 14.2 System Test Scripts accounts for multi-language (English and Spanish) testing.
F.19.3	F.19.3	Quality Assurance	Quality Assurance	Provide small development cycles so that portions of functionality may be tested	Provide small development cycles so that portions of functionality may be tested in the development and unit testing phases, as defined in the project work plan.	Validated with change	Deliverable 14.1 Master Test Plan describes the plan to provide small development cycles so that portions of functionality may be tested in the development and unit testing phases, as defined in the project work plan.
F.19.5	F.19.5	Quality Assurance	Quality Assurance	Track issues from identification to resolution. Provide a repository of all test documentation including test scenarios and results.		Validated without change	Deliverable 17.1 Software Problem Resolution Plan describes how Deloitte and the State track issues from identification to resolution. The IBM Rational Suite is the repository of all test documentation including test cases/scripts and results.
F.19.1	F.19.1	Quality Assurance	Quality Assurance	Provide plans, scripts and results of unit, integrated, regression and stress tests	Provide plans, scripts and results of unit, integrated, regression, stress, conversion and infrastructure testing.	Validated with change	Deliverable 14.1 Master Test Plan describes the plan for unit, integrated, regression, stress, conversion and infrastructure testing. Deliverable 14.2 System Test Scripts provides the scripts and results of system integration testing. Deliverable 14.3 Testing Results Reporting provides the results of system integration testing. The IBM Rational Suite is the repository of all test documentation including test cases/scripts and results.
F.19.4	F.19.4	Quality Assurance	Quality Assurance	Provide conversion and infrastructure testing		Duplicate	Not applicable.
F.19.2	F.19.2	Quality Assurance	Quality Assurance	Provide systematic unit and development testing		Duplicate	Not applicable.

Table 33: Test Team Requirements

Deloitte.

17.1 Software Problem Resolution Plan Deliverable

Deloitte.

Document Control Information

Document Information

Document Identification	17.1
Document Name	Software Problem Resolution Plan
Project Name	██████████ ████████████████ (██
Client	████████
Document Author	████████
Document Version	1.7
Document Status	Revised
Date Released	11-04-2014

Document Edit History

Version	Date	Additions/Modifications	Prepared/Revised by
1.0	11-04-2014	Initial	████████
1.1	12-01-2014	Revised based on State comments	████████
1.2	12-02-2014	Revised based on State comments	██████████
1.3	12-03-2014	Revised based on State comments	████████
1.4	1-20-2015	Revised based on State comments	████████
1.5	1-27-2015	Revised based on State comments	████████
1.6	2-04-2015	Revised based on State comments	████████
1.7	2-11-2015	Revised based on State comments resolution discussion on 2/11/2015 and comments related to Action Item 282931	████████

Table of Contents

1 Introduction

1.1 Purpose

The Software Problem Resolution Plan documents the activities and process for handling problems within ███████ application software. The Software Problem Resolution Process defines the mechanism to document problems, track and manage across project phases, communicate status to stakeholders, and define and manage problem resolutions.

Problems may be identified and documented by any project team member during the System Development Life Cycle (SDLC) phases including the requirements, design, testing, training and implementation phases. Problem resolution is a cross-team effort coordinated by the Deloitte Test Team and State stakeholders using the integrated problem management capabilities provided by the Rational tool suite.

1.2 Scope

The following table summarizes the 'Software Problem Resolution Plan' deliverable scope as documented in the requirements of the ████

██ Requirements (Request for Proposal – ███████ (██ Section 4.7.17.1	Detailed Document Scope
All detected problems are reported and entered into the problem resolution process	Documenting Software Problems (Section 3)
Action is assigned for detected problems	Reviewing Software Problems (Section 4) Managing Software Problems (Section 5)
All relevant parties as defined by the State are advised of the existence of problem(s)	Managing Software Problems (Section 5) Reporting and Metrics (Section 6)
Problem causes are identified and analyzed, resolution and disposition are achieved and documented	Managing Software Problems (Section 5)
Status is tracked and reported to the State	Reporting and Metrics (Section 6)
Records of the problems are maintained, accessible and transparent to the State	Reporting and Metrics (Section 6)
When problems (including non-conformance) are detected in a software product or activity, a problem report shall be prepared to describe each problem detected. The report should be easily understood with non-technical language. The report shall include, but not be limited to, the following: • Detection of the problem (description and date) • Analysis and cause identification documented in easily understood non-technical language • Impact • Resolution of the problem and documentation updates • Methodology, including process updates • Trend detection and metrics across problems	Software Problem Attributes (Section 2.3)

1.2.1 Associated Requirements

State Responsibility

- Review and accept or reject Software Problem Resolution Plan
- Identify problems for resolution
- Participate in the resolution process
- Assign priority

Vendor Responsibility

- Prepare the Software Problem Resolution Plan
- Implement and execute the Software Problem Resolution Plan
- Identify problems for resolution
- Implement problem resolution prior to the completion of testing milestones and/or per Configuration Management Plan
- Track the status of problem resolution
- Assume the lead in any product related software issue resolution process
- Identify problem trends and make timely project process and plan corrections

1.3 Associated Deliverables

This document references the following deliverables:

- 1.2 Revised Project Management Plan
- 5.3 Requirement Change Control Plan
- 12.1 Software Development Plan
- 14.1 Master Test Plan
- 15.1 Quality Management Plan Appendix A
- 18.3 System Documentation

1.4 Deliverable Acceptance Criteria

Standard deliverable acceptance criteria are defined as part of the 1.2 Revised Project Management Plan deliverable, Deliverable Approval section. This document does not have additional acceptance criteria.

1.5 Deliverable Reviewer and Approver

Given the content of this deliverable, it is suggested that persons with the following subject matter expertise provide input to the review and/or approval:

- Project Management
- Test Management
- Project Systems Analysts
- Project Technical Analysts

The State holds the right to allow any stakeholder deemed necessary to review and approve the documentation.

1.6   Software Problem Resolution Objectives

To achieve timely response and resolution to project problems, Deloitte provides a structured software problem resolution process. The objectives of the software problem resolution process include the following:

- Enable the tracking of process and technology problems from the point of discovery until resolution

- Communicate the process to document, manage, and escalate problems identified during the SDLC phases including requirements, design, development, testing, training, and implementation

- Define the roles and responsibilities necessary to support the software problem resolution process; Facilitate software problem triage and root cause analysis by the Test and Application Teams

- Create a structured workflow and customized dashboard for the inflow and outflow of software problems raised during implementation as well as in production; The production workflow will be revisited prior to production implementation

- Establish a system to efficiently prioritize and categorize problems based on impact to overall system functionality

- Monitor and analyze the trends of problems reported through Rational Team Concert (RTC); Capture detailed software problem information to support calculation of testing and development metrics and enable trend analysis for ongoing process improvement

- Explain the use of RTC and Rational Quality Manager (RQM) for software problem resolution and management

- Support generation of software problem status and management reports

2   Software Problem Resolution Overview

Software and process problems may be identified by any team member throughout the SDLC phases including requirements, design, development, testing, and training, and implementation. Process and related work product problems are governed by the same process as application software problems. Process problems are resolved and managed by the ██ ██ project team. Problems with application software are facilitated and managed by the Deloitte Test team. Software problems may be identified during test phases conducted and/or supported by the Deloitte and State Test teams. The State and Deloitte test teams exercise ██ ██ system functionality using test scripts and document software problems when actual test results differ from scripted expected results.

The integrated suite of Rational tools supports comprehensive documentation and management of ██ ██ software problems. Rational Team Concert (RTC) is the primary repository for problem information. This tool supports the problem resolution process through planning, escalation, and closure.

Application software problems may be identified during test script execution using Rational Quality Manager (RQM). RQM serves as a hub for test execution and software problem resolution management, reporting, and traceability. Testers can log software problems during manual script execution within RQM using the direct RQM interface with RTC.

The Deloitte Test team facilitates management, resolution, and reporting for ██ ██ software problems that reside in RTC and RQM. Refer to the Deliverable 14.1 Master Test Plan for additional information about application software testing as it relates to software problem resolution.

The major steps and activities of software problem resolution include the following:

Step	Role	Activity
1	Problem Author	Log problem in RQM/RTC
2	Test Lead	Review problem to confirm it is documented correctly
3	Test Lead	Assign to test team member for resolution or application team member for further analysis
4	Application Team	Review problem and resolve if possible or assign to development team member for further analysis
5	Development Team	Review problem and resolve; reassign to test team for retest
6	Test Team or Resolving Team	Retest defect and close if resolved

Table 1: Software Problem Resolution High Level Steps

2.1   Software Problem Lifecycle

Problems are communicated and transparent to the State through periodic and ad hoc status reporting and configurable dashboard capabilities provided by Rational. Each software problem is retained for audit and reporting purposes. The problem management lifecycle is illustrated below.
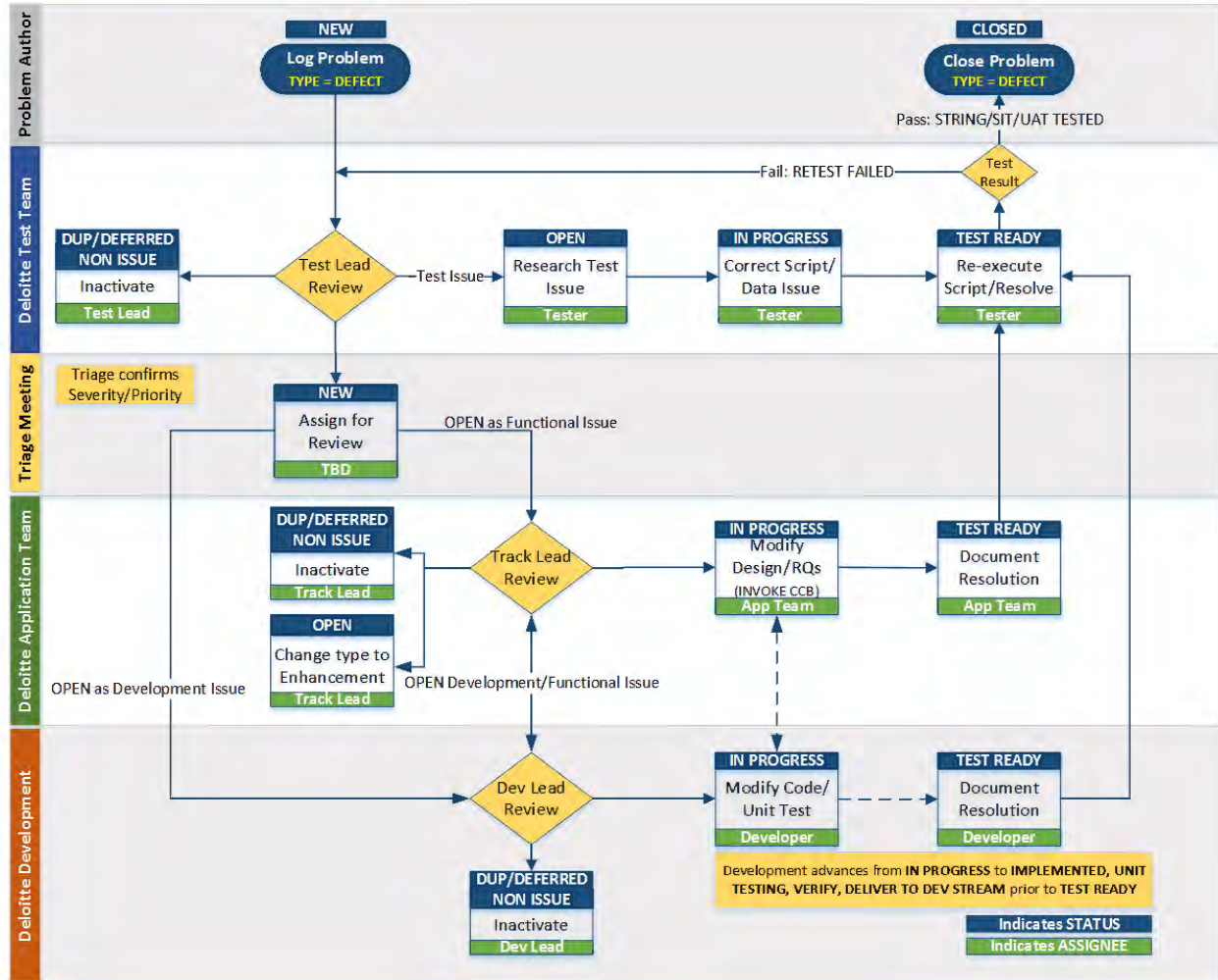
Figure 1: Software Problem Resolution Lifecycle

The software problem resolution lifecycle addresses the testing portion of the SDLC. The process to address production defects will be governed by the Operations and Maintenance processes defined for the Production implementation as defined in a later version of this document or as a part of 18.3 System Documentation.

Refer to Appendix 7.1 Software Problem Resolution Lifecycle Examples for additional information.

2.2   Software Problem Resolution Roles and Responsibilities

The following table identifies the role and responsibilities associated with the software problem resolution process.

Owner	Role	Responsibilities

Deloitte.

Owner	Role	Responsibilities
Deloitte	**Project Manager**	• Review Software Problem Resolution Plan • Coordinate resources for software problem resolution process • Participate in the Change Control Board process as requested • Confirm and serve as final decision maker for non-UAT defect severity and priority • Confirm UAT defect severity and priority as established by the State
Deloitte	**Application Manager**	• Review Software Problem Resolution Plan • Coordinate with application team leads to define consistent approach for resolving software problems • Work with the client project manager to define and prioritize project-specific requirements for the project's software management process
Deloitte	**Testing Lead**	• Assign team members to software problems, considering their availability, workload, subject matter knowledge, and level of authority • Provide insight into software problems from an impact to the overall ▮ solution perspective • Review and approve defect assignments and the design strategy for implementing the fix based on severity, priority, and applicable software problem resolution objectives • Track issues assigned to team members and escalate unresolved issues • Report on the status of software problems
Deloitte	**Tester**	• Execute test scripts and retest resolved defects • Support defect resolution process
Deloitte	**Track Lead/Application Team**	• Support defect triage and review • Support defect resolution process and assess/resolve issues related to requirements and design
Deloitte	**Development Lead/Developer**	• Support defect triage and review • Manage and execute development activities related to defect resolution • Define and implement defect resolutions including code and Unit Test
State	**Project Manager**	• Review and accept or reject the Software Problem Resolution Plan • Participate in the Change Control Board process as requested
State	**Test Lead**	• Define and implement State UAT Plan • Support defect triage and review • Assist in defining/confirming defect severity and priority for UAT defects
State	**Business Leads and Subject Matter Experts (State Testers)**	• Execute test scripts and retest resolved defects • Communicate software problems to the application manager and team leads • Review and approve proposed software problem resolutions and design approaches in a timely manner • Support go-forward processes based upon approved software fixes • Participate in the Change Control Board process as requested • Confirm and serve as final decision maker for UAT defect severity and priority

Table 2: Software Problem Roles and Responsibilities

2.3 Software Problem Attributes

Software problems should be resolved in an expeditious manner and it begins with a well written problem to minimize clarifications requested by the Deloitte Test Team and Application Team. Documented problems should be easily understood with non-technical language. Problem attributes shall include, but not be limited to, the following:

- Detection of the problem (description and date)
- Analysis and cause identification documented in easily understood non-technical language
- Impact
- Resolution of the problem and documentation updates
- Methodology, including process updates
- Trend detection and metrics across problems

RTC and RQM support documentation of software problems using the following attributes:

Attribute	Description	Input	Required?
Defect ID	Unique RTC identifier	Automated	Yes
Created By	User name of problem reporter	Automated	Yes
Summary	Brief description of problem	Manual	Yes
Description	Problem details including: • Test script executions details (RQM may prepopulate) • Action/steps that triggered problem • Problem scope (single/multiple components) if known • Problem impact (number of affected cases/records) if known	Manual	Yes
Owner	User name current problem owner	Manual	Yes
Team/Track	Areas of system ownership. Values currently include: Batch Benefits Management Business Services Conversion Customer Portal EDBC/BRMS EMPI Front Office Implementation Infrastructure Interfaces Notices PMO Program Specific Reporting Security Support Functions Technical Testing	Manual	Yes

Attribute	Description		Input	Required?
State	New	Default value assigned at creation	Manual	Yes
	Open	In review and analysis by project team member		
	In Progress	Problem correction is underway Note: Development team will advance from In Progress to Implemented, Unit Testing, Verify, and Deliver to DEV Stream prior to advancing to Test Ready		
	Test Ready	Correction has been made to the application or functional documentation. Problem resolution has been updated to reflect correction. Problem is ready for retest or review.		
	String Tested	Deloitte Test team has successfully re-executed String		
	SIT Tested	Deloitte Test team has successfully re-executed String and SIT		
	UAT Tested	State has successfully executed UAT. (Will revisit this process prior to UAT completion/██ ██ implementation.)		
	Retest Failed	Deloitte Test team has re-executed String/SIT and the reported problem is not fixed		
	Non Issue	No fix is required; comments or an explanation is provided (terminating status)		
	Duplicate	Problem has been reported multiple times; Duplicate is cross referenced to the original ID (terminating status)		
	Deferred	Problem is associated with a deferred requirement or application component and will be revisited at a future date as specified in comments and follow up date attribute		
	Closed	Resolution has been retested or reviewed and problem may be closed by author or their designee (terminating status)		
Version	Version of application component tested		Manual	Yes

Attribute	Description	Input	Required?
Planned For	Release expected to contain correction	Manual	No
Design Widget	Unique application component identifier	Manual	Yes
Script ID	RQM test script identifier associated with the defect. Rational integration capabilities enable automated linking from test scripts to defects when executed manually or automatically using RQM, RFT, or RPT. *Authors may capture problems manually in RTC. These problems may or may not be associated with a test script.	*Manual	*No
Creation Date	Date incident was reported	Automatic	Yes
Test Phase	Phase of testing where problem was discovered. Values include: Unit String SIT Performance Conversion UAT	Manual	Yes
Test Cycle	Values include: 1 – 10 (or as needed)	Manual	No
Priority	Urgency of effort to review and correct incident including:	Manual	Yes
	1 Critical — Serious or high volume impact		
	2 High — Significant impact that impedes processing		
	3 Medium — Requires correction but does not prevent productivity		
	4 Low — Minor cosmetic issue or misspelling		
Severity (Refer to Section 2.3.1 for full definitions)	A State-defined classification of a software error or fault based on an evaluation of the degree of impacts that error or fault has on the development or operation of a system.	Manual	Yes
	1 Emergency — System inoperable		
	2 Major — System restricted/unusable		
	3 Significant — Operational impact with workaround		
	4 Minor — Non-critical functionality unusable with workaround		
	5 Cosmetic — Visual flaw without system impact		
Resolution	Includes review comments. Provides an explanation of the problem solution.	Manual	No
Attachment	Screen shot or other supporting documentation	Automatic	No
Duplicate Cross Reference	Provides the Problem ID for the originally reported problem	Manual	No
Due Date	Target date to revisit or resolve problem. Tracked for reporting purposes to validate Deferred problems are monitored.	Manual	No
External Defect ID	Captures the identifier(s) for defects logged in an external tool or system such as by an interface partner.	Manual	No

Attribute	Description		Input	Required?
Trading Partner	Indicates which Trading Partner an interface defect is associated with. Values will include a dropdown value for each Trading Partner		Manual	No
Workaround	Indicator used when a workaround is associated with a problem Values include: Yes No N/A		Manual	No
Workaround Description	Provides a description of the workaround. For complex workarounds a supporting document may be attached to the problem.		Manual	No
Root Cause	Assessment of the underlying cause of the problem. Tracked for reporting purposes and identified as part of the problem resolution. Values include: Requirement Issue Code Issue Design Issue Environment Issue Deployment Issue Configuration Issue Test Script/Data Issue Conversion Issue		Manual	No
Problem Type	Defect	Application error or functionality that does not conform with requirements/design	Manual	No
	Enhancement	Any product change or upgrade that increases the application capabilities beyond original requirement/design specifications		
	Training	A problem requiring clarification or instruction to specific users or the user community		
	Process	A problem related to a process or work product defined by a process		

Table 3: Software Problem Attributes

Refer to Appendix 7.2 Sample Rational Software Problem Entry Screenshots for additional information.

2.3.1 Problem Severity

Software Problem Severity is agreed upon and documented during the triage meeting. Severity designations follow the ▮▮▮▮ criteria:

Severity Level	Description
1 Emergency	The system is totally inoperable, or the system, network, or application outage impacts many locations. No workaround exists, or the available workarounds unacceptable due to the impact on the business community.

Severity Level	Description
2 Major	Restricted operation, lack of system functionality or component, end user functions or portions of the system or network are down or unusable. No acceptable workaround or alternatives are available.
3 Significant	A component, application or procedure is down, unusable or difficult to use causing operational impact. An alternative workaround acceptable to the business is available.
4 Minor	A component or procedure that is not critical to the business is unusable. An alternative workaround acceptable by the business is available and deferred resolution is acceptable to the State.
5 Cosmetic	A component has some sort of visual inconsistency, display defect, formatting problem or other inconsequential defect that does not impact system performance or degrade operations.

Table 4: Problem Severity Levels

2.4 Software Problem Resolution Objectives

The Deloitte Test team works with the ██ Application teams and State stakeholders to monitor and manage the Software Problem Resolution process. Deloitte strives to achieve and maintain timely triage and resolution for identified software problems. The following objectives are defined as target resolution timeframes based on the problem severity and environment where the problem was identified.

Environment	Objective				
	1 Emergency	2 Major	3 Significant	4 Minor	5 Cosmetic
SIT	2 business days	5 business days	10 business days	15 business days	20 business days
UAT	1 business day	1 business days	5 business days	15 business days	20 business days

Table 5: Problem Resolution Objectives

These objectives are intended to provide targets to assist in prioritization and allocation of project resources. Deloitte monitors software problems to achieve timely resolution and support the Deloitte Test team's ability to conduct SIT and the State's ability to conduct UAT. We work with the State to address UAT problems associated with Smoke Test (of deployment) or test execution as part of the triage process. In the event of an Emergency or Major UAT problem, the State and Deloitte will evaluate options such as the following:

- Rollback to a previous version of code
- Redeploy to correct a deployment problem
- Schedule an emergency code release
  - o An expedited version of the promotion path defined in the 12.1 Software Development Plan Section 4.4 Code Promotion to Higher Environments

Deloitte strives to minimize the impact of open problems to the State UAT build and test execution schedule. This includes consideration of the number of blocked test scripts associated with a problem.

The software problem resolution objectives for Production will adhere to the defined Key Performance Standards (Exhibit 4 within the Contract) and will be addressed in a later version of this document or as a part of 18.3 System Documentation. The Performance Standards identified in Exhibit 4 within the Contract have been mutually determined to not apply to the Design, Development, and Implementation (DDI) phases of the project, which includes Testing.

A problem identified in SIT is considered resolved at the time it is successfully retested in the SIT environment and the Deloitte Test Lead reviews and closes the problem. A problem identified in UAT is considered resolved at the time it is successfully retested in the UAT environment and the State reviews and closes the problem. Deloitte collaborates with the State to assess problem severity and prioritize

resolution for problems according to business impact. Refer to Section 2.3.1 Problem Severity and the severity definitions provided in Table 4: Problem Severity Levels for additional information.

Problem severity and priority are confirmed during triage meetings facilitated by the Deloitte Test lead. The Deloitte ▮▮ team prioritizes problem resolution activities including problem research, triage, analysis, code/documentation modifications, testing, and deployment based on problem severity and priority.

3   Documenting Software Problems

This section describes the considerations for documenting a software problem and the major attributes the problem author will capture including a summary, detailed description of how the problem was generated, screenshot, and other supporting information.

Software problems are created using RQM/RTC during each test phase. The tester (or test tool) provides a summary of the software problem and completes each manual, required attribute as defined in Section 2.3 Software Problem Attributes.

3.1   Software Problem Documentation Considerations

Prior to reporting a software problem, it is important for the author to know what triggered the problem. Authors should ask questions such as:

- Does the problem happen to only one user?
- Does the problem only happen when specific data is entered and, when there are specific processes running at the time?
- Can the tester consistently reproduce the defect?
- Has the problem already been documented?

Authors strive to log unique software problems a single time. Testers are provided with a listing of open software problems by test phase to limit reporting of duplicate software problems. Testers may also search RQM/RTC as necessary to determine whether a problem was previously reported. Unique problems are created with a default status of New. UAT testers may find it necessary to wait until the end of a test cycle to reproduce a defect.

3.2   Information to Include in Software Problem

Software problems should be written in a clear and concise manner. As part of a problem discovery, the tester should:

- Take a screen shot (if applicable and exclude confidential information)
- Save the URL (if applicable)
- Record the test data
- Document what was being done when the defect happened
- Try to reproduce it

The content of the Software Problem is the most crucial. The content should have the following information:

- Detailed Description
- Steps to Reproduce
- Expected Result
- Actual Result
- Screen Shot (optional)
- Screen URL (optional)

In the "Steps to Reproduce", a person with knowledge of the system should have enough detail to adequately reproduce the problem. Precise detail is needed, such as indicating what the author

specifically entered when the problem occurred. If the problem occurred during test script execution, the author should copy the steps into the software problem. If the software problem depended on specific data, then the author should document the data used. The author should include the "Expected Result" and "Actual Result". Additional information can also be included in the description.

For example:

Description

Attempted to search for an Application and system returned no results.

Steps to Reproduce

Created and assigned application, application number "T123456789"

Select from left navigation: Application Registration, Maintain Application, Search application.

Entered case number "A123456789"

Selected "Search"

Expected Result

The system should have returned application in the Application Search Results

Actual Results

The system did not return application in the search results. See attached screen shot.

Additional Information

I tried several applications recorded today and several that were recorded on previous tests and the system still did not return the applications entered.

Screen URL

http://11.111.1.11:1111/ControllerServlet?REQUESTED_PAGE_ID=ARSAR

In certain cases, the author may need to provide additional information or the software problem may be reassigned for additional information as part of the triage and review process defined in the next section.

Screen shots may be attached as necessary to clarify the problem, as long as they do not contain PII. Each RQM/RTC problem is automatically linked to the associated RQM/RTC test script. In the event a problem is identified during informal, unscripted testing, the problem is logged with a comment that a new or modified script is required.

4 Reviewing Software Problems

Software problems undergo a review process beginning with the appropriate team lead and occurring as necessary by other ██ ██ project team members until a resolution is identified for each problem reported. Software problems are reviewed to confirm required fields are complete/correct, status and priority are correct, and the problem is correctly assigned for the next step in the resolution process.

A Test team lead reviews each software problem with a status of New to confirm the following:

- Required fields are complete and correct

- Status is set appropriately

- The problem is legitimate; assess need for further analysis

- Resolve incident within Test team if possible by correction of

    o Test script

    o Test data setup

    o Test execution parameters such as system date or batch execution order

- Priority and Severity are set appropriately

- Problem is associated to a test script; Assigns task to create or edit test scripts as necessary

- Reassign problem to appropriate team member if necessary for resolution

The Deloitte Test Team monitors RQM/RTC on an ongoing basis to perform software problem review and triage. RQM/RTC supports generation of email alerts as desired based on software problem activity. The Test lead may edit software problem attributes or reassign a software problem as necessary for correction or clarification. A State or Deloitte Test lead may resolve a software problem using a status of Closed, Duplicate or Non Issue as applicable depending on the environment where the problem was identified. Incidents unresolved by the Deloitte Test lead are assigned for further resolution activity. Subsequent reviewers may include test team, functional team leads/analysts, and development team members.

New defects are reviewed on a daily or weekly basis with representatives from the test, functional and development teams depending on the test phase/environment. This review is facilitated by the Deloitte test team. The review format may be internal to the test team or scheduled as a recurring cross-team meeting if necessary to expedite the triage process. The review format is driven by the test phase. Broader participation in triage meetings may be required depending on affected stakeholders such as State representatives and trading partners.

5 Managing Software Problems

Proper software problem management is critical to the testing phases. Software problem management involves more than logging problems; it involves monitoring problems throughout their lifecycle. Problems must be managed through to closure to avoid or minimize a software problem backlog. In addition, software problem management provides opportunities for analysis to identify patterns such as, modules with higher or lower expected number of issues, short or long turnaround time for fixes, larger or smaller number of invalid software problems, etc. The analysis provides the ability to identify corrective action or pursue a more in depth root cause analysis. Software problems may be associated with various root causes/errors including requirement, design, test script, test data, test environment, application software issues, etc. Problem causes are identified and analyzed; resolution and disposition are achieved and documented.

RQM/RTC users may monitor software problems through direct tool query, automated alert subscription, and published software problem reports. Each assigned problem owner is responsible to document their review comments and modify the software problem status as necessary. Application Team members may attribute a software problem to an error/omission related to a requirement or system design document and propose a resolution in RTC. The Track Lead/Development Lead may attribute a software problem to an error/omission associated with a development object and propose a correction in RTC. Example of software problem resolution notes for defects consist of information such as:

- Developer Name: <<developer who is fixing the defect>>
- Technical Description: <<describe what the defect is from a technical perspective>>
- Steps taken to Fix Defect: <<list steps to correct the defect >>
- Screenshots Attached: <<Yes/No, attachment name>>

The Deloitte Test Team reviews the resolution for each software problem created within a given test phase. Software problems identified as Test Ready are retested and closed by the Deloitte or State Test Team as appropriate based on test phase and author.

6 Reporting and Metrics

Once problems have been identified, assessed, and reviewed, they need to be monitored and reassessed regularly so they can be managed and reported effectively. Problems are recorded, identified, categorized, and communicated to project stakeholders using a variety of methods including:

- Recurring status meetings and triage sessions
- Problem dashboards
- Problem metrics tracking and analysis

All relevant parties as defined by the State are advised of the existence of problem(s). Software problems are stored for audit and reporting purposes. Records of the problems are maintained, accessible and transparent to the State.

6.1 Software Problem Reports

Rational Team Concert (RTC) and Rational Quality Manager (RQM) provide predefined and customizable reports and dashboard capabilities. The Deloitte Test team uses this reporting functionality to support generation of weekly status reports and test deliverables.

Key reports used to monitor software problem status include the following:

- Problem Summary by Track and Severity
- Problem Status by Track
- Test Script Status Linked to Problems
- Software Problem Aging Report

Refer to Appendix 7.3 Sample Software Problem Reports for a sample version of each report. Reports can be produced using the attributes defined in this document.

6.2 Software Problem Metrics

The Deloitte Test team calculates and tracks problem metrics to assess the effectiveness and efficiency of the software problem resolution process including the following:

- Component Defect Ratio – calculated as a count of unique problems per application component
- Problems Identified per Test Phase – calculated as a count of unique problems identified per Test Phase
- Fix Backlog – calculated as ratio of new to closed problems to identify growth rates

7 Appendix

7.1 Software Problem Resolution Lifecycle Examples

Sample Problem Resolution						
Scenario	Step	Status	Problem Type	Role	Assigned to	Comments
Typical Defect	1	New	Defect	Deloitte Tester	TBD	Tester logs problem and sets priority/severity
Typical Defect	2	New	Defect	Deloitte Test Lead	TBD	Test Lead reviews and assesses whether defect is documented correctly. Lead assesses whether a possible test issue or Status should be Non Issue, Deferred, Duplicate or requires triage. Test Mgr/Lead reviews priority/severity.
Typical Defect	3	Reviewed	Defect	Triage	TBD	Triage meeting formally confirms Status and Priority and assigns to appropriate team member for functional or technical analysis.
Typical Defect	4	Open	Defect	Deloitte Development Lead	Developer	Lead reviews and assesses whether defect is potentially Duplicate, Deferred, or Non Issue. If documentation is inadequate or unclear the problem can be reassigned to the Test Lead with a comment describing the clarification needed. Otherwise, the defect is assigned to a developer to resolve and Unit Test.
Typical Defect	5	In Progress	Defect	Deloitte Developer	Developer	Developer modifies code and performs Unit Test. Developer updates the resolution in the problem and documents Unit Test results per the Software Development Plan. Status values advance from In Progress to Implemented, Unit Testing, Verify, Deliver to DEV Stream and finally Test Ready
Typical Defect	6	Test Ready	Defect	Deloitte Developer	Test Lead	Developer assigns corrected defect to Test Lead.
Typical Defect	7	Test Ready	Defect	Deloitte Test Lead	Tester	Test Mgr reviews resolution and assigns to tester for system and/or performance test
Typical Defect	8	SIT Tested	Defect	Deloitte Tester	Test Lead	Tester retests the defect in String/SIT as applicable, updates Status to SIT Tested and assigns to Test Lead for closure (assuming UAT is not required).
Typical Defect	9	Closed	Defect	Test Lead	Test Lead	Test Lead reviews the defect, resolution, and any tester comments and closes the defect.

Figure 2: Problem Resolution Example for New Problem Successfully Resolved

Sample Problem Resolution						
Scenario	Step	Status	Problem Type	Role	Assigned to	Comments
Typical Defect	1	New	Defect	Deloitte Tester	TBD	Tester logs problem and sets priority/severity
Typical Defect	2	New	Defect	Deloitte Test Lead	TBD	Test Lead reviews and assesses whether defect is documented correctly. Lead assesses whether a possible test issue or Status should be Non Issue, Deferred, Duplicate or requires triage. Test Lead reviews priority/severity.
Typical Defect	3	New	Defect	Triage	TBD	Triage meeting formally confirms Status and Priority and assigns to appropriate team member for functional or technical analysis.
Typical Defect	4	Open	Defect	Deloitte Development Lead	Developer	Lead reviews and assesses whether defect is potentially Duplicate, Deferred, or Non Issue. If documentation is inadequate or unclear the problem can be reassigned to the Test Lead with a comment describing the clarification needed. Otherwise, the defect is assigned to a developer to resolve and Unit Test.
Typical Defect	5	In Progress	Defect	Deloitte Developer	Developer	Developer modifies code and performs Unit Test. Developer updates the resolution in the problem and documents Unit Test results per the Software Development Plan.
Typical Defect	6	Test Ready	Defect	Deloitte Developer	Test Lead	Developer assigns corrected defect to Test Lead.
Typical Defect	7	Test Ready	Defect	Deloitte Test Lead	Tester	Test Mgr reviews resolution and assigns to tester for system and/or performance test
Typical Defect	8	Retest Failed	Defect	Deloitte Tester	Test Lead	Tester retests the defect in String/SIT as applicable, and updates Status to Retest Failed and assigns to the Test Lead.
Typical Defect	9	Retest Failed	Defect	Deloitte Test Lead	Dev Lead	Test Lead reviews the defect, resolution, and any tester comments and assigns to the Development Lead for review.
Typical Defect	10	In Progress	Defect	Deloitte Developer	Developer	Developer makes necessary corrections. Developer modifies code and performs Unit Test.
Typical Defect	11	Test Ready	Defect	Deloitte Developer	Test Lead	Developer assigns corrected defect to Test Lead.
Typical Defect	12	Test Ready	Defect	Deloitte Test Lead	Tester	Test Lead reviews resolution and assigns to tester for system and/or performance test
Typical Defect	13	SIT Tested	Defect	Deloitte Tester	Test Lead	Tester retests the defect in String/SIT as applicable, updates Status to SIT Tested and assigns to Test Lead for closure (assuming UAT is not required).
Typical Defect	14	Closed	Defect	Test Lead	Test Lead	Test Lead reviews the defect, resolution, and any tester comments and closes the defect. The Test Manager generates periodic defect status reports.

Figure 3: Problem Resolution Example for New Problem when Retest Fails

Sample Problem Resolution						
Scenario	Step	Status	Problem Type	Role	Assigned to	Comments
Potential Enhancement	1	New	Defect	Deloitte Tester	TBD	Tester logs problem and sets priority/severity
Potential Enhancement	2	New	Defect	Deloitte Test Lead	TBD	Test Lead reviews and assesses whether defect is documented correctly. Lead assesses whether a possible test issue or Status should be Non Issue, Deferred, Duplicate or requires triage. Test Lead reviews priority/severity.
Potential Enhancement	3	New	Defect	Triage	TBD	Triage meeting formally confirms Status and Priority and assigns to appropriate team member for functional or technical analysis.
Potential Enhancement	4	Open	Defect	Deloitte Development Lead	Development Lead	Lead reviews and assesses whether defect is potentially Duplicate, Deferred, or Non Issue. The Deloitte Development Lead identifies this problem as an enhancement and updates the type from defect to enhancement. The Development Lead reassigns to the Application Team lead for consultation with Project Management as necessary.
Potential Enhancement	5	Open	Enhancement	Deloitte Application Lead	Application Lead	Application Lead researches enhancement and invokes the change control process. The status may be set to deferred as necessary with a target follow up date provided.
Potential Enhancement	6	Closed	Enhancement	Deloitte Application Lead	Application Lead	Upon successful creation of change control the Application Lead closes the enhancement. Enhancement will be incorporated and tested as part of planned or maintenance release.

Figure 4: Problem Resolution Example for New Problem Identified as an Enhancement

Sample Problem Resolution					
Scenario	Step	Status	Problem Type	Role	Assigned to	Comments
UAT Defect - Initial UAT Retest Fails	1	New	Defect	UAT Tester	TBD	State tester logs problem and sets priority/severity
UAT Defect - Initial UAT Retest Fails	2	New	Defect	Deloitte/State Test Lead	TBD	Deloitte/State Test Lead reviews and assesses whether defect is documented correctly. Lead assesses whether a possible test issue or Status should be Non Issue, Deferred, Duplicate or requires triage. State Test Mgr/Lead reviews priority/severity.
UAT Defect - Initial UAT Retest Fails	3	New	Defect	Triage	TBD	Triage meeting formally confirms Status and Priority and assigns to appropriate team member for functional or technical analysis.
UAT Defect - Initial UAT Retest Fails	4	Open	Defect	Deloitte Development Lead	Developer	Lead reviews and assesses whether defect is potentially Duplicate, Deferred, or Non Issue. If documentation is inadequate or unclear the problem can be reassigned to the Test Lead with a comment describing the clarification needed. Otherwise, the defect is assigned to a developer to resolve and Unit Test.
UAT Defect - Initial UAT Retest Fails	5	In Progress	Defect	Deloitte Developer	Developer	Developer modifies code and performs Unit Test. Developer updates the resolution in the problem and documents Unit Test results per the Software Development Plan. Status values advance from In Progress to Implemented, Unit Testing, Verify, Deliver to DEV Stream and finally Test Ready
UAT Defect - Initial UAT Retest Fails	6	Test Ready	Defect	Deloitte Developer	Test Lead	Developer assigns corrected defect to Test Lead.
UAT Defect - Initial UAT Retest Fails	7	Test Ready	Defect	Deloitte Test Lead	Test Lead	Deloitte Test Lead assign to a Deloitte Tester for String Test.
UAT Defect - Initial UAT Retest Fails	8	Test Ready	Defect	Deloitte Tester	Tester	Deloitte Tester executes String Test and advances the defect to String Tested if passed. (If String Test fails the defect will be updated to Retest Failed.) The Tester assigns the retested defect to a Test Lead for review.
UAT Defect - Initial UAT Retest Fails	9	String Tested	Defect	Deloitte Test Lead	Test Lead	Deloitte Test Lead schedules defect for SIT Test and assigns to Deloitte Tester.
UAT Defect - Initial UAT Retest Fails	10	String Tested	Defect	Deloitte Tester	Tester	Deloitte Tester executes SIT and advances the defect to SIT Tested if passed. (If SIT Test fails the defect will be updated to Retest Failed.) The Tester assigns the retested defect to a Test Lead for review.
UAT Defect - Initial UAT Retest Fails	11	SIT Tested	Defect	Deloitte Test Lead	Test Lead	Deloitte Test Lead reviews the defect and works with the State Test Lead to schedule UAT retest and assign to a State Tester
UAT Defect - Initial UAT Retest Fails	12	SIT Tested	Defect	State Tester	Tester	State Tester executes UAT and advances the defect to UAT Tested if passed. (If SIT Test fails the defect will be updated to Retest Failed.) The Tester assigns the retested defect to the State Test Lead for review.

UAT Defect – Initial UAT Retest Fails	13	Retest Failed	Defect	State Tester	State Test Lead	State Test Lead reviews the test performed and works with the Deloitte Test Lead to reassign/triage the defect as necessary.
UAT Defect – Initial UAT Retest Fails	14	Open	Defect	Deloitte Development Lead	Dev Lead	Development Lead reviews and assigns to a Deloitte developer if rework is required
UAT Defect – Initial UAT Retest Fails	15	In Progress	Defect	Deloitte Developer	Developer	Developer modifies code and performs Unit Test.
UAT Defect – Initial UAT Retest Fails	16	Test Ready	Defect	Deloitte Developer	Test Lead	Developer assigns corrected defect to Test Lead.
UAT Defect – Initial UAT Retest Fails	17	Test Ready	Defect	Deloitte Test Lead	Test Lead	Deloitte Test Lead assign to a Deloitte Tester for String Test.
UAT Defect – Initial UAT Retest Fails	18	Test Ready	Defect	Deloitte Tester	Tester	Deloitte Tester executes String Test and advances the defect to String Tested if passed. (If String Test fails the defect will be updated to Retest Failed.) The Tester assigns the retested defect to a Test Lead for review.
UAT Defect – Initial UAT Retest Fails	19	String Tested	Defect	Deloitte Test Lead	Test Lead	Deloitte Test Lead schedules defect for SIT Test and assigns to Deloitte Tester.
UAT Defect – Initial UAT Retest Fails	20	String Tested	Defect	Deloitte Tester	Tester	Deloitte Tester executes SIT and advances the defect to SIT Tested if passed. (If SIT Test fails the defect will be updated to Retest Failed.) The Tester assigns the retested defect to a Test Lead for review.
UAT Defect – Initial UAT Retest Fails	21	SIT Tested	Defect	Deloitte Test Lead	Test Lead	Deloitte Test Lead reviews the defect and works with the State Test Lead to schedule UAT retest and assign to a State Tester
UAT Defect – Initial UAT Retest Fails	22	SIT Tested	Defect	State Tester	Tester	State Tester executes UAT and advances the defect to UAT Tested if passed. (If SIT Test fails the defect will be updated to Retest Failed.) The Tester assigns the retested defect to the State Test Lead for review.
UAT Defect – Initial UAT Retest Fails	23	UAT Tested	Defect	State Test Lead	Test Lead	The State Test Lead works with the Defect author to facilitate defect closure.
UAT Defect – Initial UAT Retest Fails	24	Closed	Defect	State Test Lead	Test Lead	The State Test Lead facilitates defect closure and communicates the resolution.

Figure 5: Problem Resolution Example for UAT defect that fails retest in UAT

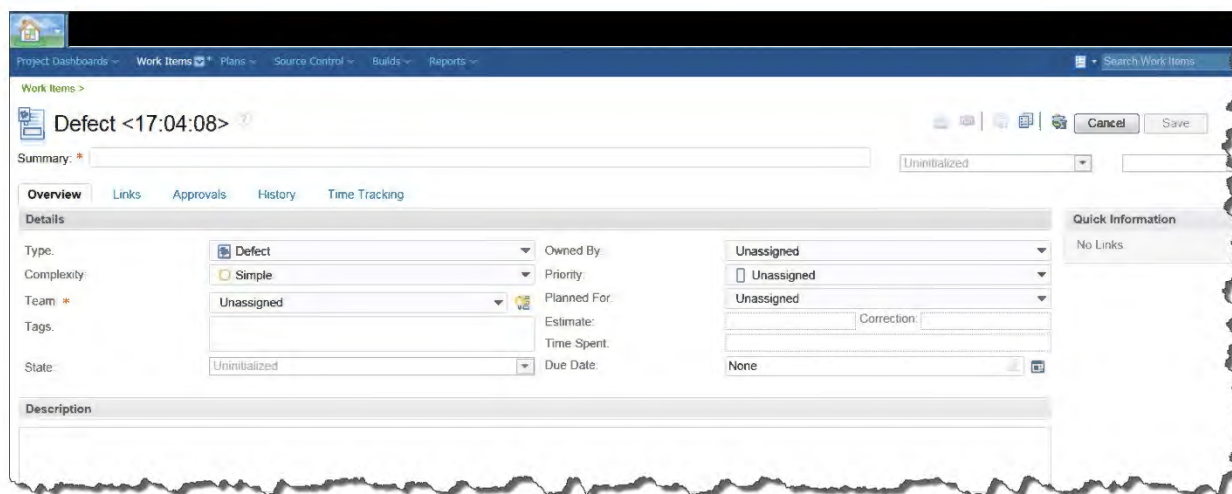## 7.2 Sample Rational Software Problem Entry Screenshot

Figure 6: Sample Rational Software Problem Entry Screenshot

Problems may be documented using customizable attributes using Rational Quality Manager (RQM) and Rational Team Concert (RTC) as illustrated in this sample.

7.3 Sample Software Problem Reports

ID	Problem Summary	Status	Assigned To	Severity	Track
1	"Required fields are missing Page 2 * Initiating FIPS code is missing" CD indicates that initiating FIPS code is not required.	New	T. Smith	2 Major	Customer Portal
2	Request Received and No Additional Information is necessary/ Additional Information needed (see remarks) check boxes. User should select one or other, not both.	New	T. Smith	3 Significant	Customer Portal
3	Discrepancy in button name on Screen and CD - Case Merge confirmation message displays OK	New	T. Smith	3 Significant	Customer Portal
4	Export to Excel Button noted in CD - option not available on Screen	New	T. Smith	3 Significant	Customer Portal
5	Change of Venue-No Grid as indicated on CD. Existing DR# is drop-down field. CD discrepancies	New	R. Dixon	3 Significant	Front Office
6	Change of Venue-INITIATE and TRANSFER screens. Required Fields	New	R. Dixon	2 Major	Front Office
7	Accept or Reject Change of Venue DR# Transfer discrepancy	New	R. Dixon	2 Major	Front Office
8	Error Message when Change of Venue-Receive screen clicked	New	R. Dixon	3 Significant	Front Office
9	Member merge confirmation message displays - CD screen identifies Yes button, Screen displays OK button	New	R. Dixon	4 Minor	Front Office

Figure 7: Sample Software Problem Report for Problem Summary by Track and Severity

Track	Problem Status											
	New	Open	In Progress	Reopened	Test Ready	SIT Tested	Retest Failed	Closed	Deferred	Non-issue	Duplicate	Subtotal
Benefits Management	1	3	0	0	1	2	1	2	1	0	0	11
Business Services	0	3	3	1	0	1	2	0	0	0	2	12
Conversion	3	7	8	1	0	0	8	0	1	0	3	31
Customer Portal	1	4	4	1	0	8	0	9	2	0	5	34
EDBC/BRMS	2	5	8	0	6	2	0	3	3	0	1	30
EMPI	3	3	3	0	1	1	2	0	0	8	0	21
Front Office	1	6	7	0	9	9	0	0	0	0	0	32
Implementation	0	0	0	5	1	6	0	0	0	0	0	12
Infrastructure	1	0	0	8	3	0	0	1	0	0	3	16
Total	**12**	**31**	**33**	**16**	**21**	**29**	**13**	**15**	**7**	**8**	**14**	**199**

Figure 8: Sample Software Problem Report for Problem Status by Track

Exec Date	Functional Area	Test Name	Type	Status	Tester	Problems
11/14/2014	Customer Portal	CUS013-01-RFT	AUTOMATED	Failed	R. Dixon	98
11/14/2014	Customer Portal	CUS037-01-RFT	AUTOMATED	Failed	R. Dixon	99
1/16/2014	Front Office	FRO002-01cdv1.4	MANUAL	Passed	R. Dixon	
1/16/2014	Front Office	FRO010-01cdv1.3	MANUAL	Passed	R. Dixon	
1/16/2014	Front Office	FRO032-01cdv1.3	MANUAL	Passed	R. Dixon	

Figure 9: Sample Software Problem Report for Test Script Status Linked to Problems

Status	Open Incident Age				
	0 - 30 days	31 - 60 days	61 - 90 days	Over 90 days	Subtotal
New	2	2	0	0	4
Reopened	1	0	1	0	2
Open	5	6	0	0	11
In Progress	2	6	1	2	11
Test Ready	4	5	0	0	9
SIT Tested	8	3	5	0	16
Total	**22**	**22**	**7**	**2**	**53**

Figure 10: Sample Software Problem Aging Report

7.4 Glossary

Term	Definition
Rational Functional Tester	IBM Rational Functional Tester is an automated functional testing and regression testing tool. This software provides automated testing capabilities for functional, regression, GUI, and data-driven testing.

Term	Definition
Rational Quality Manager (RQM)	IBM Rational Quality Manager is a collaborative hub for business-driven software and systems quality across virtually any platform and type of testing. This tool support manual testing and integrates with other Rational tools to support traceability, execute automated testing, and log and manage defects.
Rational Team Concert (RTC)	IBM Rational Team Concert provides collaborative change management capabilities used to store and version control ▮ software development lifecycle artifacts. Rational Team Concert is the primary repository for software problems.
Terminating Status	A status of the Software Problem Life Cycle that is final; terminates actions related to this software problem.
Triage	The review process for evaluating new software problems. This process includes a meeting with members of the Deloitte Test team, Application teams, and State stakeholders as applicable based on the test phase or environment. Problem severity and priority are confirmed during the triage meeting.

Table 6: Glossary of Terms

Deloitte.