



**STATE OF MICHIGAN
SEM EXPRESS**

A Guide to Systems Engineering for Small Projects

**A Companion Guide to the
Systems Engineering Methodology (SEM) of the
State Unified Information Technology Environment
(SUITE)**



**Michigan Department of Technology,
Management & Budget**

www.michigan.gov/SUITE

October 2014

Version 1.5

PREFACE

The initial development of the State of Michigan *Systems Engineering Methodology (SEM)* was published in April 2007, and was developed as part of a continuing effort to improve the quality, performance, and productivity of State of Michigan information systems. Development of the SEM was governed by the Michigan *State Unified Information Technology Environment (SUITE)* initiative. This initial development of *SEM Express* was published in July 2007, as a companion to the SEM.

The purpose of SUITE is to standardize methodologies, procedures, training, and tools for project management and systems development lifecycle management throughout the Department of Technology Management and Budget (DTMB) in order to implement repeatable processes and conduct development activities according to Capability Maturity Model Integrated (CMMI) Level 3 requirements. A formal enterprise level support structure will be created to support, improve and administer SUITE, SEM, Project Management Methodology, and related enterprise initiatives. Until that structure is in place, questions regarding the SEM should be sent to SUITE@michigan.gov.

For more information on CMMI, visit www.sei.cmu.edu/cmmi.

REVISION HISTORY

The following information is used to control and track modifications made to this document.

Revision Date	Section(s)	Summary
July, 2007	n/a	Initial Document Release
November 2009	SEM Express Overview Diagram, and throughout the document	Updated SEM Express Overview Diagram to show updated touch points. Added SEM, Express, and Maintenance process usage info from Systems Maintenance Guidebook.
February 2010	SEM Testing Templates	Modified the Test Reports template reference to read Test Type Approach and Reports. Added Test Case Template reference.
October 2014	All	Updates for consistent formatting, references to correct PMM and SEM forms and department name.

ACKNOWLEDGEMENTS

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INITIAL RELEASE (April 2007)	
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CHAPTER 1.0 - INTRODUCTION TO SEM EXPRESS

Description

This document is a companion guide to the State of Michigan Systems Engineering Methodology (SEM). *SEM Express* offers guidance for small and straight-forward systems development projects. The SEM defines a small project as typically one that is estimated to be less than 1000 effort hours (including both systems development related and project management related hours). The following table is to be used as a guideline for which methodology to use:

Project Size (Effort)	Methodology To Use
0 – 200 hours	System Maintenance process
200 – 1000 hours	SEM Express
1001 hours or larger	SEM

In general, the definition of “straight-forward” includes projects that:

- Continue to operate in the existing infrastructure environment and do not involve procurement of additional infrastructure components;
- Utilize existing resources and do not procure services (except when contractors are utilized as part of a multi-project initiative);
- Are developed for a single agency;
- Can be implemented without formal user training;
- Have little to no risk associated with them; and
- Have a low degree of exposure

The intent of *SEM Express* is to provide an abbreviated methodology that, nonetheless, ensures all necessary processes are performed and documented. *SEM Express* provides a methodology that is not over burdened with excessive paperwork, processes, and approvals. *SEM Express* provides for condensed stages and approvals, where appropriate. The full SEM must be referenced, and all appropriate templates utilized where appropriate when developing an information system using *SEM Express*.

Project managers having initiatives that do not meet the criteria for *SEM Express* and are small to medium in size/scope, are to refer to the Systems Engineering Methodology, Chapter 2 for additional guidance on effective and efficient use of the SEM via tailoring.

A diagram showing the stages, templates and processes, touch points, and stage exit approvals associated with *SEM Express* is provided in Exhibit 1.0-1, *SEM Express Overview* found on page 4.

It is expected that all projects will use the Project Management Methodology (*PMM*) document for guidance. *PMM* can be found at www.michigan.gov/suite in the Project Management Methodology section.

CHAPTER 2.0 – SEM EXPRESS STAGES

The SEM includes seven stages to build an information system:

- Initiation and Planning
- Requirements Definition
- Functional Design
- System Design
- Construction
- Testing
- Implementation

Each stage requires adherence to standard processes, templates, and touch points, as well as a stage exit review to move from one stage to the next.

SEM Express condenses the seven SEM stages into the following three *SEM Express* stages for use on small and straight-forward projects:

- Initiation, Requirements and Design Stage (incorporates Initiation and Planning, Requirements Definition, Functional Design, and System Design)
- Construction and Testing Stage
- Implementation Stage

As there are only three stages in the SEM Express Methodology, there are only three stage exit reviews that must be performed, rather than the typical seven reviews.

A diagram showing the stages associated with *SEM Express* is provided in Exhibit 1.0-1 *SEM Express Overview*, found on page 4.

CHAPTER 3.0 - SEM EXPRESS TEMPLATES

The Systems Engineering Methodology (SEM) contains a total of thirteen templates. The SEM templates are designed to capture/document information needed for the system being developed or enhanced. The goal of *SEM Express* is to ensure that all essential processes and documentation needed for even the smallest project are addressed.

SEM Express is comprised of the following two templates:

- Initiation, Requirements and Design Plan (SEM Exp-0001), contains references to the following SEM templates:
 - Maintenance Plan (SEM-0301)
 - Software Configuration Management Plan (SEM-0302)
 - Requirements Traceability Matrix (SEM-0401)
 - Requirements Specification (SEM-0402)
 - Functional Design Document (SEM-0501)
 - Conversion Plan (SEM-0601)
 - Test Plan (SEM-0602)
 - Test Type Approach and Reports (SEM-0603)
 - System Design Document (SEM-0604)
 - Test Cases (SEM-0606)

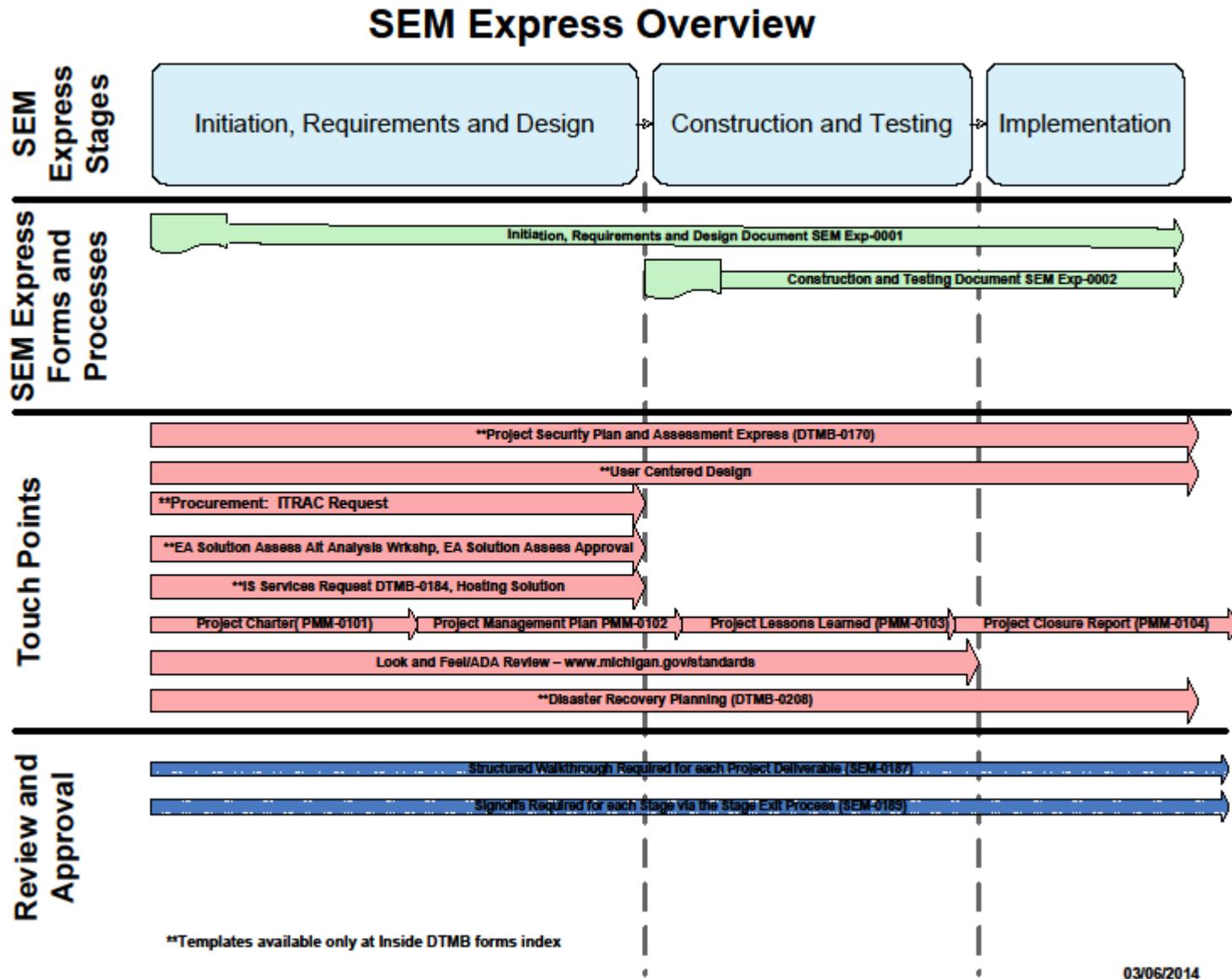
- Construction and Testing Plan (SEM Exp-0002), contains references to the following SEM templates:
 - Transition Plan (SEM-0701)
 - Installation Plan (SEM-0702)
 - Training Plan (SEM-0703)

It is assumed that if “master” documents exist for the system, those master documents will be updated and attached to the current *SEM Express* documents, with the new changes noted. These *SEM Express* templates are to act as validation mechanisms that the base documents for the system have been created or updated. The method of documenting version control varies by installation.

Projects utilizing *SEM Express* will need to go through a minimum of two structured walkthroughs – one for each of the above *SEM Express* templates (including the associated SEM templates). These structured walkthroughs are conducted just prior to initial signoffs of the Initiation, Requirements and Design Plan and the Construction and Testing Plan. Peer reviews, which are less formal in nature than structured walkthroughs, should also be performed for application code, test scenarios, etc.

A diagram showing the stages associated with *SEM Express* is provided in Exhibit 1.0-1 *SEM Express Overview*, found on page 4.

Exhibit 1.0-1 – SEM Express Overview Diagram



CHAPTER 4.0 - SEM TAILORING GUIDANCE

Due to the large variation among system size and complexity, there is a need to offer guidance to the project / development manager regarding which components of the methodology, both project-based and product-based, are required.

The intent of this section is to provide flexibility in utilizing SEM components in the systems development process. The focus here is to ensure that adequate processes are used for each of the various types of systems engineering initiatives – “using the right tool for the job.”

A small project which meets the criteria for *SEM Express* is typically straight-forward in nature and estimated to be less than 1000 effort hours (including both systems development related and project management related hours). A large project, which meets the criteria for the full SEM, is typically complex in nature and is estimated at more than 1000 effort hours. Projects that fall in the middle are considered medium projects, and will typically use a customized SEM for development of the system. Additional guidance can be found in the SEM, Chapter 2 – *Adapting the Lifecycle*.

The project manager has the discretion to use *SEM Express* for slightly larger projects if he/she feels the complexity is such that *SEM Express* is preferable.

If at any time the project manager feels he/she need to have more process guidance, he/she has the discretion to add processes and/or templates from the full SEM to meet the documentation/approval needs of the project. It is also acceptable to switch from *SEM Express* to SEM mid-stream if the project warrants such a change, due to increased scope, inaccurate initial estimates, etc.

The following SEM Tailoring Matrix is designed to guide the project / development manager in selecting the relevant components of the Systems Engineering Methodology for use in their project.

This matrix is used to identify SEM templates and processes required for a given project size.

SEM Tailoring Matrix

NOTES:

- 1.) "If Applicable" means the template is required if the project has impact on that area, such as training, contract management, or infrastructure changes.
- 2.) It is assumed that if "master" documents exist for the system, those master documents will be updated and attached to the current SEM / SEM Express documents, with the new changes noted.

Template / Process	Document Reference	Small, Straight-Forward Project -SEM Express-	Medium Project -Customized SEM-	Large Project -SEM-	Guidance
EA Solution Assessment	SEM Touch Point (Solution Assessment Worksheet)	Required if no existing EA Solution Assessment is on file with EA or if proposing changes to the one on file. Applicable	Required if no existing EA Solution Assessment is on file with EA or if proposing changes to the one on file.	Required if no existing EA Solution Assessment is on file with EA or if proposing changes to the one on file.	Check with an Enterprise Architecture representative if unsure.
Maintenance Plan	SEM-0301	New plan required or updates to original plan, if available.	New plan required or updates to original plan, if available.	New plan required or updates to original plan, if available.	
Software Configuration Management Plan	SEM-0302	New plan required or updates to original plan, if available.	New plan required or updates to original plan, if available.	New plan required or updates to original plan, if available.	
Requirements Traceability Matrix	SEM-0401	Required	Required	Required	
Requirements Specification	SEM-0402	New specification required or updates to original specification, if available	New specification required or updates to original specification, if available	Required	
Functional Design Document	SEM-0501	New design required or updates to original design, if available	New design required or updates to original design, if available	New design required or updates to original design, if available	
Conversion Plan	SEM-0601	Required if converting existing data	Required if converting existing data	Required if converting existing data	
Test Plan	SEM-0602	Required	Required	Required	
Test Type Approach and Reports	SEM-0603	Required	Required	Required	

Template / Process	Document Reference	Small, Straight-Forward Project -SEM Express-	Medium Project -Customized SEM-	Large Project -SEM-	Guidance
Test Cases	SEM-0606	Required	Required	Required	
System Design Document	SEM-0604	New design document required or updates to original design document, if available	New design document required or updates to original design document, if available	Required	
Transition Plan	SEM-0701	If Applicable	If Applicable	Required	Required if new staffing or operational procedures are identified for operations staff, maintenance staff, or client staff
Installation Plan	SEM-0702	Required	Required	Required	
Training Plan	SEM-0703	If Applicable	If Applicable	Required	Required if new staffing or training needs are identified
Structured Walkthrough process	Structured Walkthrough Process Guide	Required for both Initiation, Requirements, and Design Plan and Construction and Testing Plan	Required	Required	Structured Walkthroughs are required for all major deliverables
Stage Exit process	Stage Exit Process Guide	Required for each stage	Required for each stage	Required for each stage	
Security Plan	SEM Tough Point (DTMB-0170)	New Security Plan and Assessment required or updates to original design document, if available	New Security Plan and Assessment required or updates to original design document, if available	Required	
Infrastructure Services Request	SEM Touch Point (DTMB-0184)	If Applicable	If Applicable	Required	

Template / Process	Document Reference	Small, Straight-Forward Project <i>-SEM Express-</i>	Medium Project <i>-Customized SEM-</i>	Large Project <i>-SEM-</i>	Guidance
Contracts and Procurement documents	SEM Touch Point (ITRAC Request, DTMB-0015B)	If Applicable	If Applicable	If Applicable	
Business Continuity Plan	SEM Touch Point (DTMB-0208)	If Applicable	If Applicable	Required	

CHAPTER 5.0 - INITIATION, REQUIREMENTS AND DESIGN STAGE

Stage Introduction

SEM Express combines the initiation and planning processes, the requirements definition process, the functional design process, and the system design process into one stage. This translates into the need for only one (or more, as needed) structured walkthrough and one stage exit review during this stage.

Refer to the SEM for additional guidance and documentation for the completion of individual detailed tasks, such as requirements gathering.

This stage involves development of the condensed Initiation, Requirements and Design Plan (SEM Exp-01). This template contains the mechanism to document software configuration management planning, system maintenance planning, system requirements specifications, system design specifications (both functional-based and system-based), and test planning.

As needs dictate, templates from SEM are to be used to document of particular sections within the Initiation, Requirements, and Design Plan. For example, for Requirements Management, the Requirements Specification and Requirements Traceability Matrix are to be used to document business and technical requirements for the project.

The first activity of this stage is to **initiate and plan** the project, including development of the software configuration management needs of the system development environment. The State's Project Management Methodology (PMM) and the System Engineering Methodology (SEM) are tightly integrated, and thus, it is recommended that both PMM and *SEM Express* be used. It is imperative that the project manager ensures participation of the business client in the creation of both the PMM and SEM documents. Due to the abbreviated nature of *SEM Express* it is advised to refer to the SEM (for systems engineering assistance), as needed.

The **requirements definition** portion of this stage develops a basis of mutual understanding between the business owner/users and the project team with regards to the business requirements for the project. The result of this understanding is a mutually agreed upon Requirements Specification - which becomes the initial baseline for product design and a reference for determining whether the completed product performs as the system owner requested and expected. All system requirements, (e.g., software, hardware, performance, infrastructure, etc.) should be included. This effort involves analysis of the business owner/users' business processes and needs, translation of those processes and needs into formal requirements, and planning the testing activities to validate the performance of the product.

The **functional design** portion of this stage maps the "what to do" of the requirements specification into the "how to do it" of the design specifications. During this activity, the overall structure of the product is defined from a functional viewpoint. The functional design describes the logical system flow, data organization, system inputs and outputs, processing rules, and operational characteristics of the product from the user's point of view. The functional design is not concerned with the software or hardware that will support the operation of the product or the physical organization of the data or the programs that will accept the input data, execute the processing rules, and produce the required output. The focus is on the functions and structure of the components that comprise the product. The goal of this activity is to define and document the functions of the

product to the extent necessary to obtain the system owner and users understanding and approval and to the level of detail necessary to build the system design.

The **system design** portion of this stage translates the user-oriented functional design specifications into a set of technical, computer-oriented system design specifications, including design of the database structure and description of processes to the level of detail necessary to plan and execute the remainder of the stages. General module specifications should be produced to define what each module is to do, but not how the module is to be coded. Effort focuses on specifying individual routines and data structures while holding constant the structure and interfaces developed in the previous portion of this stage. Each module and data structure is considered individually during detailed design with emphasis placed on the description of internal and procedural details. The primary work product is a system design that provides a blueprint for the coding of individual modules and programs.

Stage Inputs

The following items provide input to the Initiation, Requirements and Design Stage:

- Requirements identified in project related materials
- Related project pre-initiation materials, such as project justification documents, problem definition documents, etc.
- Existing system documentation, such as Requirements, Functional Design, and System Design

Stage High-Level Activities

High-Level activities in the Initiation, Requirements and Design Stage include, as applicable:

- Software Configuration Management Planning
- System Maintenance Planning
- Disaster Recovery Planning
- Requirements Specification Development
 - Select Requirements Analysis Technique
 - Define System Requirements
 - Compile and Document System Requirements
 - Develop System Test Requirements
 - Develop Acceptance Test Requirements
 - Establish Functional Baseline
- Functional Design Development
 - Determine System Structure
 - Design Content of System Inputs and Outputs
 - Design User Interface

- Design System Interfaces
- Design System Security Controls
- Build Logical Model
- Build Data Model
- Develop Functional Design
- Select System Architecture
- System Design Development
 - Design Specifications for Modules
 - Design Physical Model and Database Structure
 - Develop Integration Test Considerations
 - Develop System Test Considerations
 - Develop Test Cases
 - Conversion Planning
 - Develop System Design
 - Develop Program Specifications

Refer to the Systems Engineering Methodology for further detail regarding how to perform these activities, as needed.

Stage Touch Points

The following touch points are involved in the Initiation, Requirements and Design Stage:

Contracts and Procurement

- Assignment of a Contract Liaison if procuring goods or services
- Utilize the services of the assigned Contract Liaison, if procuring services
- Completion of an ITAC request, if procuring commodities (e.g., servers, software)
- Completion of DTMB-0015B (including Statement of Work), if procuring services (e.g., project management, application developers)

E-Michigan

- Web review assessment by E-Michigan's webmaster to ensure ADA compliance and Michigan.gov look and feel standards. Contact E-Michigan for more information on obtaining this review.

Infrastructure Services

- If applicable, prepare the Infrastructure Services Request (DTMB-0184)

Security

- Notify the Security Liaison of project initiation
- Review DTMB and Agency Security Policies
- Initiate Security Plan, including Data Classification and System Criticality sections
- Review State and Federal laws and regulations
- Develop Infrastructure/Network and Data Flow Diagram
- Review existing or propose new security controls
- Review Risk Analysis with OES recommended security controls

Other

- Business Application Criticality Request Planning process

Stage Outputs

Several work products are developed during the Initiation, Requirements and Design Stage. The work products listed below are the minimum requirements for a small project. Deviations in the content and delivery of these work products are determined by the size and complexity of a project. Explanations of the work products are provided under the applicable activities described either in the SEM, in the PMM, or other applicable documents.

SEM Express

- Initiation, Requirements and Design Plan (SEM-0001 Exp) *[initial]*
 - Including attached SEM templates (refer to the Systems engineering Methodology for a detailed listing of these templates)

PMM

- Project Charter (PMM-0101)
- Project Management Plan (PMM-0102)

Security

- Security Plan and Assessment (DTMB-0170 or DTMB-0170 Exp) *[new or updated]*

Agency Services

- Business Application Criticality Request (DTMB-0208) *[new or updated]*

CHAPTER 6.0 CONSTRUCTION AND TESTING STAGE

Stage Introduction

The goal of the Construction and Testing Stage is to translate the set of technical, computer-oriented system design specifications into a language the computer can understand and execute, and then assure that the system meets the business and technical requirements through testing.

Construction involves coding, validation and unit testing by a developer. Any hardware or software procured to support the construction effort is installed.

Testing activities focus on interfaces between and among components of the product, such as functional correctness, system stability, overall system operability, system security, privacy and sensitive information control, and system performance requirements (e.g., reliability, maintainability, and availability). Incrementally performed testing provides feedback on quality, errors, and design weaknesses early in the integration process.

The activities in this stage result in the transformation of the system design into the complete executable representation of the product. If required, the source code, including suitable comments, is generated using the approved program specifications. The source code is then grouped into executable units and all high-level language units are compiled into object code. Unit testing is performed by developers to determine if the code satisfies the program specifications and is complete, logical, and error free.

Components are then integrated and tested by a test team to determine whether the product meets predetermined functionality, performance, quality, interface, and security requirements. Once the product is fully integrated, system testing is conducted to validate that the product will operate in its intended environment, satisfies all user requirements, and is supported with complete and accurate operating documentation. User Acceptance Testing (UAT) follows System Testing, and solicits feedback from users to make any final adjustments to the programming before releasing the product for implementation.

The operating documentation is also produced in the Construction and Testing Stage. The operating documentation is required for installing, operating, and supporting the product through its lifecycle.

This stage involves development of the condensed Construction and Testing Plan (SEM Exp-02), as well as SEM documentation, such as the Transition Plan, Installation Plan, and Training Plan – if needed. This template contains the essentials for test reporting, transition planning, conversion planning, installation planning, and client acceptance of the tested system.

Stage Inputs

The following items provide input to the Construction and Testing Stage:

SEM Express

- Initiation, Requirements and Design Plan (SEM-0001 Exp)
 - Including attached SEM templates

PMM

- Project Management Plan (PMM-0102)

Security

- Security Plan and Assessment (DTMB-0170)

Stage High-Level Activities

High-Level activities in the Construction and Testing Stage include, as applicable:

Construction

- Establish Development Environment
- Develop Programs
- Plan Transition to Operational Status
- Generate Operating Documentation
- Develop Installation Plan

Testing

- Conduct Unit Testing
- Conduct Integration Testing
- Conduct System Testing
- Conduct User Acceptance Testing

Refer to the Systems Engineering Methodology for further detail regarding how to perform these activities, as needed.

Stage Touch Points

The following touch points are involved in the Construction and Testing Stage:

Contracts and Procurement

- Contract Liaison involvement if contract issues arise

Infrastructure Services

- Infrastructure Specialist involvement as documented in the Infrastructure Services Request (DTMB-0184), if required

Security

- Finalize Network and Data Flow diagrams
- Include application testing for security controls

E-Michigan

- Web review assessment by E-Michigan's webmaster to ensure ADA compliance and Michigan.gov look and feel standards. Contact E-Michigan for more information on obtaining this review.

Stage Outputs

Several work products are developed during this stage. The work products listed below are the minimum requirements for a small project. Deviations in the content and delivery of these work products are determined by the size and complexity of a project. Explanations of the work products are provided under the applicable activities described either in the SEM, in the PMM or other applicable documents.

SEM Express

- Initiation, Requirements and Design Plan (SEM-0001 Exp)
 - Including attached SEM templates (refer to the Systems engineering Methodology for a detailed listing of these templates)
- Construction and Testing Template (SEM-0002 Exp)
 - Including attached SEM templates (refer to the Systems engineering Methodology for a detailed listing of these templates)

PMM

- Project Management Plan (PMM-0102)

Security

- Security Plan and Assessment (DTMB-0170 or DTMB-0170 Exp)

Other Outputs:

- Development baselines
- Operating documentation
 - Users manual
 - Developer's reference manual
- System units and modules
- Test reports

CHAPTER 7.0 – IMPLEMENTATION STAGE

Stage Introduction

Implementation of the product is initiated after all system-related testing has been successfully completed and approved by the client. This stage involves the activities required to install the software, databases, or data that comprise the product onto the hardware platform at the site(s) of operation. The activities associated with this stage should be performed each time the product is installed at a production site.

Stage Inputs

The following items provide input to the Implementation Stage:

SEM Express

- Initiation, Requirements and Design Plan (SEM-0001 Exp)
 - Including attached SEM templates
- Construction and Testing Plan (SEM-0002 Exp)
 - Including attached SEM templates

PMM

- Project Management Plan (PMM-0102)

Security

- Security Plan and Assessment (DTMB-0170 or DTMB-0170 Exp)

Other Inputs

- Business Application Criticality Request (DTMB-0208)
- Operating Documents
 - Users Manual
 - Developer's Reference Manual

Stage High-Level Activities

High-Level activities in the Implementation Stage include, as applicable:

- Perform Installation Activities
- Conduct Installation Tests
- Transition to Operational Status

Refer to the Systems Engineering Methodology as needed for further detail regarding how to perform these activities.

Stage Touch Points

The following touch points are involved in the Implementation Stage:

Contracts and Procurement

- Contract Liaison involvement if contract issues arise

Infrastructure Services

- Infrastructure Specialist involvement in issues resolution

Security

- Security liaison assistance with finalizing and final sign-off of the Security Plan

E-Michigan

- Web review assessment by E-Michigan's webmaster to ensure ADA compliance and Michigan.gov look and feel standards. Contact E-Michigan for more information on obtaining this review.

Stage Outputs

Several work products are developed during the Implementation Stage. The work products listed below are the minimum requirements for a small project. Deviations in the content and delivery of these work products are determined by the size and complexity of a project. Explanations of the work products are provided under the applicable activities described either in the SEM, in the PMM or other applicable documents.

SEM Express

- Initiation, Requirements and Design Plan (SEM-0001 Exp)
 - Including attached SEM templates
- Construction and Testing Plan (SEM-0002 Exp)
 - Including attached SEM templates

PMM

- Post Implementation Evaluation Report (PIER)

Security

- Security Plan and Assessment (DTMB-0170 or DTMB-0170 Exp)

Other Outputs

- Business Application Criticality Request
- Converted data or system files

- Installation Test materials
- Operating documents
- Operational software product

CHAPTER 8.0 – PROCESS GUIDES USAGE

Structured Walkthrough Process Guide

The Structured Walkthrough Process Guide is a companion to the SEM and *SEM Express*. The Structured Walkthrough Process Guide is designed to assist the project team with a formal process on how to ensure a deliverable is complete and of acceptable quality. For a large project, a Structured Walkthrough is required for every major project deliverable. For a small project, peer reviews are more the norm when reviewing a document, such as the Requirements Specification (SEM-0402). A peer review is an informal gathering with one or more of an individual's peers to walk through the deliverable.

Structured walkthroughs are appropriate for reviewing the technical accuracy and completeness of system development work products and other types of documents (e.g., technical operating procedures). The walkthroughs should be scheduled to review small, meaningful pieces of work. The progress made in each lifecycle stage should determine the frequency of the walkthroughs.

A Structured Walkthrough is required for each of the two templates used for *SEM Express* – the Initiation, Requirements and Design Plan and the Construction and Testing Plan, plus all associated SEM and PMM documents.

Refer to the document titled “*Structured Walkthrough Process Guide*” for more information on the purpose and usage of structured walkthroughs. Applicable forms include the Structured Walkthrough Meeting Record (DTMB-0187).

Stage Exit Process Guide

The Stage Exit Process Guide is a companion to the SEM and *SEM Express*. The Stage Exit Process Guide is designed to assist the project team with the transition from one SEM stage to the next. A Stage Exit Review is required before moving to the next stage.

The stage exit is the vehicle for securing the concurrence of key project participants to continue with the project and to move forward into the next stage of systems development. The purpose of a stage exit is to allow key personnel involved with the project to review all deliverables associated with the stage. This provides a forum to address outstanding issues and concerns, and ensures an acceptable action plan exists for any and all open issues.

The stage exit process begins when the project manager notifies all key project participants that all deliverables for the current stage have been finalized. The project manager then schedules a stage exit review with the project sponsors (both DTMB and the client) and all interested key project participants. This stage exit review meeting can occur in person, via conference call, or via web/video conference.

The stage exit process ends with the receipt of the Stage Exit Approvals form (DTMB-0189) from the designated approvers to proceed to the next stage. This is generally accomplished by all approvers signing the form or sending their approval electronically via email.

With *SEM Express*, there are only three stage exit reviews required, as there are only three *SEM Express* stages.

Refer to the document titled "*Stage Exit Process Guide*" for more information on the purpose and usage of the stage exit process. Applicable forms include the Stage Exit Approvals form (DTMB-0189).