State of Michigan (SOM)

Initiation Process for Commercial-Off-the-Shelf (COTS) Software Purchase

State Unified Information Technology Environment (SUITE)

Version 1.0

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Introduction

Purpose

This is the first guidebook in a series written for commercial off-the-shelf (COTS) and COTS-possible projects. This guidebook provides guidelines for steering a project from the planning and requirement steps to the completion of alternatives analysis, and recommendations to the project sponsors.

Second Guidebook

A second guidebook for COTS projects will detail the processes for purchasing and implementing projects when a COTS package is the selected solution.

Audience

This guidebook is written for project teams, business owners and sponsors, project managers (PMs) and DTMB information technology (IT) staff who are working on projects that may identify COTS software as the solution for business and technical requirements.

Assumptions

All State of Michigan (SOM) information technology (IT) projects use the Systems Engineering Methodology (SEM) and the Project Management Methodology (PMM) of the State Unified Information Technology Environment (SUITE).

SUITE Information

More information about SUITE, SEM, and PMM can be found at www.michigan.gov/suite. This guidebook assumes that the project team is using SEM and PMM methodologies, reference material, and templates.

Forms

The SUITE, SEM and PMM templates mentioned in this document can be found on the DTMB forms page (http://inside.michigan.gov/dtmb/wr/Pages/Forms.aspx).

The material in this guidebook does not replace any tasks in the SEM or PMM workflows.

Project Team

Throughout this document, extensive use is made of the term "project team." The project team consists of both technical personnel and key personnel from the business area. The composition of the team may actually vary during the course of the project, depending on when the services of team members are required. A project team typically includes:

- Project manager
- Key business area representatives
- Technical lead
- Developers
- Database administrator
- Business analyst

During the course of the project, other personnel will help with the work effort. These might include the project sponsor, the quality assurance group, usability experts, a technical writer, etc.

Process Overview

The process outlined in this document consists of the steps listed below. Each of these steps is described in greater detail in the remainder of this document.

1. Develop the Project Scope and Communication Plan
2. Document the Business Requirements
3. Document the System Requirements
4. Identify Options and Perform Alternatives Analysis
5. Create Recommendation Presentation

Step 1: Develop the Project Scope and Communication Plan

Goal

The goal of this step is to develop a mutual understanding between the business owner, users and DTMB about the scope of the proposed project. The result of this understanding is an approved scope statement.

In order to create a successful scope statement, it is important that the business partners (owner and users) provide input on processes and associated business rules.

Deliverables

Deliverables for this step are:

- Draft version of the as-is business process/workflow
- Project scope statement
- Project communication plan (PMM-0008)

This document provides a format for a simple scope statement. Please refer to Appendix B to view a sample scope statement. Ultimately the scope statement will be incorporated into the project charter (PMM-0002 form).

Getting Started

Begin to work on these deliverables as early as possible. They provide important content for deliverables in subsequent steps.

Draft As-is Workflow

Assign members of the project team to draft as-is workflow diagrams for the business process or processes that are in the scope of the project.

Include someone from the business who is currently involved in the process(es) and can articulate the process(es) and associated business rules.

The as-is workflow can range from a complex sequence of transactions to something simple. For example: the business user may show you the form that needs to be automated or the report generated, explain who touches the data along the way, and identify links to other information.

An example of an as-is workflow diagram is provided in Appendix A.

Draft Project Scope

It is the project manager's responsibility to develop the project scope statement. Involve both IT and business stakeholders early in the project to facilitate success and mutual understanding.

Complete the following tasks as part of the scope development process:

- If the process has already been automated, talk to the IT analyst responsible for maintaining the system. This may help you understand who the customers are and what methods work well in gathering useful information.
- Review all existing system and process documentation.
- Schedule a series of meetings between the business team and the project team for the purpose of developing the project scope statement.
- Be sure to include key stakeholders – a sponsor, business owner, subject matter expert, and staff who are currently involved in the process.
- Don't assume that everyone knows the same terminology. At an early meeting with the business team present, define the meaning of COTS, customized COTS, and in-house build.
- With the business owner and sponsor, answer the questions outlined in the table below. Please note that it will probably take more than one meeting to complete and confirm the answers. It is acceptable if you do not have answers to all of the questions.

Scope Contents

The project scope statement should include as much of the information listed in the table below as is available at the time. If some of the information listed here is not available at this stage, you may omit it.

Category	Scope Statement Content
Project Description	Describe the purpose(s) of the project
	Describe the process(es) that require(s) automation/replacement
	Using the as-is process diagram for reference, describe the scope of the document
	Include any known information about the project budget and funding for software and/or hardware, including any known funding for staffing.
Project Objectives	Indicate the reason for automating the process(es)

Category	Scope Statement Content
	Specify any pertinent legislative mandate
	Describe any time constraints for implementing a solution
Business Benefits	List key benefits to the State of Michigan
	Define the business need(s)
	Indicate the internal and external user communities who will benefit from the implementation of this system
Project Deliverables	List the deliverables for this phase – as-is and to be workflows, scope statement, alternatives analysis, RFP if appropriate, etc.
Out of Scope	What is out-of-scope for the project? What parts of the business are not included in this project?
Approvers	Business sponsor name(s)
	Business owner name (a.k.a., business project manager)

Step 2: Document the Business Requirements

Goal

The primary goal of this step is to develop a basis of mutual understanding between the business owner/users and DTMB regarding the requirements for a solution to a business need.

The result of documenting this understanding is an approved Requirements Specification (form SEM-0402). This is a key project document whether the decision is made to go with COTS or develop a different solution. In the case of a COTS solution, the Requirements Specification becomes the initial baseline for the purchasing process.

Deliverables

Deliverables for this step are:

- Approved requirements specification (SEM-0402). A sample SEM-0402 is provided in Appendix F on page 32.
- Readiness assessment
- Final version of the as-is business process/workflow
- Draft version of the to-be business process/workflow
- High level list of potential project risks (see sample risk plan in Appendix E)

Organize Early

This step requires the development and integration of many deliverables. The PM should plan and facilitate the development of the deliverables for accuracy and completeness. The outputs of this step are inputs into many tasks throughout the rest of the project.

Expand and Validate As-is Workflow

Use the following steps to expand and validate the as-is workflow that was drafted in step one.

Suggestions

Below are several suggestions for completing this step.

- Appoint sub-teams to take responsibility for drafting or completing various deliverables.
- DTMB recommends that the project team include a business analyst. The business analyst schedules facilitated sessions for defining business process details and later documents the requirements.
- Ask the business subject matter expert(s) (SME(s)) to verify that

the as-is draft process model includes all high level business processes in the scope of the project. Check this against the project scope document.
- Schedule meetings for a sub-team to develop (expand and document) the as-is draft into complete details and steps.
- Review any existing process and system documentation to ensure that all process elements are covered.
- Ask the SMEs for validation and approval of the expanded as-is workflow documentation.

Draft To-Be Business Process

Schedule meetings for the team to identify, document, and review the to-be business process workflow for the solution (COTS or other). Refine it to the same level of detail as the as-is flow.

Readiness

During this stage you should conduct an initial readiness assessment. A COTS Readiness Assessment Questionnaire is provided in Appendix C. The readiness assessment will help you identify both risks and business requirements for the project.

Requirements Identification Methods

There are many methods of identifying business requirements. You will need to determine which methods best meet the needs of your project and the personnel involved. It is possible that you will gather requirements using more than one identification method. Methods to consider using include:

- Interviews with stakeholders, particularly those who use the as-is business process regularly
- Facilitated sessions, during which you identify requirements and gain consensus from stakeholders
- Analysis of existing system documentation
- Questionnaires or surveys

Requirements Identification Participants

You should elicit requirements from representatives of all major stakeholder groups. This may include sponsors and managers, but should also include personnel who participate in the business process regularly and will use the resulting system. You should also communicate with technical stakeholders, including a system architect, infrastructure services personnel, DBAs, a technical lead, developers, etc.

Draft Requirements Specification

In addition to the guidelines provided in the state of Michigan Systems Engineering Methodology document, use the following tips for drafting the requirements specification document for projects where COTS is being considered.

- Remind the team that the approved Requirements Specification will be used whether the solution is COTS, in-house development, or enhancement of an existing system.
- Write with sufficient flexibility to accommodate a variety of available commercial products and their evolution.
- Display an adequate familiarity with the commercial marketplace to describe functional features for which actual commercial products exist.
- Enable awareness of the relationships among stakeholders and trade-offs among technology and product selection, requirement specification, and architecture definition.

Finalize Requirements

Once the requirements have been drafted, the business owners need to review them. The project team should discuss and make any needed revisions, additions, or deletions. When the requirements are finalized, the business owners will approve them in a structured walkthrough.

Risk Management

Although the processes described in this document do not yet qualify as a "project," it is important that you identify and document risks at a high level. The types of data you want to capture for each risk include:

- Date opened
- Created by (name)
- Risk description
- Comments
- Mitigation plan required (yes/no)
- Risk type and severity
- Risk response plan developed
- Date risk closed and reason for closing

A sample high-level risk plan is provided in Appendix E.

Step 3: Document the Technical Requirements

Goal of this Step

The goal of this step is to define and incorporate all technical requirements (software, hardware, performance, function, and infrastructure) into the SEM and PMM templates for the project.

The project team builds on the outputs of step two, analysis of business processes and needs, and translates those processes and needs into formal, technical requirements.

In this step you need to document the high level technical requirements as well as provide a descriptive listing of all possible linkages/interfaces between existing systems and the solution.

Also at this point, the team prepares to check the validity of its own work by designing testing activities to validate the performance of the selected solution.

Deliverables

Deliverables for this step are:

- An approved requirements specification (SEM-0402). A sample SEM-0402 is provided in Appendix F on page 32.

Develop Technical Requirements

DTMB Agency Services recommends that all projects, including those that are "COTS-possible," include technical requirements. For more information about developing technical requirements, please refer to the Technical Requirements Guide published by DTMB's Enterprise Architecture group. The technical requirements should be added to the SEM-0402 (requirements specification document) which was started during the business requirements step of this process.

Remember to use industry-standard language. Business and technical requirements should be communicated clearly to people outside SOM departments and agencies.

Critical Tasks

These tasks affect project outcomes, and should be accomplished at this point by the technical lead and other developers assigned to the project:

- Select requirements analysis technique
- Develop system test requirements
- Develop acceptance test requirements
- Establish functional baseline

More information is in the Testing Guidelines document available at http://www.michigan.gov/suite.

Replacing an Existing System

If the project involves replacing an existing system, use the following questions to help identify technical requirements:

Technical Requirements Survey: Replacing an Existing DTMB Supported System	
Data migration needs:	
	Identify the data that will need to be transferred
	Describe the data.
	How far back do you need to go?
System interfaces:	
	Specify existing systems that will need to be interfaced with the new application.
Security:	
	Identify all users, internal and external.
	Is sensitive data (i.e. social security number) involved?
Document Current Technology Environment:	
	Infrastructure
	Tools/Utilities
	Software Architecture
	Database
	Security Architecture
	State Standard Infrastructure (Technology Roadmap)
System Availability:	
	Is it a Red Card (critical agency business) application?
	Refer to Service Level Agreement between DTMB and agency to determine system availability requirements

Replacing a Manual Process

If the business/customer uses a manual process or an application they developed themselves (user developed application or UDA), use the following questions to open the process of drilling down to technical requirements:

Technical Requirements Survey: Non IT-Supported System	
Data migration needs:	
	Identify where the data is stored (for example, Excel spreadsheets, Access, data from external systems)
	What data needs to be transferred?
	Describe the data.
	How far back do you need to go?
System interfaces:	
	List all systems that may need to interface with this project.
Security:	
	Identify all users, internal and external.
	Is it sensitive data?
Document Current Technology Environment:	
	Infrastructure
	Tools/Utilities
	Software Architecture
	Database
	Security
	State Standard Environment

Schedule Touch Points	At this point, project scope and requirements are reasonably well defined. Initiate meetings where the project team will work with different specialists who can provide inputs on project status as well as current and future proposals. In other words, the project team will be meeting with subject matter expert(s) from current systems, database analyst(s), business analyst(s), and security specialist(s).
Step Summary/Key Points	The technical requirements developed during this step should be added to the requirements specification document (SEM-0402) created during step two. DTMB personnel should ensure that the technical requirements are communicated with the agency business owners.

Step 4: Identify Options and Perform Alternatives Analysis

Goals

During this step the project team researches and documents all feasible solutions, including:

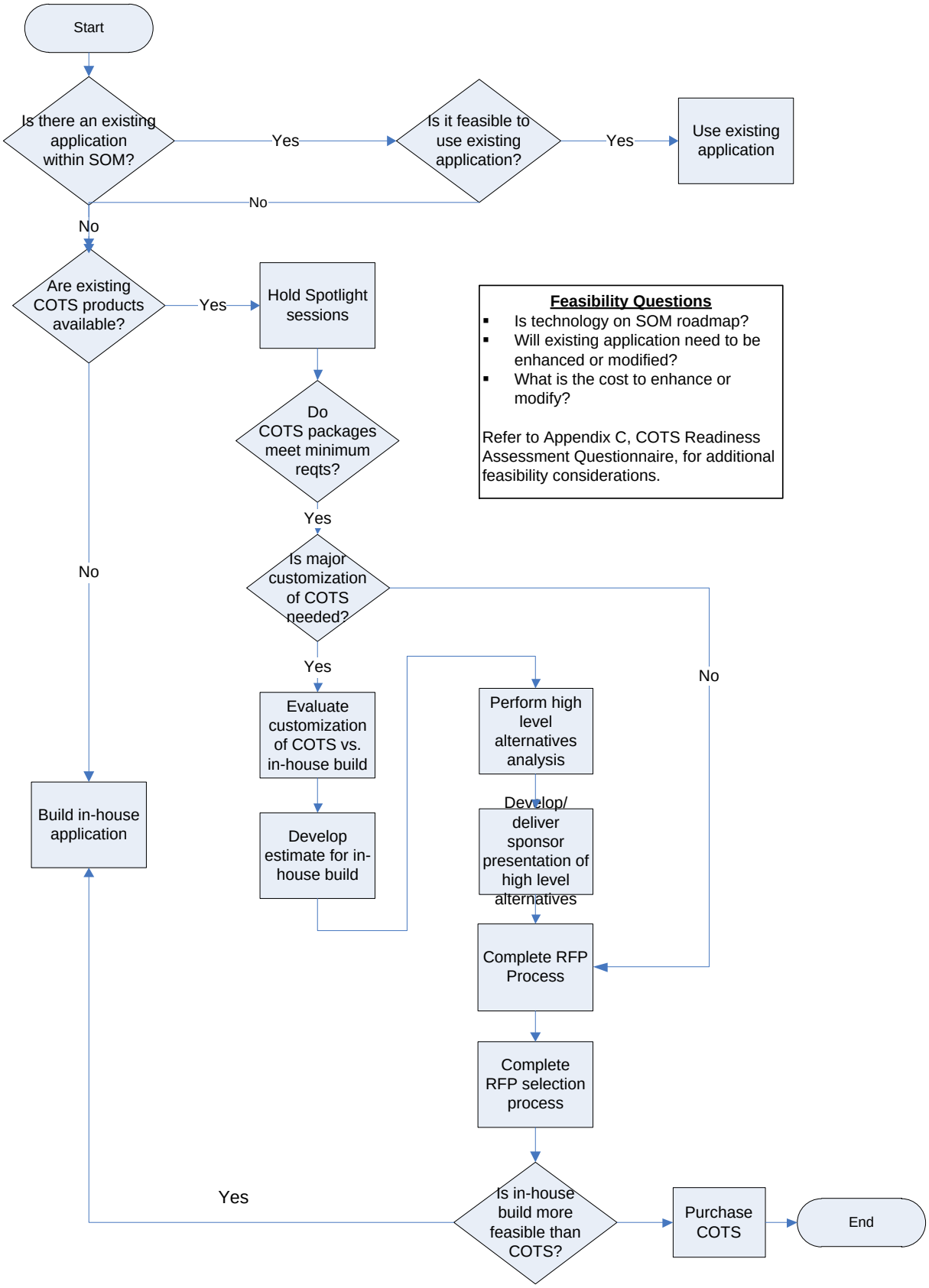
- Existing market offerings
- In-house built software
- Other state of Michigan applications that can be leveraged for this project
- An existing system within the agency that can be enhanced to fit the requirements

The final goal of the step is to determine which of the following is the appropriate solution:

- Prepare for COTS software purchase via the Michigan Master Computing Contract (MMCC) or request for proposals (RFP)
- Develop the system in-house
- Use an existing system, enhancing or modifying as necessary

Decision-Making Flow

The diagram provided on the following page summarizes activities at this step.


Start
Is there an existing application within SOM?
Yes
Is it feasible to use existing application?
Yes
Use existing application
No
No
Are existing COTS products available?
Yes
Hold Spotlight sessions
Feasibility Questions
Is technology on SOM roadmap?
Will existing application need to be enhanced or modified?
What is the cost to enhance or modify?
Refer to Appendix C, COTS Readiness Assessment Questionnaire, for additional feasibility considerations.
Do COTS packages meet minimum reqts?
Yes
No
Is major customization of COTS needed?
Yes
No
Evaluate customization of COTS vs. in-house build
Perform high level alternatives analysis
Build in-house application
Develop estimate for in-house build
Develop/ deliver sponsor presentation of high level alternatives
Complete RFP Process
Complete RFP selection process
Yes
Is in-house build more feasible than COTS?
Purchase COTS
End

Research Application Inventory

&

Enterprise Architecture Solution Assessments

Check the DTMB Application Inventory in Changepoint for existing applications with business functions that parallel project requirements. You may find additional information on the EPMO-PMO website (http://inside.michigan.gov/sites/dtmb/epmo-pmo/default.aspx).

Review Enterprise Architecture Solution Assessment (EASA) for potential solutions already approved by the EA Core Team.

Research and Analyze Market Offerings

Conduct market research including but not limited to the following activities:

- Search the Internet
- Obtain the Gartner statistics on what it costs to maintain any COTS package that merits consideration. (The state has a Gartner contract.)
- If your agency has a librarian, ask the librarian to help with querying other states
- Contact local and other state governments
- Contact local universities
- Contact non-profit business consortiums
- Leverage personal experience and contacts
- Identify, with the help of the business, vendors that are the leaders in this area

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Hold Spotlight Sessions

Use the SEM-0402, Requirements Specification to develop high level requirements to share with vendors participating in the Spotlight sessions.

- Working with DTMB Purchasing, contact vendors and provide them with the high-level requirements, including key highlights of what the project team will be looking for.
- Prepare an agenda for and schedule spotlight sessions.
- Invite (required attendance) representatives from the extended business and technical teams. Work with sponsors to identify other required attendees.
- Coach all Spotlight attendees to ask questions and take notes. The objective of Spotlights is research and demonstration of options in the

marketplace.

- Remember: Ask questions about the technical capabilities and costs/prices of the products presented at the Spotlights.

Estimate a New In-House Build	Based on the documented business and technical requirements, the project team should create an initial high level estimate for the time, resources, and money required to meet the business need by developing a system in-house.
Estimate Adapting an Existing System	Identify any existing in-house or in-state systems (for example, accounting or case management) that could be adapted/expanded/enhanced to meet the documented business and technical requirements. If the existing system seems like a viable option, the project team will create initial high level project estimates.
Estimate Total Cost of Ownership	For any possible solution, estimate the total cost of ownership (TCO). The TCO includes the initial capital outlay, development/customization/configuration cost, and the on-going maintenance costs. In addition to information from Gartner, look at budget/cost records for any similar, previous IT projects in your department.
Conduct Readiness Assessment	For any COTS package that might be recommended, the project team should complete the Technology portion of the COTS Readiness Assessment Questionnaire in Appendix C.
Develop an Alternatives Analysis	Develop an alternatives analysis using the format provided in Appendix D.
	Make the development of the alternative analysis an iterative process with input from a key business owner or key business sponsor, and the project team. This will help to ensure that all participants are in agreement with the choices and decisions that are made.

Step 5: Create Recommendation Presentation

Goal of this Step

The goal of this step is to create a presentation for the project sponsors. The presentation will provide details that illustrate due diligence and anticipate questions that sponsors and other decision-makers might ask.

The presentation will help the sponsors evaluate the options and decide whether to proceed with COTS or a different development solution to meet the business needs.

Note: Prior to developing presentation, ensure DTMB consensus for recommended alternative solution.

Suggested Contents for Sponsor Presentation
Showcase the scope statement, business and technical requirements.
Document the pros and cons of the features you saw in the COTS packages.
Document the configuration and/or customization required for implementation of the COTS package(s) discussed in the report.
Document the possible maintenance costs for the COTS package(s) discussed in the report.
Provide an estimate for developing/building in-house. State the pros and cons for this option.
If applicable, provide an estimate for enhancing/adapting an existing application. State the pros and cons for this option.
Discuss any potential risks that have been identified for the alternatives presented.

Once the sponsor presentation has been created, hold a meeting for all stakeholders during which the alternative analysis (with all options, pros and cons) and the DTMB recommendation to the project sponsors is presented and discussed.

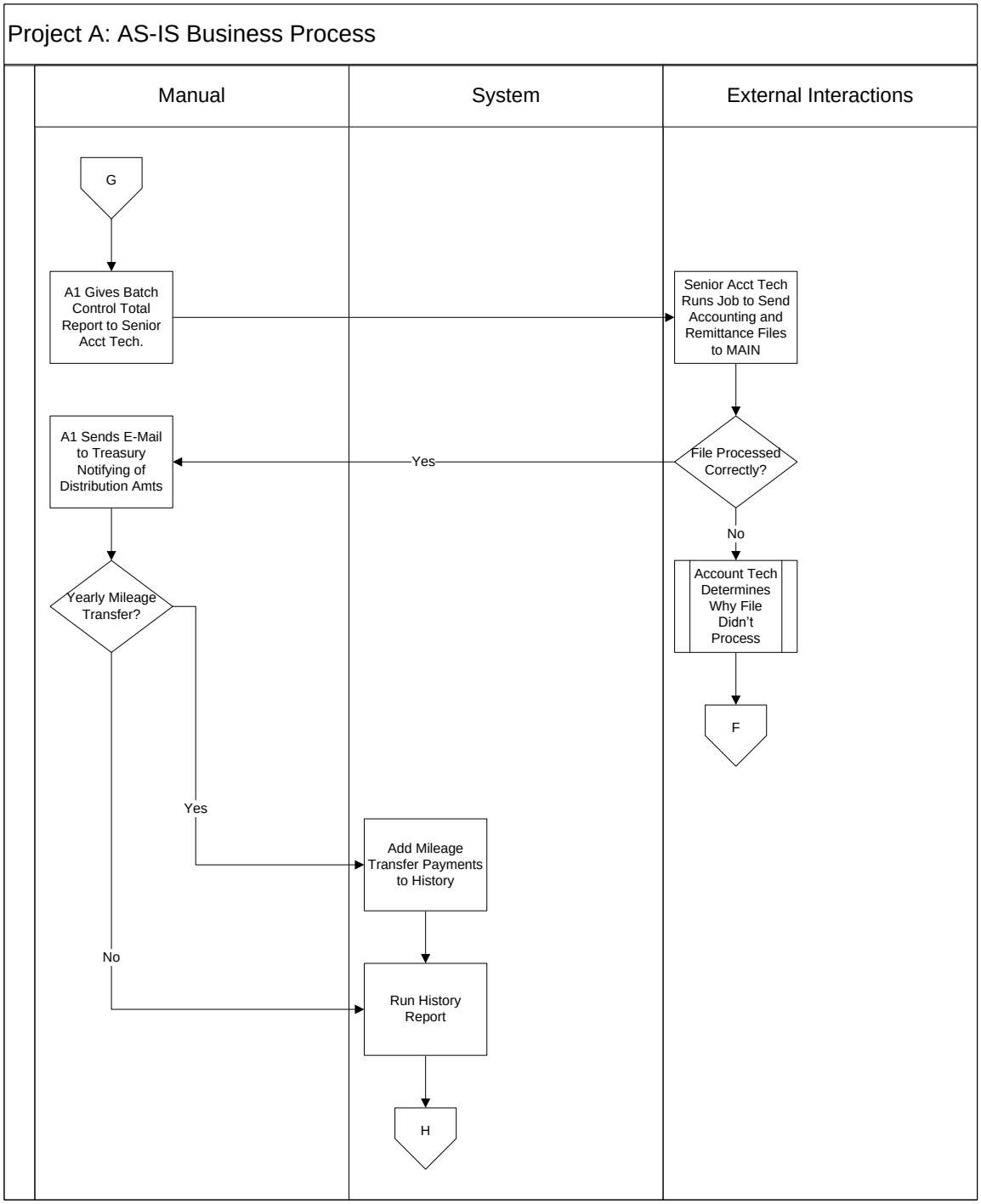
Document the Decision

When the sponsors have made a decision, complete the following tasks to position the team for the next phase of the project:

- Document the decision and the reasons given.
- Obtain signatures as needed.
- Update requirements as needed.
- If the decision is to buy COTS, develop a list of possible vendors.

Appendix A: Sample As-is Workflow Diagram

Please note that the following information is a sample of a workflow diagram. The information provided here will not necessarily be pertinent to your project. It is provided only as an example; it is not intended to be used as a template. Your agency may use a different format.



Appendix B: Sample Scope Statement from an Approved Project

Please note that the following information is a sample of a scope statement. The information provided here will not necessarily be pertinent to your project. It is provided only as an example; it is not intended to be used as a template. Your agency may use a different format. Some information has been removed for reasons of confidentiality.

Scope Statement

Project Name: Project B
Project Acronym: Project B
Project Sponsor: Project Sponsor
Business Owner: Business Owner Name
Technical Manager: DTMB Manager Name

Project Description

The application serves as an integral decision support tool to feed a comprehensive identification and scoping process and to provide a clear link showing how proposed actions support transportation objectives.

The application is designed as a single management system with six components or subsystems. These systems include: Bridge, Congestion, Intermodal, Pavement, Public Transportation, and Safety. This allows the application to include a common shared database, a common set of decision support tools and functionality, and the use of a robust and consistent user interface. Data collected, processed and maintained at the working levels are stored using an enterprise database management system.

The application is an existing department client/server application that has been around since 1996, developed using Sybase's PowerBuilder development platform. The purpose of this project is to evaluate the justifications for, and provide a recommendation on, moving the application, including 5 of the 6 sub-systems, off of the existing PowerBuilder platform and on to a newer technological platform.

Project Objectives

- Understand and document (at a high level) current application business functionality
- Identify and document any business or technology problems with the current application
- Identify and document business and decision support process improvements
- Identify and document technology improvements
- Identify and document shared components and services
- Identify consolidation possibilities with other systems (add functionality to or remove functionality from application)
- Identify other projects (existing or upcoming) that might affect future scope

- Provide a recommendation for conversion

Business Benefits

- Provides a plan to move to department approved technologies
- Provides a roadmap for conversion
- Identify repetitive services that could be used as common services
- Consolidate functionality within the application, and with external applications

Required Project Deliverables

- Provide Initiation and Planning documentation: Scope, Risk Management Plan, Project Schedule, Issues List
- Current situation analysis
- Analysis and recommendation document

Not in Scope

- Data conversion is not in scope for this project
- Detailed business and technical requirements are not in scope for this project
- Detailed cost estimates are not in scope for this project
- Design, Construction, Testing, and Implementation SEM stages are not in scope for this project

Signatures

Name / Title	Signature	Date
Project Manager		
Business Owner		
Technical DIT Manager		
Project Sponsor		

Appendix C: Sample COTS Readiness Assessment Questionnaire

This COTS Readiness Assessment Questionnaire is provided as a guideline only. There is no prescription for ensuring readiness, but the questions provided here may help your project team to think about issues and risks that may impair readiness. Many of the questions are subjective in nature and you will need to tailor these to ensure that they are appropriate for your agency and the scope of your project. For example, for each project you may wish to define more clearly the exact definition of terms such as "thoroughly," "very able," "poorly," etc.

COTS Readiness Assessment- Business Purpose	
1. How well are your agency's business processes documented?	
a.	Thoroughly—comprehensive, current documentation exists
b.	Moderately well—comprehensive documentation exists, but has not been updated recently
c.	Poorly—minimal documentation exists
2. Does your agency have the ability to adapt to the new business processes supported by the COTS product(s)?	
a.	Very able—there is a general understanding that the new business processes would enhance the agency's operation
b.	Somewhat able—there is a general understanding that the new business processes would not enhance or deter agency's operation
c.	Not able—there is a general understanding that the new business processes would deter agency's operation
3. How many business functions (e.g., accounting, procurement) are supported by the COTS application package(s)? Note that the greater the number of functions and complexity supported by the application, the greater the level of inherent risk.	
a.	Single function
b.	Few functions
c.	Many functions
4. How many COTS product(s) can accommodate your agency's requirements?	
a.	Many (more than 5)
b.	Some (3 or 4)
c.	Few (1 to 3)
5. In the agency where the COTS product(s) will be implemented, how would you characterize the need for the agency to respond to mandatory, quick changes (e.g., legislative changes)?	
a.	Demands for changes are limited and few
b.	Demands for changes are moderate
c.	Demands for changes are frequent and far reaching
6. Who will be responsible for identifying business processes affected by the COTS product(s) implementation?	
a.	End users (SMEs and business owners)
b.	IT analyst

COTS Readiness Assessment – Agency	
1. How many physical sites within your agency will be affected by the COTS product(s)?	
a.	One
b.	Several (2 to 4)
c.	Many (5 or more)
2. How would you describe the agency that will be affected by the COTS application package(s) implementation?	
a.	Single division
b.	Entire agency
c.	Several agencies within state/enterprise
3. How would you describe the project team's level of experience with implementing COTS solutions? (Note: This pertains to the DTMB and agency members of the project team, not vendor personnel.)	
a.	Extensive
b.	Some
c.	None

COTS Readiness Assessment - Technology	
1. Is the COTS application package a totally new system for the agency?	
a.	System is a replacement
b.	Components of the system are new
c.	New system
2. To adequately address your agency's needs, what is the level of customization required for the COTS product(s) baseline?	
a.	No customization necessary
b.	Some customization necessary
c.	Much customization necessary
3. How does the COTS application package(s) "fit" with the agency's existing and planned architecture?	
a.	Good fit
b.	May fit
c.	Not a fit
4. How would you describe the complexity of the interfaces between the COTS product(s) and other systems?	
a.	Simple
b.	Somewhat complex
c.	Very complex
5. How would you describe the sufficiency of documentation supporting the system(s) with which the COTS application package(s) will interface?	
a.	Thorough documentation
b.	Some documentation
c.	Poor documentation
6. To what extent has your agency tested COTS application package(s) in your environment?	
a.	Conducted extensive testing
b.	Conducted some testing
c.	Have not conducted any testing
7. Do the security features included in the COTS product(s) need modification to meet your agency's needs?	
a.	No modification needed
b.	Some modification needed
c.	Extensive modification needed
8. How well does the database design and structure of the COTS application package(s) support the planned use of the product and your agency's business functions?	
a.	Supports most requirements
b.	Supports some requirements
c.	Does not support requirements
9. How would you describe the run time performance of the COTS product(s) in your environment?	
a.	Very efficient
b.	Moderately efficient

COTS Readiness Assessment - Technology	
c.	Not efficient
10. How flexible is the design of the COTS product(s) to allow for future changes in functionality?	
a.	Very flexible—product functions can be easily separated to be modified
b.	Moderately flexible—product functions can be separated to be modified
c.	Not flexible—product functions can not be separated to be modified
11. How would you describe the existing telecommunications infrastructure's ability to support new configurations and processes?	
a.	Can support new configurations and processes
b.	Needs improvement
c.	Cannot support new configurations and processes
12. How much experience does the state of project team have with implementation of other COTS products? (Note: This pertains to the DTMB and agency members of the project team, not vendor personnel.)	
a.	Experienced with many COTS products
b.	Experienced with a few COTS products
c.	Experienced with no other COTS products

Appendix D: Sample Alternative Analysis Format

Please note that the following information is a sample of a format to be used for alternatives analysis. The information provided here will not necessarily be pertinent to your project. It is provided only as an example; it is not intended to be used as a template. Your agency may use a different format. Some information has been removed for reasons of confidentiality.

IT Project Information			
Date		**Project Acronym**	
Project Name			
Sponsor		**Business Area**	
Business Project Manager		**IT Project Manager**	

Purpose

This format assists with developing an alternative analysis and recommendation.

List All Alternatives

- Categorize project business requirements as mandatory or optional, and list in the left column of the table as shown. Use the requirements provided during to vendors for the Spotlight sessions. These should be high-level requirements, a "rolled-up" version of the full requirements.
- Enter the identified alternatives (solutions) across the in top row of the table as shown. E.g., COTS packages, in-house build, modified existing state application.
- Consider all research findings, and enter evaluations into the table as follows: M (meets), A (almost meets), or D (does not meet).

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Mandatory					
Requirement statement					
Requirement statement					
Requirement statement					
Requirement statement					
Requirement statement					
Optional					
Requirement statement					
Requirement statement					
Requirement statement					
Requirement statement					
Requirement statement					

Limit Alternatives

Analyze the rating table data, and limit the alternatives to the three or four most likely to achieve the project requirements efficiently, effectively, and economically.

Further Analysis

Once you have reviewed all alternatives and then narrowed the choices, complete the following Alternatives Analysis Solution Description for each of the remaining alternatives (if any).

Alternative Analysis Solution Description

Alternative Detail

1. Indicate the development approach for the proposed solution by placing an "x" in the box to the left of the selection. Check all that apply.

	Package Acquisition & Implementation (no modifications)
	Package Acquisition & Implementation (with modifications)
	Web/Internet/Intranet New Development
	Web Enable Existing System
	Migrate System from Intranet to Web
	Other Web/Internet/Intranet New Development
	Application Support Project (add enhancements to existing system)
	Client/Server New Development
	Other

2. **Alternative Description** Provide a detailed description of the proposed alternative. Be as specific as possible and include any proposed hardware/software that will be used (if applicable). Other items to consider are data migration, impacts on other systems, etc. Use the Requirements Definition Document to detail the requirements this alternative will satisfy and specifically describe how the requirements will be satisfied by the solution.

    a. **Description**

    b. **Requirements**

3. **Assumptions** List any assumptions made about the planning, development and implementation of this alternative, such as resource availability, infrastructure configuration, hardware availability, skill set availability, application support, etc.

    Resource Availability:

    Infrastructure Configuration:

    Hardware Availability:

    Skill Set Availability:

    Application Support:

    Other:

4. **Risks and Effects** Describe the risks and effects of the proposed alternative. You may not have information for every impact category.

    Program impacts Determine how the proposed solution will affect current program operations and new program requirements.

    Equipment impacts Determine how any new equipment requirements will affect current systems and whether technological risks, such as obsolescence, maintainability, availability, expandability, reliability, flexibility, and compatibility are a factor.

Software impacts Describe what additions, conversion, or modifications are needed on existing applications and support software.

Information impacts Determine how data will be affected, including accessibility, conversion, reformatting into database, and storage media.

Organizational impacts Describe organizational, schedule, accountability, personnel, and skill requirements risks and changes.

Operational impacts Set forth the effects on operations, such as user and operating center procedures; user/operator and other relationships; source data processing; data entry procedures; information storage, retention, and retrieval requirements; privacy; output reporting, media, and schedules; system failure and recovery procedures; and security and back-up requirements.

Developmental impacts Identify the effect of the development activity on current computing, staffing (including users), space, system security, and contractual support resources.

Space and facility impacts Describe the effect on space, both in terms of square footage and necessary modifications to facilities.

Cost impacts Set forth financial risks and factors that may affect developmental or operational costs and influence the development, design, and operation of the proposed system.

5. **Summary Statement** Provide a brief summary of the system's fit as the proposed solution.

Decision Criteria Table

Completing the Alternative Analysis Solution Descriptions should yield a recommendation and provide decision support information.

If additional factors need to be considered, you may want to use some variation on the following table.

- List the alternatives in the left column of the table.
- Specify the additional factors across the top row of the table as shown.
- Enter evaluations into the table as follows: M (meets), A (almost meets), or D (does not meet).

	Meets minimum business req'ts	Complexity of interface	Uses currently acceptable technology	Available by required implementation date	High availability, reliability, maintainability	Minimal resources required	Central relational database
Alternative 1							
Alternative 2							
Alternative 3							
Alternative 4							

Appendix E: Sample Risk Summary

Please note that the following information is a sample of a risk summary used for a project completed at a state of Michigan agency. The information provided here will not necessarily be pertinent to your project. It is provided only as an example; it is not intended to be used as a template. Your agency may use a different format. Some terminology will not be appropriate for your agency, and some information has been removed for reasons of confidentiality.

Grant Funding Application System for Transportation
High-Level Risk Summary

Project Information			
Project Name	Grand Funding Application System for Transportation – Phase I		
Project Acronym	GFAST	**Plan Creation Date**	*date*
Office or Division	*Office or division name*	**Plan Modification Date**	*Date*
Business Owner(s)	*Name(s)*	**Project Manager**	*Name*
Automation Manager(s)	*Name(s)*	**Technical Lead**	*Name*
Business Sponsor(s)	*Name(s)*	**DTMB Manager**	*Name*

Executive Summary

Managing risk is a key factor in the success of a project. The objectives of this risk management plan are to:

- Document the risks associated with the project.
- Document the potential impact on the project.
- Formulate an action plan to eliminate or minimize the risk.
- Formulate a contingency plan of action to be taken if the risk cannot be prevented or minimized.
- Communicate the risks to business owners and project sponsors to obtain direction, ownership, and support.

For each risk, the likelihood that the risk will occur is estimated as a percentage. A value is assigned based on a range of percentages.

Probability Percentage	Probability Value
> 80%	5
61% - 80%	4
41% - 60%	3
21% - 40%	2
0% - 20 %	1

For each risk, an impact description is selected from the following table. The corresponding value is assigned to the risk.

Impact Description	Impact Value
Mission can't be accomplished	7
Severe effect on performance	5
Moderate effect on performance	3
Slight effect on performance	1

Project Risk Summary

This step summarizes the risks that have been identified for this project. The risks are listed in the table below, in order by risk value.

Risk ID	Description	Risk Value	Risk Prob.	Risk Impact (1 – 7)
6	The MGS project needs to be in production when we move GFAST into production. MGS is currently delayed waiting for MFOS and MPINS to approve requirements and design. Current issues are: MAP – new field MPINS – changes and testing MFOS – changes and testing	35	5 (> 80%)	7 (Critical)
5	GFAST functionality will be integrated with the MGS functionality creating one application. MGS is currently owned by the Planning team and GFAST is owned by the Executive bureau. MGS also relies on a Financial interface. Historically it has been difficult to successfully coordinate the design, development, and testing between these groups.	20	4 (61% - 80%)	5 (High)
7	GFAST will populate the MGS tables when a grant is approved. It may not be possible to develop business and technical process to keep the two applications in sync without storing the same data in two places.	15	3 (41% - 60%)	5 (High)
11	Detailed requirements for Reports and Survey were not completed during Functional Design. These need to be finalized before System Design is complete to allow for an accurate estimate of effort and schedule.	15	3 (41% - 60%)	5 (High)
4	The data conversion effort may be complex for this project. Some data will require cleanup, some existing data may not be needed and will require a plan to archive or drop and some new data fields may be required will requires a set of business rules for initial population.	15	3 (41% - 60%)	5 (High)
9	Adobe FlashBuilder (FLEX) is a new toolset to be used for the GUI for GFAST. Training time and understanding how this will integrate into the overall system design will add delay to the schedule.	15	5 (> 80%)	3 (Medium)
3	The business teams may not be able to agree on the common functionality and business process used for all grant programs.	9	3 (41% - 60%)	3 (Medium)

Risk ID	Description	Risk Value	Risk Prob.	Risk Impact (1 – 7)
1	Technical resources with the appropriate technical skills and a working knowledge of the grant management business processes may not be available for the duration of this project.	9	3 (41% - 60%)	3 (Medium)
8	Staff changes between Functional Design and System Design include project manager and technical lead roles. This transition will add a delay in the expected time to complete System Design.	9	3 (41% - 60%)	3 (Medium)
2	The business team may not be available to participate in the Requirements Definition and Functional Design stages as needed to meet the schedule.	0		

Appendix F: Sample Requirements Specification

An example of an SEM-0402, Requirements Specification, is provided beginning on the following page.

State of Michigan
Property Damage Reclamation Process (PDRP)
Requirements Specification

General Information

System or Project ID / Acronym:	PDRP	***Creation Date:***	10/25/2011
Client Agency:	Michigan Department of Transportation (MDOT)	***Modification Date:***	11/28/2011
Author(s):		***DTMB Authorized by:***	

Privacy Information

This document may contain information of a sensitive nature. This information should not be given to persons other than those who are involved with this system/project or who will become involved during its lifecycle.

Change Control

The following information is to be used to control and track changes made to this system/project document throughout its lifecycle.

Revision Date	Author	Section(s)	Summary
10/25/2011	Lisa Craven	All	Initial creation
11/4/2011	Lisa Craven	All	Updates after initial MDOT Team Review.
11/9/2011	Lisa Craven	Business Sections 1, 2, 3, and 8	Updates after Requirement Validation Sessions
11/28/2011	Lisa Craven	All	Updates after QA/UX review.

Table of Contents

1. Overview

This document contains the requirements for moving the existing functionality in TCRS that supports PDRP to a PDRP Web site. This project is considered "platform to platform" activities.

Requirements are statements of business problems and/or needs in as much detail as will fully explain the problems and/or needs. Requirements are NOT statements of a solution to a problem or need. Requirement elements may include business, functional and technical detail. Each requirement must be stated as a unique objective that is:

Necessary (i.e., absolute requirements that are to be verified are identified by "must" or "shall").
Correct (i.e., an accurate description of a feature or process).
Unambiguous (i.e., can have only one interpretation).
Complete (i.e., answers the questions who, what, when, where, why, and what if).
Consistent (i.e., is not in conflict with other requirements).
Verifiable and Testable (i.e., is stated in concrete terms and measurable quantities. Can be used to create one or more clear tests to verify the requirement has been met).
Modifiable (i.e., the structure and style of the requirement are such that any necessary changes to the requirement can be made easily, completely, and consistently).
Traceable (i.e., the origin is clear and can be tracked in future development activities and tests).

Use the Requirements Traceability Matrix (SEM-0401) to trace the requirements.

1.1 Glossary

Some terms used within the requirements may not be familiar to individuals new to the business process. These terms are defined here to assist with the understanding of the requirements.

Term	Definition
443	MDOT Report of Department Property Damage Form
CMDCC	Central Maintenance Damage Claims Coordinator
DCH/SSO	Department of Community Health / Single Sign On
MDOT	Michigan Department of Transportation
MSP	Michigan State Police
PDRP	Property Damage Reclamation Process
TCPS	Traffic Crash Purchasing System
TCRS	Traffic Crash Reporting System
TSC	Transportation Service Center
UD	Uniform Division
UD10/UD10E	MSP UD-10 State of Michigan Traffic Crash Report. Can be paper or electronic.

2. Business Requirements Detail

Items to consider:

Performance
Business Continuity
Further information on Business Continuity can be found on the DR Planning tab of the Enterprise Architecture Solution Assessment Worksheet by clicking on the link below. **NOTE: You must be logged into the State Network for the link to work.**
Enterprise Architecture (EA) Solution Assessment Worksheet
Data Archiving
User Interface / Access
Reporting
Preliminary Implementation
System Interface

Business Req. No.: The requirement number should be a sequential number (i.e., 1.0, 1.1, 1.2). To create further detail, break numbering down by extending the decimal place (i.e., 1.1.1, 1.1.2 below 1.1). To add a new requirement, select the next sequential whole number (i.e., 2.0, 3.0).

Priority: 1 = Mandatory (Must Have)
2 = Preferred (Improves Business Process)
3 = Optional (Nice to Have)

Source: JAD Sessions, agency policy, State and Federal law, interviews, facilitated sessions, rapid prototyping, individuals or organizations, etc.

Status: A = Approved
N = Not Approved

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
1	Add security processing for state property damage users to the PDRP application.	1	F	PDRP Existing Requirements			The term "user" used throughout this document refers to an individual who is authorized to perform the described action. Further clarification about user roles/groups can be found in the security matrix.
1.1	PDRP will define a PDRP administrator group to current security groupings.	1	F	PDRP Existing Requirements			
1.1.1	PDRP administrators can create reclamation work list records by verifying a TCRS crash includes state property that was damaged in the state property damage work list or by using the create PDRP process described within requirement 4.0.	1	F	PDRP Existing Functionality			
1.1.2	PDRP administrators can assign reclamation work list records to the appropriate coordinators or facilities.	1	F	PDRP Existing Requirements			
1.1.3	PDRP administrators can match created reclamation work list records to TCRS crashes.	1	F	PDRP Existing Requirements			.The term "match" used throughout this document refers to damages for crashes need to be associated with repairs.

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
1.1.3.1	PDRP administrators can modify TCRS crash records in the work list can only when they have not been matched to a reclamation or the reclamation is at a New status.	1	F	PDRP Existing Functionality			
1.1.4	PDRP administrators can create or update all assignment detail records and attached 443 records.	1	F	PDRP Existing Requirements			The official MDOT form used to report repair cost is called a 443. 443 can refer to records, forms, or cost throughout this document .
1.1.5	PDRP administrators can view Invoice information associated with a reclamation.	1	F	PDRP Existing Requirements			
1.1.6	PDRP administrators can view and print UD10's for the selected PDRP crashes.	1	F	PDRP Existing Requirements			
1.1.7	PDRP administrators can execute the following reports: Turn Around Time, Assignment Statistics, Damage Claim Cost, Recovery Statistics, and Aging.	1	F	PDRP Existing Requirements			
1.2	PDRP will define a PDRP user group to current security groupings.	1	F	PDRP Existing Requirements			
1.2.1	PDRP users cannot create reclamation work list records.	1	F	PDRP Existing Requirements			
1.2.2	PDRP users can assign reclamation work list records to which they have been assigned.	1	F	PDRP Existing Requirements			Assignments can be done to any facility or group below the assignors security level setting and within their location area. Assignments cannot be done at the same or higher security level. For example, a region cannot assign to another region.
1.2.3	PDRP users cannot match created reclamation work list records to TCRS crashes.	1	F	PDRP Existing Requirements			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
1.2.4	PDRP users can create or update assignment detail records & attach 443 records to reclamation records within their area, at or below their security level.	1	F	PDRP Existing Requirements			
1.2.5	PDRP users can view and print UD10's for all PDRP crashes to which they are assigned where a UD10 exists on the system.	1	F	PDRP Existing Requirements			
1.2.6	PDRP users can execute the following reports: Assignment Statistics, Damage Claim Cost, Recovery Statistics, and Aging.	1	F	PDRP Existing Requirements			
1.3	PDRP will limit all users in the PDRP user group from accessing information and records outside of their defined work or location area.	1	F	PDRP Existing Requirements			Security Levels: 1 – CMDCC 2 – Region 3 – TSC 4 – Facility 5 - Finance
1.4	A PDRP reporting group will be provided.	1	F	PDRP Existing Requirements			
1.4.1	PDRP reporting role/group cannot create reclamation work list records.	1	F	PDRP Existing Requirements			
1.4.2	PDRP reporting role/group cannot assign reclamation work list records.	1	F	PDRP Existing Requirements			
1.4.3	PDRP reporting role/group cannot match created reclamation work list records to TCRS crashes.	1	F	PDRP Existing Requirements			
1.4.4	PDRP reporting role/group cannot create or update assignment detail records or 443 records.	1	F	PDRP Existing Requirements			
1.4.5	PDRP reporting role/group cannot view or print UD10's.	1	F	PDRP Existing Requirements			
1.4.6	PDRP reporting role/group can execute the following reports: Assignment Statistics, Damage Claim Cost, Recovery Statistics, and Aging.	1	F	PDRP Existing Requirements			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
1.5	A PDRP financial security level will be provided within the PDRP User role/group.	1	F	PDRP Existing Functionality			
1.5.1	Financial role/group cannot create reclamation work list records.	1	F	PDRP Existing Functionality			
1.5.2	Financial role/group cannot assign reclamation work list records.	1	F	PDRP Existing Functionality			
1.5.3	Financial role/group cannot match created reclamation work list records to TCRS crashes.	1	F	PDRP Existing Functionality			
1.5.4	Financial role/group cannot create or update assignment detail records or 443 records.	1	F	PDRP Existing Functionality			
1.5.5	Financial role/group can view or print UD10's.	1	F	PDRP Existing Functionality			
1.5.6	Finance can execute the following reports: Assignment Statistics, Recovery Statistics, and Aging.	1	F	PDRP Existing Functionality			
1.6	The system must provide a role that allows for the overriding of a user's security level.	1	F	PDRP Existing Functionality			
1.6.1	Users with the Override role can change their security level to one of the following: Statewide (1), Region (2), TSC (3), Facility (4), or Finance (5).	1	F	PDRP Existing Functionality			
2	Add a PDRP state property damage work list which allows individuals with CMDCC security level the ability review TCRS crash records and to mark them as reclamations when appropriate.	1	F	PDRP Existing Functionality			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
2.1	The system must automatically assign all crash records marked as state property damage to the Central Maintenance Damage Claims Coordinator (CMDCC) resulting in these records being queued to the state property damage work list for processing.	1	F	PDRP Existing Requirements			
2.2	The system must provide the ability to suggest possible reclamations for TCRS crashes in the work list that are not already matched to an existing reclamation.	1	F	PDRP Existing Functionality			
2.3	The user can select a potential TCRS crashes to match created reclamation.	1	F	PDRP Existing Functionality			
2.4	The user can mark the Property Damage field for TCRS crashes in the work list as Potential, Yes, or No.	1	F	PDRP Existing Functionality			
2.4.1	The user can only modify TCRS crashes in the work list when they have not been matched to a reclamation or the reclamation is at a New status (changing property damage field from Yes to No or Potential).	1	F	PDRP Existing Functionality			
2.5	The user can search and display the TCRS crashes using the state property damage work list.	1	F	PDRP Existing Functionality			
2.5.1	The user can search for records which fall within a defined date range.	1	F	PDRP Existing Functionality			
2.5.2	The user can search for records which fall within a defined area as described by Potential, No Damage, or Property Damage.	1	F	PDRP Existing Functionality			
2.6	The user can sort the state property damage work list.	1	F	PDRP Existing Functionality			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
2.7	The user can display and print the UD10 associated to a crash in the state property damage work list.	1	F	PDRP Existing Functionality			Print functionality is from the UD10 window
3	Add a reclamation work list to PDRP which supports the tracking of each PDRP record.	1	F	PDRP Existing Requirements			
3.1	The user can search and display their current PDRP workload using the reclamation work list.	1	F	PDRP Existing Requirements			
3.1.1	The user can search for records which fall within a defined date range.	1	F	PDRP Existing Requirements			
3.1.2	The user can search for records which fall within a defined area as described by region, TSC, and/or facility.	1	F	PDRP Existing Requirements			
3.1.3	The user can search for records which match a provided incident number.	1	F	PDRP Existing Functionality			
3.1.4	The user can search for records which match a provided serial number.	1	F	PDRP Existing Requirements			
3.1.5	The user can search for records which match a provided record status.	1	F	PDRP Existing Requirements			
3.1.6	The user can search for records which have a notify indicator set to ‘Yes’.	1	F	PDRP Existing Requirements			
3.1.7	The system will display only records which meet the criteria.	1	F	PDRP Existing Functionality			
3.2	The user can sort their Reclamation Work List.	1	F	PDRP Existing Requirements			
3.3	The user can display and print the UD10 associated to a crash on their reclamation work list.	1	F	PDRP Existing Requirements			
3.4	The user can assign a reclamation on their work list to another area or facility.	1	F	PDRP Existing Requirements			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
3.4.1	The user can only assign to Regions, TSC, or facilities at a lower security level than the logged in user level based on PDRP security.	1	F	PDRP Existing Requirements			
3.4.2	The system will provide a list of Regions, TSC, or facilities from which the user can assign the record to. The list will be based on the users security level.	1	F	PDRP Existing Requirements			
3.4.3	The user can remove an assignment only if the assigned area has not yet acknowledged the assignment.	1	F	PDRP Existing Requirements			Only assignments in a new status can be removed. An assignment is considered acknowledge once a user has viewed and saved the assignment.
3.4.3.1	The user can remove only assignments below their PDRP security level and within their area.	1	F	PDRP Existing Requirements			
3.5	PDRP administrators can select a potential reclamation to match to a TCRS crash.	1	F	PDRP Existing Functionality			
3.6	The user can select a reclamation and display detail information for that reclamation for which the user has access to view.	1	F	PDRP Existing Functionality			
4	New PDRP records can be created prior to the crash (UD10) being processed.	1	F	PDRP Existing Requirements			
4.1	The user can request addition of a PDRP record.	1	F	PDRP Existing Requirements			
4.1.1	The system will require entry of date received and/or crash date, received from and address when creating a new PDRP record.	1	F	PDRP Existing Functionality			
4.1.2	The system will allow entry of incident #, serial #, county, and Hardcopy UD10 indicator when creating a new PDRP record.	1	F	PDRP Existing Functionality			
4.1.3	The system will automatically assign the created PDRP record to CMDCC.	1	F	PDRP Existing Requirements			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
4.1.4	The user can update the information entered on the created PDRP record.	1	F	PDRP Existing Requirements			
4.2	The user can match a PDRP record created prior to the crash (UD10) being processed, with a processed crash in TCRS.	1	F	PDRP Existing Requirements			
4.2.1	The user can search for unmatched PDRP Records	1	F	PDRP Existing Functionality			
4.2.1.1	The user can search for unmatched PDPR records using the serial # and/or incident #.	1	F	PDRP Existing Functionality			
4.2.1.2	The user can search for unmatched PDPR records which fall within a defined date range.	1	F	PDRP Existing Functionality			
4.2.2	The user can search for a possible matching crash using the serial #, incident #, or crash ID on the created PDRP record.	1	F	PDRP Existing Functionality			
4.2.2.1	The user can select match from the reclamation work list to assign a crash to a PDRP record	1	F	PDRP Existing Requirements			
4.2.2.2	The user can view and print the UD10 associated with the crash returned from the search.	1	F	PDRP Existing Requirements			
4.2.3	The system will link the PDRP record with the selected crash when the user selects saved the record.	1	F	PDRP Existing Requirements			
5	Provide weekly email notifications of open PDRP assignments.	1	F	PDRP Existing Requirements			
5.1	The system shall produce an email summarizing current PDRP assignments.	1	F	PDRP Existing Requirements			
5.1.1	The email will list counts of new and outstanding PDRP assignments for a Region, TSC, or facility.	1	F	PDRP Existing Requirements			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
5.2	The system shall send the email to users in the PDRP group that have set email receipt on.	1	F	PDRP Existing Requirements			
5.2.1	The system will send the user only the email(s) specific to their area of responsibility as determined by security level.	1	F	PDRP Existing Requirements			
6	Allow creation and update of 443 form.	1	F	PDRP Existing Requirements			
6.1	The system will provide the assigned facility user with a screen for updating assigned reclamations	1	F	PDRP Existing Requirements			
6.1.1	The user can create 443 data and display the 443 form from the reclamation detail window.	1	F	PDRP Existing Functionality			
6.1.1.1	The system will pre-fill information from the crash record on the created 443 form. Prefilled information will include incident report number, trunkline number, policing agency and facility making repairs.	1	F	PDRP Existing Requirements			
6.1.1.2	The user can enter information about the type of line item costs on the 443 window.	1	F	PDRP Existing Requirements			
6.1.1.3	The system will calculate totals on the 443 window.	1	F	PDRP Existing Requirements			
6.1.1.4	The user can enter county collected funds information on the 443 window.	1	F	PDRP Existing Requirements			
6.1.1.5	The system will allow creation of multiple 443's by an assigned facility.	1	F	PDRP Existing Requirements			
6.1.1.6	The system will allow for the creation of a 443 estimate costs	1	F	PDRP Existing Functionality			
6.1.1.7	The system will allow for the creation of a 443 actual costs	1	F	PDRP Existing Functionality			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
6.1.1.8	The user can print and display the created 443 form.	1	F	PDRP Existing Requirements			
6.1.2	The user can edit a 443 form from the reclamation detail window.	1	F	PDRP Existing Requirements			
6.1.2.1	The system will prevent changes to the 443 once record has been sent to finance.	1	F	PDRP Existing Functionality			
6.1.2.2	Individuals with CMDCC security level can mark the 443 as verified, which then includes the 443 in PDRP Reporting.	1	F	PDRP Existing Functionality			
6.1.2.3	The system will automatically lock and route a reclamation to finance when user with CMDCC security level mark the reclamation assignment status as complete and 443 information is present that is verified.	1	F	PDRP Existing Functionality			
6.1.2.4	Individuals with CMDCC security level can unlock and update the 443 after a record has been sent to finance.	1	F	PDRP Existing Functionality			
6.1.2.5	Only individuals with CMDCC Security, Regional Security, or TSC Security Level have access to the Facility Selection for a 443..	1	F	PDRP Existing Functionality			
6.1.2.6	The user can edit information about the type of repair and line item costs on a 443.	1	F	PDRP Existing Requirements			
6.1.2.7	The system will recalculate totals when a 443 is updated.	1	F	PDRP Existing Requirements			
6.1.2.8	The user can edit county collected funds information on the 443 window.	1	F	PDRP Existing Requirements			
6.1.2.9	The user can print and display the edited 443 form.	1	F	PDRP Existing Requirements			
6.1.3	The user can add comments to or remove comments from assignments.	1	F	PDRP Existing Functionality			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
6.1.3.1	The system will display all comments entered by the assigned facility in the comments list, based on the security level of the user.	1	F	PDRP Existing Requirements			
6.1.3.2	Only the comment owner is allowed to remove a comment.	1	F	PDRP Existing Functionality			
6.1.4	The user can select the routing status.	1	F	PDRP Existing Requirements			
6.1.4.1	The system will update a 'New' assignment status to in progress when any update is made at the assignment detail.	1	F	PDRP Existing Requirements			
6.1.4.2	When an assignment has been completed or cancelled the security level which made the assignment will be notified.	1	F	PDRP Existing Requirements			
6.1.4.3	The system will require a reason code for a routing status of cancel.	1	F	PDRP Existing Requirements			
6.1.5	The user can view and print the UD10 associated to the PDRP record from the reclamation detail window.	1	F	PDRP Existing Requirements			
6.1.6	The system will provide a way to display/capture finance invoicing information	1	F	PDRP Existing Requirements			
6.1.6.1	CMDCC and finance security level users can view financial invoicing information	1	F	PDRP Existing Requirements			
6.1.6.2	Finance security level users can update financial invoicing information from the reclamation detail window.	1	F	PDRP Existing Requirements			
6.1.7	CMDCC security level users can set a damage category for the reclamation on the reclamation detail window.	1	F	PDRP Existing Requirements			
7	Add reporting to support the PDRP process.	1	F	PDRP Existing Requirements			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
7.1	The user can request a damage claim cost report from the system.	1	F	PDRP Existing Requirements			
7.1.1	The user can request a damage claim cost report based on a date range within the last 5 years.	1	F	PDRP Existing Requirements			
7.1.2	The system will pull information for the damage claim cost report from the reclamation tables.	1	F	PDRP Existing Requirements			
7.1.3	Costs included in verified 443s will be included in the damage claim cost report totals.	1	F	PDRP Existing Requirements			
7.2	The user can request an assignment statistics report from the system.	1	F	PDRP Existing Requirements			
7.2.1	The user can request an assignment statistics report based on a date range within the last 5 years.	1	F	PDRP Existing Requirements			
7.2.2	The system will pull information for an assignment statistics report from the reclamation tables.	1	F	PDRP Existing Requirements			
7.3	The user can request a recovery statistics report from the system.	1	F	PDRP Existing Requirements			
7.3.1	The user can request a recovery statistics report based on a date range within the last 5 years.	1	F	PDRP Existing Requirements			
7.3.2	The system will pull information for a recovery statistics report from the reclamation tables.	1	F	PDRP Existing Requirements			
7.3.3	Costs included in verified 443s will be included in the recovery statistics report totals.	1	F	PDRP Existing Requirements			
7.4	The user can request an aging report from the system.	1	F	PDRP Existing Requirements			

Req. No.	Detailed Business Requirement Description	Priority	Type – Business / Functional	Source	Status	Status Date	Comments
7.4.1	The user can request an aging report based on the number of days from assignment.	1	F	PDRP Existing Requirements			
7.4.2	The system will pull information for an aging report from the reclamation tables.	1	F	PDRP Existing Requirements			
7.5	The user can request a turn around time report from the system.	1	F	PDRP Existing Requirements			
7.5.1	The user can request a turn around time report based on a quarter or a year time period.	1	F	PDRP Existing Requirements			
7.5.2	The system will pull the information for a turn around time report from the reclamation tables.	1	F	PDRP Existing Requirements			
8	The system will provide PDRP Administrators and individuals with CMDCC security level the ability to maintain code table information.	1	F	PDRP Existing Functionality			
8.1	The user can create and update code table information (fringe benefit percentage, overhead percentage, PDRP facilities, and PDRP security).	1	F	PDRP Existing Functionality			
8.1.1	PDRP administrators can update facilities and security code table information.	1	F	PDRP Existing Functionality			
8.1.2	Individuals with CMDCC security level can update fringe benefit percentage and overhead percentage code table information	1	F	PDRP Existing Functionality			
8.2	The user can sort code table information.	1	F	PDRP Existing Functionality			
8.3	The user can print facilities and security code table information.	1	F	PDRP Existing Functionality			

3. Technical Requirements Detail

Requirements to consider:

System Interface
Communications / Computer Security and Access
State of Michigan, Department of Information Technology, Technical Requirements

Click the following links for more information on technical requirements. **NOTE: You must be logged into the State Network for the link(s) to work.**

State of Michigan, Department of Information Technology, Technical Requirements Guide
EA Solution Assessment Worksheet

Technical Req. No.: The requirement number should be a sequential number that may expand upon applicable business requirements (i.e., 1.1, 1.2 would expand upon business requirement 1.0). To create further detail, break numbering down by extending the decimal place (i.e., 1.1.1, 1.1.2 below 1.1). Technical requirements may also stand alone.

Priority: 1 = Mandatory (Must Have)
2 = Preferred (Improves Business Process)
3 = Optional (Nice to Have)

Source: JAD Sessions, agency policy, State and Federal law, interviews, facilitated sessions, rapid prototyping, individuals or organizations, etc.

Technical Req. No.	Detailed Technical Requirement Description	Priority	Source
1	**Client / Workstation**		
1.1	The Application must function with the following web browser(s) in an **INTRANET** environment: • Microsoft IE 8.0	1	SOM Technical Requirements
1.2	The Application must function with the following web browser(s) in an **INTERNET** environment: • Microsoft IE 8.0 or above •	1	SOM Technical Requirements
2	**Documentation and Standards**		
2.1	Provide a logical network diagram that describes how the infrastructure components will meet the functional requirements.	1	SOM Technical Requirements
2.2	Provide conceptual and logical data-flow diagrams.	1	SOM Technical Requirements
2.3	Provide a complete installation and configuration documentation library.	1	SOM Technical Requirements
2.4	Provide a high-level architecture diagram, including logical and physical components.	1	SOM Technical Requirements
2.5	Application/System documentation must provide FAQ and/or Support Information for frequent issues staff/users may encounter.	1	SOM Technical Requirements
3	**Installation**		
3.1	Provide a detailed work plan (in hours) and duration (in days) of a typical installation.	1	SOM Technical Requirements
4	**Product Development**		

Technical Req. No.	Detailed Technical Requirement Description	Priority	Source
4.1	The application must follow the SUITE testing processes and documentation of testing and testing types/levels must be provided.	1	SOM Technical Requirements
4.2	Application development must be done in the following development framework: • .NET Framework 3.5 (standard)	1	SOM Technical Requirements
4.3	Programming must be done in the following language(s): • ASP.Net 2008 • C# • JavaScript • Jquery	1	SOM Technical Requirements
4.4	Software development must use the following source code version control repositories: • Serena Dimensions (PVCS/Ver Mgr) 2009 R1.x	1	SOM Technical Requirements
4.5	Software development must adhere to the System Engineering Methodology (SEM) described in the State Administrative Guide (Section 1360): • http://www.michigan.gov/documents/dmb/1360.00_281429_7.pdf	1	SOM Technical Requirements
5	**Reporting**		
5.1	The reporting product technology must be compatible with the following Server Operating Systems: • (see requirement 10.2)	1	SOM Technical Requirements
5.2	The reporting product technology must not require any installed component on the user desktop.	1	SOM Technical Requirements
5.3	The reporting product technology must not require any installed component in the user browser other than the following: • Adobe Acrobat Reader	1	SOM Technical Requirements
5.4	The reporting product technology must be compatible with the following Reporting tools: • Crystal Reports .NET	1	SOM Technical Requirements
5.5	The reporting product technology must support ad-hoc reporting via custom-built queries.	1	SOM Technical Requirements
6	**Application Security** *Note 2: Security requirements listed in this section are guidelines only and may be superseded by the DIT-0170.*		
6.1	Access to program libraries (e.g. base code) must be restricted and controlled.	1	SOM Technical Requirements
6.2	Passwords and User ID's must be able to: • Protect sensitive data • Restrict access to only those intended • Meet DCH/SSO Security Standards • Be encryptable	1	SOM Technical Requirements
6.3	User authentication methods, based on risk and severity level, may include: • Tivoli Single Sign On	1	SOM Technical Requirements

Technical Req. No.	Detailed Technical Requirement Description	Priority	Source
6.4	Session State must be stored and maintained in one or more of the following manners: • Cookie • URL String • Database	1	SOM Technical Requirements
6.5	Application and database communication must use the following port(s) and protocol(s): • Oracle • 80 / 443	1	SOM Technical Requirements
7	**Identity Management**		
7.1	The solution must have a completed MDIT Project Security Plan and Assessment (DIT-0170) *Note 1: The DIT-170 should be started during the requirements gathering phase and be authored by DTMB staff.* *Note 2: Security requirements listed in this section are guidelines only and may be superseded by the DIT-0170*	1	SOM Technical Requirements
7.2	The application must support the following authentication requirement: • Tivoli Single Sign On	1	SOM Technical Requirements
7.3	Application authentication and authorization must be by individual user. User account information must be stored securely in a database. Users may belong to groups and roles.	1	SOM Technical Requirements
7.4	The application must lock out users after three invalid login attempts due to bad passwords.	1	SOM Technical Requirements
7.5	The application must provide the system administrators with the capabilities to define different roles with different privileges.	1	SOM Technical Requirements
7.6	The application must provide the system administrators with the capabilities to create groups whose members can be either role-based or individual login account names.	1	SOM Technical Requirements
8	**Network Security**		
8.1	The solution must have a completed MDIT Project Security Plan and Assessment (DIT-0170). *Note 1: The DIT-170 should be started during the requirements gathering phase and be authored by DTMB staff* *Note 2: Security requirements listed in this section are guidelines only and may be superseded by the DIT-0170.*	1	SOM Technical Requirements
8.2	Network communication must use the following port(s) and protocol(s): • 1521/1522 using TCP • 80/443 using Http • Soap/XML 80	1	SOM Technical Requirements
8.3	Web interface or browser technology must use TCP/IP protocol through Ports 80 or 443.	1	SOM Technical Requirements
9	**Server Security**		

Technical Req. No.	Detailed Technical Requirement Description	Priority	Source
9.1	The solution must have a completed MDIT Project Security Plan and Assessment (DIT-0170). *Note 1: The DIT-170 should be started during the requirements gathering phase and be authored by DTMB staff.* *Note 2: Security requirements listed in this section are guidelines only and may be superseded by the DIT-0170.*	1	SOM Technical Requirements
10	**Application Server**		
10.1	The reporting product technology must be compatible with n-Tier architecture (client-server & web).	1	SOM Technical Requirements
10.2	The application server must support the following Server Operating Systems (OS): • Microsoft Windows 2008 (standard)	1	SOM Technical Requirements
10.3	All Application components must use the following communication protocols: • ODBC • ADO.Net • OLE DB	1	SOM Technical Requirements
10.4	The application must be capable of sharing the application server with multiple applications.	1	SOM Technical Requirements
10.5	The software running on the application tier must be coded in the following DTMB supported language: • ASP.Net • C# • JavaScript • Jquery	1	SOM Technical Requirements
11	**Database Server**		
11.1	The application must use the following database management systems (DBMS) and version: • Oracle 11g (standard)	1	SOM Technical Requirements
11.2	All data fields containing sensitive data in a database must be encrypted.	1	SOM Technical Requirements
11.3	The database must support data deletion.	1	SOM Technical Requirements
11.4	The database structure must be extensible, allowing the addition of new tables, new columns and new objects.	1	SOM Technical Requirements
12	**Web Server**		
12.1	The Web server must support the following Operating Systems (OS): • (see requirement 10.2)	1	SOM Technical Requirements
12.2	The web server for this application must be: • MS IIS 2003, 2008 (standard)	1	SOM Technical Requirements
12.3	The application must be capable of sharing a web server with multiple applications.	1	SOM Technical Requirements
12.4	The application should support clustering and/or load balancing across several servers.	1	SOM Technical Requirements

Technical Req. No.	Detailed Technical Requirement Description	Priority	Source
13	**Solution Architecture**		
13.1	A detailed network/server diagram must be provided illustrating the relative architecture of the proposed system. It should include: • Network security zones and firewalls • Server types and network components (e.g., switches) • Ports and protocols used to cross security zones • How users will access the system • Clustering of servers	1	SOM Technical Requirements
13.2	The solution/application must have an approved Enterprise Architecture (EA) Solution Assessment, prior to production.	1	SOM Technical Requirements
13.3	Provide conceptual and logical application data-flow models.	1	SOM Technical Requirements
13.4	Provide a high-level architecture diagram, including logical and physical components.	1	SOM Technical Requirements
14	**Solution Integration**		
14.1	System integration must support the following method(s) • Web Services	1	SOM Technical Requirements
14.2	An Application Programming Interface (API) must be supplied and supported for the following technologies: • .NET (standard)	1	SOM Technical Requirements
14.3	Connectivity to the following relational database(s) must be provided and supported: • (see requirement 11.1)	1	SOM Technical Requirements
14.4	The solution must be able to import and export data to and from the following external source(s): • Microsoft Office 2003	1	SOM Technical Requirements
14.5	The ability to make use of the following external services must be available: • tcrsweb	1	SOM Technical Requirements
15	**System Administration and Licensing**		
15.1	Application/System documentation must provide access to FAQ and/or Support Information for frequent issues administrative staff may encounter.	1	SOM Technical Requirements
15.2	Provide a complete configuration and set-up documentation library.	1	SOM Technical Requirements
16	**Application Configuration Management – (PCI-DSS)**		
16.1	All known security vulnerabilities must be addressed in accordance with industry-accepted system hardening standards. Industry-accepted standards include: • SysAdmin Audit Network Security (SANS) • National Institute of Standards Technology (NIST) • Center for Internet Security (CIS)	1	SOM Technical Requirements
16.2	Only one primary function can be implemented per server (i.e. web, database, domain, etc.).	1	SOM Technical Requirements

Technical Req. No.	Detailed Technical Requirement Description	Priority	Source
16.3	All unnecessary and unsecure services and protocols (those not directly needed to perform the device's specified function) are disabled.	1	SOM Technical Requirements
16.4	System security parameters must be configured to prevent misuse (see requirement 17.1 for guidance).	1	SOM Technical Requirements
16.5	All unnecessary functionality is removed, such as: • Scripts • Drivers • Features • Subsystems • File Systems • Unnecessary Web Servers	1	SOM Technical Requirements
17	**Application Development Management – (PCI-DSS)**		
17.1	Software applications must be developed in accordance with PCI DSS (for example, secure authentication and logging) and based on industry best practices. Information security must be incorporated throughout the Systems Development Life Cycle (SDLC).	1	SOM Technical Requirements
17.2	All security patches and system and software configuration changes must be tested before deployment, including but not limited to: • All input must be validated to prevent such things as cross-site scripting, injection flaws and malicious file execution. • Proper error handling must be incorporated into the software. • Data at rest must use secure cryptographic storage. • Data in motion must use secure communications. • Role-based access control (RBAC) must be used to control and audit user actions.	1	SOM Technical Requirements
17.3	There must be separate development, test and production environments.	1	SOM Technical Requirements
17.4	There must be separation of duties between development, test and production environments.	1	SOM Technical Requirements
17.5	All test data and accounts must be removed before production systems become active.	1	SOM Technical Requirements
17.6	All custom and developer accounts, user IDs, and passwords must be removed before applications become active or are released to agencies.	1	SOM Technical Requirements
17.7	A code review must be performed of custom code prior to release to production or agencies, in order to identify any potential coding vulnerabilities.	1	SOM Technical Requirements
17.8	All web applications (internal, external, and web administrative access to applications) must be developed based on secure coding guidelines such as the *Open Web Application Security Project Guide.* http://www.owasp.org	1	SOM Technical Requirements

Technical Req. No.	Detailed Technical Requirement Description	Priority	Source
17.9	Prevention of common coding vulnerabilities must be covered in software development processes, including: • Cross-side scripting (XSS). • Injection flaws, particularly SQL injection. Also consider LDAP and Xpath injection flaws • Malicious file execution • Unsecure direct object references • Cross-site request forgery (CSRF). • Information leakage and improper error handling. • Broken authentication and session management. • Unsecure cryptographic storage. • Unsecure communications. • Failure to restrict URL access.	1	SOM Technical Requirements
18	**Application Password Management - (PCI-DSS)**		
18.1	Only DTMB approved personnel may add, delete, or modify user IDs, credentials, and other identifier objects on systems containing PCI data.	1	SOM Technical Requirements
18.2	A user's identity must be verified before performing a password reset.	1	SOM Technical Requirements
18.3	Access rights for any terminated user must be immediately revoked.	1	SOM Technical Requirements
18.4	Inactive user accounts must be removed or disabled at least every 90 days.	1	SOM Technical Requirements
18.5	Group, shared, or generic accounts and passwords are prohibited.	1	SOM Technical Requirements
18.6	User passwords must be changed at least every 90 days.	1	SOM Technical Requirements
18.7	All passwords must have a minimum password length of at least eight (8) characters.	1	SOM Technical Requirements
18.8	A new individual password for a specific user account must be different from any of the last four passwords for that user account.	1	SOM Technical Requirements
18.9	The user lockout duration must be set to a minimum of 30 minutes or until administrator re-enables the user ID.	1	SOM Technical Requirements
18.10	A user must re-enter his or her password to re-activate the session after more than 15 minutes of idle time.	1	SOM Technical Requirements
18.11	All access to any database containing cardholder data must be authenticated (this includes access by applications, administrators, and all other users.).	1	SOM Technical Requirements

4. Functional Baseline

A baseline consists of those things that serve as the basis for measurement or comparison. The functional baseline, sometimes called a system requirements baseline, is the main technical work product of the Requirements Definition Stage. The approved Requirements Specification document (SEM-0402) is the official agreement and authorization to use the requirements for the product design. Approval implies that the requirements are understood, complete, accurate, and ready to be used as the basis for the subsequent lifecycle stages. Once the requirements are identified and approved, any changes to the requirements must be managed under change control procedures established in the Software Configuration Management Plan. Approved changes must be incorporated into the Requirements Specification document.

Approval Information

The signatures relay an understanding of the purpose and content of the document by those endorsing it.

☐ Approve ☐ Approve with Modifications ☐ Reject

Comments:

Approval Signatures

	Name / Title	Signature	Date
Client Sponsor	Mark Geib		
DTMB Sponsor	Scott Wager		
Program Manager	Joe Silva		

Glossary

BO	Business Owner
CEO	Chief Executive Officer
CIO	Chief Information Officer
CM	Configuration Management
Clarity	Clarity Project Portfolio Management tool
CMMI	Capability Maturity Model Integration
COO	Chief Operations Officer
COTS	Commercial-Off-The-Shelf
DBA	Database Administrator
DTMB	Department of Technology, Management and Budget
ER	Executive Review
FY	Fiscal Year
IC	Infrastructure Committee
IT	Information Technology
KPA	Key Process Area
LAMP	Legacy Application Modernization Program
PM	Project Manager
PMC	Project Monitoring and Control
PMM	Project Management Methodology
PMO	Program Management Office
PPM	Program and Portfolio Manager
QA	Quality Assurance
SEM	System Engineering Methodology
SG	Specific Goal
SME	Subject Manager Expert
SP	Specific Practice
SST	SUITE Support Team
SUITE	State Unified Information Technology Environment
TL	Technical Lead
UDA	User Developed Application
UX	User Experience
WBS	Work Breakdown Structure