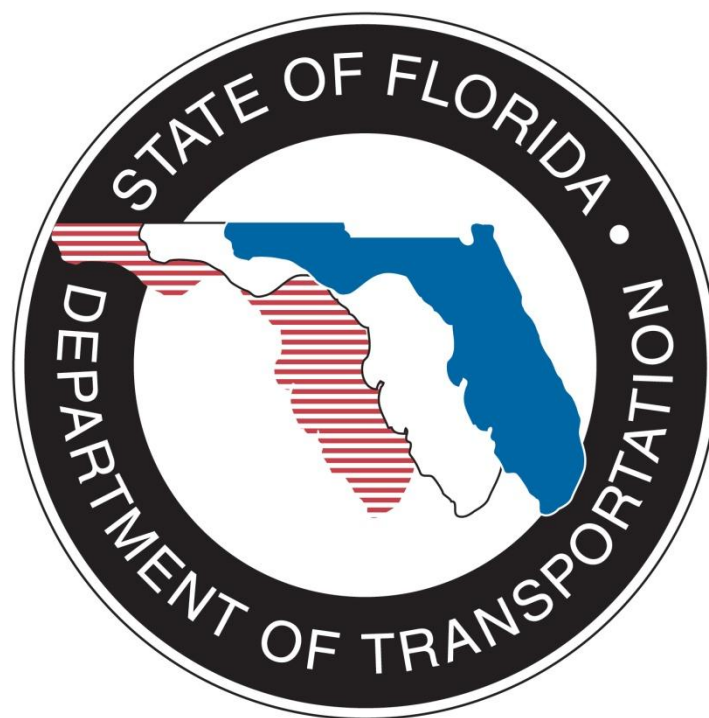# 2013

Florida Department of Transportation
Office of Information Systems

Business Systems Support Office

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PROJECT DELIVERY METHODOLOGY (PDM)

CHAPTER 1 – INTRODUCTION TO THE PROJECT DELIVERY METHODOLOGY

1.1   Purpose

The Project Delivery Methodology (PDM) establishes standards for Information Technology (IT) projects delivered by and/or for the Florida Department of Transportation (FDOT). This chapter describes the structure and controls of the PDM.

1.2   Authority

Florida Statutes

Title IV: Executive Branch, Chapter 20: Organizational Structure

- Section 20.23 Department of Transportation, 20.23(4)

Title XIX: Public Business, Chapter 282: Communications and Data Processing

Part 1 Enterprise Information Technology Services Management

- Section 282:318 Enterprise Security of Data and Information Technology

Title XXVI: Public Transportation, Chapter 334: Transportation Administration

- Section 334.044(2) Department; powers and duties
- Section 334.048 Legislative intent with respect to department management accountability and monitoring systems

1.3   Scope

The scope of the PDM is to deliver the FDOT Information Technology (IT) Projects using a consistent, predictable, and repeatable method. The PDM applies to personnel, including consultant and/or contract personnel working for or under the Department, engaged in information systems development and/or enhancements for any application for which the Office of Information Systems (OIS) is, or will be, the custodian. This methodology is focused on a single project, as opposed to a portfolio of projects.

1.4   PDM Concept

The successful delivery of projects is based on two critical factors: (1) A project is a temporary endeavor with a defined scope and a definite begin and end, and (2) Projects can be delivered in a consistent, predictable and repeatable fashion if a common method is defined and enforced.

The PDM consist of four stages, with guidance and tools for each stage. A stage is a distinct division of effort done for a specified purpose during the project delivery life cycle. Each stage is designed to provide deliverables and information which will allow management to determine if the project is ready to proceed to the next stage. Executive Management must authorize movement from stage to stage.

The four stages of the PDM are:

1. **Project Selection Stage** – This stage establishes the business case and justification for the project; initial project estimate; and project priority.

2. **Project Planning Stage** – This stage defines project scope; defines stakeholders, critical success factors and executive sponsorship; identifies project deliverables and describes how the project will be managed, tracked, and progress communicated.

3. **Application Development Stage** – This stage produces the application, product and/or service established in the Project Planning Stage. This stage consists of four phases:

    a. Requirements Phase – defines the detail requirements of the application, product or service

    b. Design Phase – defines the technical design of the application, product or service

    c. Construction Phase – builds the application, product or service

    d. Implementation Phase – encompasses User Acceptance testing and implementation of the application, product or service

    e. Stabilization Phase – ensures that the product is stable or constant for a reasonably short amount of time (i.e., a week for a very small project), immediately after implementation.

4. **Project Closure Stage** – This final stage closes out the project. During this stage all living documents are brought up to date; issues and risks are addressed; post implementation reviews are conducted, and if applicable, the transition to the maintenance plan is executed.

The PDM also contains three process management chapters to define Business Systems Support Office (BSSO) standards and processes for managing Quality, Project Management Processes (e.g. Issues, Change Control, Configuration Management, etc), and Risk. The process management chapters are:

1. **Quality Management** – Chapter 6 Quality Management defines the BSSO quality assurance and quality control review standards and processes.

2. **Project Management** – Chapter 7 Project Management establishes the standards and processes BSSO will use for issue management, change management, and configuration management.

3. **Risk Management** – Chapter 8 Risk Management defines the BSSO risk management standards and processes.

1.5   PDM Revisions and Addition Process

The PDM is a dynamic document which requires periodic review. It will be assessed annually to be up dated with current information, strategic practices in the industry of IT projects and business practices of the BSSO. The BSSO Portfolio Manager will coordinate the review. For a current list of changes, refer to Appendix A.

1.5.1   Requesting Changes to the PDM

Requests for changes to the PDM can be submitted at any time. These suggestions may be submitted by contacting the BSSO Standards and Technical Workgroup (BSTWG) through the FDOT email group, CO-BSSOStandardsTech.

All correspondence concerning the PDM should include a Contact Name, Phone Number, and UserID/Email Address so that the requestor may be contacted for further information.

1.5.2   Processing Changes to the PDM

All requests, comments, and suggestions concerning the PDM will be considered. The amount, complexity, and urgency of the changes will affect when and how the changes are included in the PDM. When possible, multiple change requests will be grouped together and processed as an "enhancement release" to the PDM.

A. **New Chapter/Section**
When a new item appears that cannot be adequately addressed within the PDM's current chapter/sections, a new chapter/section will be written by the OIS personnel. The BSSO Standards and Technical Workgroup (BSTWG) and BSSO Program Managers will review what has been written. If the new material is accepted, sign-off by the BSSO Portfolio Manager is required before the new material will be made available on the PDM Intranet website.

B. **Revised Chapter/Section**
After revisions and additions to the PDM have been drafted, they will be reviewed by the BSTWG and BSSO Program Managers. If changes are accepted, sign-off by the BSSO Portfolio Manager is required before revisions/additions will be made available on the PDM Intranet website.

All revisions and updates will be made to the electronic version of the PDM.

1.5.3   Supplemental Instructions

When the standards in the PDM conflict, or fail to address the specific needs of a Functional Office (the customer), a request for an exception to the existing standards may be made. The request must be made in writing and submitted to the BSSO Portfolio Manager. The request must cite the specific standard in question, an explanation as to why the exception is being requested, and a description of how the exception will be handled, including any alternative solutions. At their discretion, the BSSO Portfolio Manager may refer the request to the BSTWG

for recommendation before making the final determination to grant an exception. Any exception granted must be incorporated into the project documentation of the project to which it applies.

1.6   Training

Training in the use of the PDM is not required however; it will be made available as needed.

1.7   Technical Reference

Each chapter provides available templates, how-to documents, and samples for use in conjunction with the PDM.

1.8   Tools

Informational links are provided as tools to show various aspects of the PDM.

Tool	Description	Location
Stages and Phases	Outlines the high-level process flow for the PDM	BSSO SharePoint Site
PDM Deliverables	Shows a graphical view of all the deliverables within the PDM	BSSO SharePoint Site
Project Selection	High level overview of the Project Selection Stage	BSSO SharePoint Site
Project Planning	High Level overview of the Project Planning Stage	BSSO SharePoint Site
Application Development	High level overview of the Application Develop Stage	BSSO SharePoint Site
Project Closure	High level overview of the Project Closure Stage	BSSO SharePoint Site

1.9   References

FDOT Policies:

- FDOT Policy Statement 001-325-060, Security and Use of Information Technology Resources, Including Email, Internet and Antivirus Software
- FDOT Policy Statement 001-325-003, Information Systems Roles and Responsibilities

OIS Policies:

- Office of Information Systems Policy Statement 325-A01-020 Mainframe Backup Procedure
- Office of Information Systems Policy Statement 325-A00-007 Testing of Mainframe Software
- Office of Information Systems Policy Statement 325-A00-005 Access and Use of Production Environments
- Office of Information Systems Policy Statement 325-A00-001 Immediate Notification Requirement - Suspected or Known Occurrences of Specific Types of Information Resource Problems
- Office of Information Systems Policy Statement 325-A01-007 JCL Documentation Standard
- Office of Information Systems Policy Statement 325-A60-307 Elevated Computer Security Access
- Office of Information Systems Policy Statement 325-A60-303 Computer Software Security-Related Service Pack, Patch and Hot Fix Testing
- Office of Information Systems Policy Statement 001-325-008, Electronic Document Management and Geographical Information Systems
- Office of Information Systems Policy Statement 325-A80-221 Authorization To Request Migration of Code to the Production Environment

FDOT Procedures:

- FDOT Procedure No. 325-080-001, Acquiring Information Technology Resources
- FDOT Procedure No. 325-080-002, Application Systems Service Requests
- FDOT Procedure No. 325-025-001, Requesting Special Scheduling of Mainframe Computer Resources
- FDOT Procedure No. 325-080-050, Information Technology Resource Standards

OIS Procedures:

- Office of Information Systems Procedure 325-060-001, Electronic Security for Public Records Exemptions
- Office of Information Systems Procedure 325-060-010, Internet Requirements
- Office of Information Systems Procedure 325-080-003, Electronic Document Management System (EDMS) Requirements
- Office of Information Systems Procedure 325-080-020, FDOT Intranet
- Office of Information Systems Procedure 325-080-025, Information Asset Certification for the Enterprise Information Portal

CHAPTER 2 – PROJECT SELECTION STAGE

2.1   Introduction

The Project Selection Stage sets the initial foundation and documentation necessary for the success of all IT Projects. This stage assists in the Departments' project selection process. Within this stage, FDOT executive management prioritizes IT projects prior to advancing to the Project Planning Stage of the PDM.

IT projects are initiated when a potential opportunity is identified to improve business processes or services through technology. A key focus of the Project Selection Stage is alignment of the request with the FDOT's goals and objectives. This is accomplished through collaboration of the BSSO and the Functional Office(s) submitting the initial request.

2.1.1   Purpose

The purpose of the Project Selection Stage is to:
- Establish a clear understanding of what is being requested.
- Determine the feasibility (benefits expected, cost, risk, etc) of the request.
- Establish the project priority and next course of action based on the request.

2.1.2   Documentation of Work and Deliverables

Documentation of all deliverables of the stage will be initialized and maintained in an approved location.

2.1.3   Stage Coordination

A.   The Project Selection Stage is a collaborative effort between BSSO and the Functional Office(s). Therefore BSSO and the Functional Office(s) must work together to achieve the objectives and goals during this stage.

B.   Upon receipt of the initial request, the BSSO Portfolio Management team will determine if a Business Study is warranted.

C.   When a Business Study is warranted or requested, a Project Analysis Team will be established to develop the Business Study. This team will consist of personnel from both BSSO and the Functional Office(s).

D.   The BSSO Portfolio Manager and Project Sponsor will collaborate to ensure the IT project needs and objectives are clearly defined, and will seek project priority and authorization from FDOT Executive Management.

2.1.4   Stage Approvals

Projects are selected and prioritized in this stage. Stage approval is not required.

2.2   Project Selection, General

This section explains project selection procedures and criteria. It includes information on standards and deliverables, defines approval requirements, and lists helpful tools and templates.

2.2.1   Standards

A.   Inclusion on the Annual BSSO WorkPlan requires submission of a Request for Service Form No. 325-080-02. Request for Service must be submitted in accordance with the Application Systems Service Requests Procedure No. 325-080-002.

B.   IT projects must be referenced on the Annual BSSO WorkPlan.

C.   Stage deliverables, documents, and communication shall be provided using "Plain Language" as outlined by the Public Information Office.

D.   Deliverables must be established and approved in accordance with Sections 2.2.3 and 2.2.4 of the PDM.

2.2.2   Inputs

Input provided by the Functional Office(s) serves as the foundation of the initial analysis for the request. One or more of the following "inputs" or documents are available at the beginning of the Project Selection Stage.

a.   Request(s) for Service

b.   Service Request Evaluation

c.   Information Resource Request(s)

d.   Service Desk Ticket(s)

e.   Email or other method of communication

2.2.3   Deliverables

There is one, possibly two, deliverables documented within this stage. Use of a template is required for the following required deliverables:

- Business Study (Optional)
- Business Case (Required)

The deliverable templates, that supply a standardized format and offer additional instructions, are provided in Section 2.2.6 of the PDM.

(A) **Business Study** – A Business Study specifies the business solution, costs, and benefits of a project based on a Business Study analysis process. Content within this deliverable can be used as the basis to determine if a viable business solution warrants a project(s). Therefore, the Business Study can be a tool used by FDOT Management during project selection.

The Business Study is developed at the discretion of the BSSO Portfolio Manager and the Project Sponsor.

A Business Study should be considered when:

a) The initial request indicates the project costs may exceed certain thresholds set by FDOT Management.

b) There is a major technology refresh.

c) Business process reengineering is needed or

d) There will be significant impact to multiple business processes.

The following must be included in the Business Study:

1) **Executive Summary**
   a) Issue
   b) Recommendation
   c) Cost Benefit Summary

2) **Problem Definition**
   a) Problem Statement
   b) Affected Stakeholders

3) **Objectives and Strategic Assessment**
   a) Business Objectives
   b) Strategic Alignment

4) **Current Business Process Analysis**
   a) Current Business Process
   b) Assumptions and Limitations

5) **Proposed Business Process Requirements**
   a) Proposed Business Process
   b) Business Solution Alternatives
   c) Recommendation Business Solution
   d) Rationale for Selection
   e) Assumptions
   f) Constraints
   g) Risks Assessment

6) **Cost Benefit Analysis**
   a) Net Tangible Benefits
   b) Business Cost Analysis
   c) Benefits Realization Table

(B) **Business Case** – The Business Case provides the project request, risks, benefits and costs for the purpose of authorizing and prioritizing the project by FDOT executive management. The Business Case is developed by the BSSO Portfolio management team and the Project Sponsor.

The following should be included in the Business Case:

1) A brief summary of the request (one paragraph).
2) The expected final deliverable. Be specific, this will be used to establish project scope.
3) Any savings that the Department will realize. What are they?
4) The risks or costs to the Department by delaying this request.
5) The number of people that will benefit from this request.
6) Any critical dates or dependencies.
7) If mandated by the FDOT Executive Board or other governing authority (IRMC, FHWA, DMS, Legislature, etc.), a brief description the mandate and which authority is requiring this change.

2.2.4   Approval of Deliverables

There are two (2) deliverables that must be considered during this stage. Approval of the Business Study (if provided) and Business Case indicates:

- An understanding of the purpose and content described in the deliverables
- Acceptance of the analysis results and
- Verification of the overall accuracy, viability, and validity of the content and estimates.

Business Study and Business Case must be reviewed and approved by the following:

- Project Sponsor(s)
- BSSO Portfolio Manager

Approval of the Business Case is required for any project to advance to the Project Planning Stage.

2.2.5   Process

View the process flow, located on the BSSO SharePoint site, for the Project Selection Stage.

2.2.6   Tools and Templates

Deliverable templates, informational links, and forms are provided as tools during the Project Selection Stage.

Tools and Templates	Description	Location
Project Selection Process Flow	Outlines the high-level process flow for the Project Selection Stage including the deliverables and approvals.	BSSO SharePoint Site
Business Study (stage deliverable)	Provides comparative information between business solution costs and project benefits based on a Business Study analysis process.	BSSO SharePoint Site
Business Case (stage deliverable)	Includes information used to formally authorize and prioritize a project.	BSSO SharePoint Site
Benefits Realization Table	Summarizes the estimates for tangible and intangible benefits resulting from implementation of the proposed IT project.	BSSO SharePoint Site
Project Risk Assessment Tool	Risk relates to the level of uncertainty assigned to a given project. This uncertainty is measured in terms of the likelihood of a particular event to impact the outcome of a project. This tool identifies potential project risks for the organization.	BSSO SharePoint Site
Application Systems Service Requests Procedure	Defines the steps necessary to request computer application system development, enhancement, and maintenance services.	BSSO SharePoint Site
Request for Service Form	This form is submitted by the Functional Office(s) prior to the Project Selection Stage.	BSSO SharePoint Site
Request for Service Evaluation Form	Evaluation of an initial "Request for Service". This form is not required but often used to provide a high-level evaluation of a requested project.	BSSO SharePoint Site
Public Information Office - Communicate Web, Plain Language	This web page provides access to useful tools, resources, and training regarding Plain Language.	BSSO SharePoint Site
Annual BSSO WorkPlan	This document identifies BSSO projects and the resources allocated for a given fiscal year.	BSSO SharePoint Site

CHAPTER 3 – PROJECT PLANNING STAGE

3.1 Introduction

The Project Planning Stage establishes the project scope and management plans on which the information technology (IT) project will be based, and for which the project stakeholders will be held accountable.

3.1.1 Purpose

The Project Planning stage authorizes the project for execution. Each IT project is unique and therefore the project charter and project plan must be tailored to meet specific project needs.

3.1.2 Project Management

All IT projects shall be managed in accordance with the standards and procedures established in Chapter 7 of the PDM.

3.1.3 Documentation of Work and Deliverables

Documentation of all deliverables of this stage will be initialized and maintained in an approved location.

3.1.4 Stage Coordination

Provided approval of the project to proceed to this stage is obtained, continual and effective coordination and communication is vital to the success of the IT project.

(A) The project will be introduced to all identified personnel within the User/Stakeholders Office(s) (i.e., the Management Steering Stakeholders and Functional Steering Stakeholders) by means of a formal project "kick-off" event.

(B) The project will be introduced to all identified personnel within the Office of Information Systems (i.e., personnel from the areas of Database Administration/Database Administration Technical, Security Administration, Computer Services, Business Systems Support Office (BSSO), Office of the Inspector General, District Information Systems Managers, etc.) by means of a formal project "kick-off" event.

3.1.5 Stage Approvals

Projects are authorized by the Project Charter in this stage. Stage approval is not required.

3.2 Project Planning General

Project Planning involves definition and sequencing of activities and resources to deliver the product and/or service.

3.2.1   Input

The Business Case, input from the Project Selection Stage, must be available at the beginning of the Project Planning Stage. It will provide the detail needed to establish a solid Project Charter and Project Plan.

3.2.2   Standards

A. The project plan must pass all quality control checklist items in accordance with Chapter 6 of the PDM.
B. For BSSO Managed projects, the project baseline estimate must be performed by the Project Estimate Group (PEG).
C. Once the Project Plan is approved, changes that result in a change to the baseline project scope, baseline cost, and/or baseline schedule must be made through the Change Control process.

3.2.3   Deliverables

The Project Planning Stage produces two (2) deliverables for the project: the Project Charter and Project Plan. Both deliverables are project type "Project Documents" and will be referenced and updated throughout the life of the IT project.

A. The **Project Charter** – The Project Charter provides a consistent method to identify the scope of work to be completed by a project. It is an agreement between the stakeholders and BSSO so the appropriate FDOT Management approval can be sought and before significant resources are committed and expenses incurred. The Project Charter represents the initial scope of work for the requested IT project.
B. The **Project Plan** consists of two components:
   1. Project Scope – The Project Scope defines the project scope in detail, addresses assumptions, constraints, risks, and the approach the project will pursue.
   2. Management Plan – The Management Plan defines the baseline estimate, schedule, and how the project will be managed.

3.2.3.1   Project Charter

A template for the Project Charter is provided in Section 3.2.5 of the PDM. The template provides a standardized format and offers additional instructions. Use of the template is required.

 The components of the Project Charter are listed below.
   The following must be included in the Project Charter:
   1) Project Definition
      a. Problem Statement
      b. Project Description/High-Level Requirements
      c. Project Goals and Objectives
      d. Initial Project Scope
      e. Critical Success Factors

    f. Assumptions

      The following three assumptions must be considered for each project:

        1. Project resources, both BSSO and Functional Office(s), must be available for planned tasks as determined by the posted project schedule in order to meet the deadline.

        2. A formal change control process will be utilized as defined in the Project Plan.

        3. Unplanned tasks will be communicated and coordinated with all affected parties by the Project Manager in a timely manner. Reasonable accommodation for resource availability is required in order to minimize impacts.

    a) Constraints

    b) High Level Project Risks

2) Authority and Milestones

    a. Funding Authority

    b. Project Oversight Authority

    c. Initial Project Estimate

    d. Major Project Milestones

3) Project Organization

    a. Project Structure

    b. Roles and Responsibilities

3.2.3.2   Project Plan

Templates for the Project Plan are provided in Section 3.2.6 of the PDM. The templates provide a standardized format and offer additional instructions. Use of a template is required.

The following comprise the Project Plan:

1. The **Project Scope** component must address the following:

   - Baseline Requirements
   - Project Deliverables
   - Project Approach
   - Assumptions
   - Constraints
   - Risks

2. The **Management Plan,** contained within the Project Plan, must address the following:

   - Project Organization
     - o Project Structure
     - o Project Stakeholders
     - o Roles and Responsibilities
   - Estimates and Schedules
     - o Estimates
     - o Baseline Schedule and Major Milestones

- o Work Activities - Work Breakdown Structure (WBS)
- o Resource Allocation
- o Budget Allocation
- Scope Management Plan
  - o Change Management
  - o Issue Management
- Risk Management Plan (RMP)
  - o Risk Register
- Quality Management Plan
  - o Project Reviews and Assessments
- Communication Management Plan
  - o Stakeholder and Information Identification
  - o Status Reporting
  - o Distribution Groups
- Configuration Management Plan
  - o Configuration Item Register
- Project Closure Plan
  - o Closeout Plan
  - o Phase Closeout Plan
  - o Transition to Maintenance Plan

3.2.4   Quality Control Reviews

The Project Planning Stage must comply with the quality control reviews found in Chapter 6 of the PDM for the Project Planning Stage.

3.2.5   Approval of Deliverables

For projects less than 1000 hours, the BSSO Program Manager will determine which planning template(s) will be used to satisfy the PDM Planning Stage deliverables.

3.2.6   Project Charter

The approval of the Project Charter indicates an understanding of the purpose and content described in the deliverable. Approval of the deliverable is an agreement between the OIS and the Functional Office(s) that a project should be initiated, and the necessary resources should be committed as outlined in the Project Charter.

For projects greater than 1000 hours, the Project Charter must be developed and approved by the following:

1. Executive Sponsor
2. Project Sponsor(s)

3. Chief Information Officer
4. BSSO Portfolio Manager

3.2.7   Project Plan

Approval of the Project Plan indicates an understanding of the purpose and content described in the deliverable. Approval of the deliverable signifies agreement between the OIS and the Functional Office(s) that the project scope, cost, and schedule are clearly defined, understood, and accepted. Approval also means that both OIS and the Functional Office(s) understand and agree on the Project Management Plan section of the Project Plan.

For Projects greater than 1000 hours the Project Plan must be approved by:
1. <Business> Functional Coordinator
2. BSSO Program Manager
3. Project Manager

For projects less than 1000 hours the Project Plan must be approved by:
1. Project Sponsor
2. Portfolio Manager
3. <Business> Functional Coordinator
4. BSSO Program Manager
5. Project Manager

3.2.8   Tools and Templates

Several deliverables are completed during the Project Planning Stage. Templates, checklists, and guidelines are provided as tools during development of these deliverables.

Tools and Templates	Description	Location
Project Charter (stage deliverable)	Document used to establish the project scope, project organization and authorization.	BSSO SharePoint Site
Project Plan (stage deliverable)	Includes general planning information, monitoring and control methods, and quality, communication, configuration, performance, and risk management. Used for projects greater than 1000 hours.	BSSO SharePoint Site
Project Plan 1000 (stage deliverable)	Includes an abridged content of the Project Plan. Used for projects less than or equal to 1000 hours.	BSSO SharePoint Site

Tools and Templates	Description	Location
PDM Deliverable Responsibility Matrix (aka RACI)	Tool to assist project manager in determining who is Responsible, Accountable, Consulted and/or Informed (RACI) by each deliverable in the PDM. The matrix is laid out by deliverable and project role.	BSSO SharePoint Site
Project Contact Register	Tool to provide a list of project points of contacts, phone numbers, and email addresses.	BSSO SharePoint Site
Change Control Process	BSSO Change Control process flow.	BSSO SharePoint Site
Change Control Request	Change Control Request form used to detail scope, costs, or schedule changes on the project.	BSSO SharePoint Site
Change Control Log	List of all Change Control Requests.	BSSO SharePoint Site
Communication Register	Tool to describe how and how often the project will disseminate information and communicate with stakeholders.	BSSO SharePoint Site
Configuration Items Register	Tool to provide a list of the control items (documents, deliverables, etc) that will require user and/or management sign off prior to change.	BSSO SharePoint Site
Deliverables Index	List of all project deliverables that will be developed or updated.	BSSO SharePoint Site
Risk Register	Tool to provide a list of risks identified specifically for the project, probability, status, and mitigation triggers.	BSSO SharePoint Site
Risk Item Form	Tool to describe a single risk for the project. Contains details about individual risks in the Risk Register.	BSSO SharePoint Site
Work Breakdown Structure (WBS)	Tool showing tabular break down of the work to be performed on the project. Work is divided into work packages.	BSSO SharePoint Site
Enhancement WBS (MPP)	Work Breakdown Structure for Enhancement projects.	BSSO SharePoint Site
Additional Tools	Risk Factor Tables used to assist in determining project risks	BSSO SharePoint Site
Stage/Phase Approval Template	Used to obtain Stage/Phase Signatures after completion of a Project Phase or Stage.	BSSO SharePoint Site

CHAPTER 4 – APPLICATION DEVELOPMENT STAGE

4.1 Introduction

The contents of this chapter apply to the personnel, consultants and/or contract personnel working for or under the guidance of the Office of Information Systems, engaged in application development or enhancement for any application for which the Office of Information Systems is, or will be, the custodian.

4.1.1 Purpose

This chapter establishes the standard methodology and corresponding deliverables for development of information technology applications/systems, or their components, to support the business needs of the Department.

This methodology delineates the full System Development Life Cycle (SDLC), whether for the whole application/system or just components thereof.

The phases of the SDLC covered in this chapter include:

Section 4.2 Phase I: Requirements

Section 4.3 Phase II: Design

Section 4.4 Phase III: Construction

Section 4.5 Phase IV: Implementation

Each phase must be completed satisfactorily according to its standards before moving on to the next phase. Specific problems in one phase may require that a previous phase be readdressed. In such cases, that will be done and the order of work will again proceed from the readdressed phase.

The size, complexity, and type of application development project will dictate the magnitude of effort, degree of detail, and techniques involved in satisfying each phase. Reasonable discretion is required of project management, quality assurance, and review personnel to ensure phase deliverables provide the level of information and precision required for the success of the application development project.

4.1.2 Project Management

All IT projects shall be managed in accordance with the standards and procedures established in Chapter 7 of the PDM.

4.1.3 Documentation of Work and Deliverables

Project documentation of all deliverables of the stage will be initialized and/or maintained in an approved, predetermined location.

4.1.4   Stage Coordination

Coordination during this stage will be addressed at the beginning of each phase with a phase "kick-off". Personnel from both the Office of Information Systems and the Functional Office assigned to the project phase should participate. Each phase "kick-off" should provide an orientation to the project, which should include the goals of the specific phase, an introduction of the participants, a communication plan, and any other phase-specific documents.

4.1.5   Standards

A. All Phase Deliverables must pass all of their respective quality control checklist items or processes in accordance with Chapter 6 of the PDM.
B. Any constraints imposed by legislative or governmental policies or regulatory directives that will affect the operation or performance of the system must be identified in this stage.
C. Changes to any approved phase deliverables that cause a change to the project scope, cost and/or schedule must be made through the Change Control process.

4.1.6   Quality Control

A Quality Control Review will be conducted in each phase of the Application Development Stage. Each phase must comply with the quality control reviews found in Chapter 6 of the PDM.

4.1.7   Stage Deliverables

There are several deliverables that must be provided during this Stage of the PDM. The PDM contains an outline and links to templates to assist with organizing and completing the deliverables for each of the SDLC Phases. Required Deliverables are those deliverables identified in the Project Plan, Project Deliverables section.

4.1.8   Stage Approvals

Systems developed by the Office of Information Systems require full adherence to all requirements, standards, and policies referenced or stated in the PDM. Each phase of the SDLC must be thoroughly addressed with appropriate approvals and sign-offs as stated for each Phase.

Stage approval requires a formal approval of the Application Development Stage. Authorization, including signatures, is required from the following:

1. Project Sponsor(s)
2. BSSO Portfolio Manager

4.2   Requirements Phase

The Requirements phase focuses on deliverables, which provide the necessary documents and authorization required to advance to the Application Development, Design phase. These documents are critical to the success of the application development project and signify the agreed upon requirements of the data, system, and business processes.

4.2.1   Standards

The following sections define standards for this phase.

4.2.1.1   Data Structure Analysis

Changes in, or additions to, existing data structures, data models and areas of integration with data supported by other applications, must be analyzed by Data Administration/Database Administration Technical, according to the procedures of that section of the Office of Information Systems.

4.2.2   Inputs

The following information must be available at the beginning of the Requirements phase. It will provide the details needed to begin documentation of the Requirements for the application development project.

   a)   Project Plan

4.2.3   Deliverables

Requirements deliverables must be identified in the Project Plan. Templates for each Project Deliverable are provided in the Tools and Templates section of this phase. The templates provide a standardized format and offer additional instructions.

A. **System Requirements** - A formal high-level document describing what the application or project must do and how it must be structured. This is the first formal document that must be approved/signed-off by the user/business office per prescribed approval processes. <Describes what the system is expected to do, the system's expected environment, the system's usage profile, its performance parameters, and its expected quality and effectiveness. Is a structured collection of information that embodies the requirements of the system.> The System Requirements document must include the following information:
   a. **General System Requirements**
      i. **Major System Capabilities** - Specify the major system capabilities in terms of availability, target deployment environment(s), device accessibility, and/or technical capability.
      For example:

   - System must be available on the Internet.
   - System must be available 24 hours per day.
   - System must be accessible by mobile devices.
   - System must be able to accept electronic payments.

      ii. **Major System Conditions** - Specify major system assumptions and/or constraints (conditions). The conditions may limit the options available to the designer/developer. For example
         1. System must use the FDOT Enterprise GIS Framework.
         2. System must use FDOT Enterprise Document Management System.
         3. System must interface with Bank of America credit card payment system.

  iii. **System Interfaces** - Describe the dependency and relationship requirements of the system to other enterprise/external systems. Include any interface to a future system or one under development. For clarify, a graphical representation of the interfaces should be used when appropriate.

  iv. **User Characteristics** - Identify each type of user of the system by function, location, and type of device. Specify the number of users in each group and the nature of their use of the system.

b. **Policy and Regulation Requirements** – Specify any constraints imposed by legislative, governmental, policies or regulatory directives that will affect the system.

  i. Specify any internal policies and/or procedures that need to be changed and/or created as a result of implementing the system.

c. **Security Requirements** Identify the security access and authorization requirements necessary for the application or project inclusive of public access, confidential/restricted access, file/data transfer access, external department access, Internet access specifically when performing functions for browsing, reporting, adding, deleting and/or maintaining data.

  i. Specify any confidential and/or exempt data requirements.

d. **Training Requirements** – Identify documentation requirements for user manuals, interactive help screens and/or pages, graphics/multimedia, CBTs and/or training materials required for the application or project.

e. **Initial Capacity Requirements** - All aspects of impact of the new and/or modified system requirements will be considered and addressed where necessary. An initial estimation can be established using current data amounts, planned number of users, and an approximate number of transactions.

f. **Initial System Architecture -** Specify the data platform, hardware, software, programming languages, tools and operating system requirements for the application or project.

g. **System Acceptance Criteria** - Specify the general system acceptance criteria specified and agreed upon by the project sponsor and key stakeholders that will be used to accept the final end product. For example: the new system must run in parallel with current production system for x months; three years of data must be in the system (conversion implied) on day one; etc.

h. **Current System Analysis** - If a current system exists, perform analysis on the system and describe how the current system is used by the business. Specify data conversion requirements, relevant data flows, system interfaces to existing systems, reporting capability, etc.

B. **Software Requirement Specifications (SRS)** - Documents requirements for the software product being developed. It is the document upon which the design and implementation of the software will be built. The Software Requirement Specifications document must include the following information:

a. **Business Requirements** - Describe all business requirements for the system. Business requirements are the parts of the fully defined business process that will be automated by the system. If lower level information is known document that as well.

b. **Business Process Model** - Identifies and define the business processes based on the business requirements. The Business Process model will include such items as:

       i. **Business Process Definitions** – Identify the Business process name and purpose. Include the process decomposition thru the elementary processes for the business process defined.

       ii. **Business Process Flow** - Include how business processes flow from one process to the next.

   c. **Functional Requirements** – This documentation will describe each Business process/requirements in detail by providing business rules for the process/requirement.

   d. **Data Management Requirements** - Describe the data management requirements for the business data to be stored by the application. Describe archive, purge and audit requirements.

   e. **Reporting Requirements** - Describe all reporting requirements needed by the application. For each report identified, specify the frequency, distribution and sorting requirements.

C. **Conceptual Data Model** - Produces an initial/conceptual Entity Relationship Diagram (ERD) with logical data relationships as seen at this point in the project, including an initial description for each entity represented.

D. **Requirements Traceability Matrix (RTM) -** Contains an identifier for each requirement listed and cross references/relates the requirement back to the source requirement in the Scope/Baseline Requirement listed in the Project Plan. The RTM will also be used in design to cross reference design components/elements back to each requirement.

E. **Initial Integration Plan** –OIS applications are integrated with other Department computer systems, processes and data. Providing integration of data/processes is crucial to data integrity and providing consistent, cost effective and efficient information for the Department. This documentation will establish the initial plan for integrating the application into the Department. This plan will include such items as:

   a. **Integration Overview** – Document the relationship of new processes and/or data within the OIS application environment must be determined.

       i. The potential for integration and/or reuse of processes and/or data must be evaluated. Additionally, an assessment should be made of any newly planned processes data, or system where this current change/development effort could also benefit.

       ii. A recommendation must be made regarding the feasibility and timeliness of accomplishing these integration objectives within the current development effort.

   b. **Integration Strategy -** Describes the high level plan for integration and, most importantly, why the integration plan is structured the way it is. The Integration Plan is subject to several constraints, sometimes conflicting constraints. It is one part of the larger process of build, integrate, verify, and deploy. All of which must be synchronized to support the same project strategy.

   c. **Initial Data Conversion Plan** - A formal written document(s) describing the steps necessary for data conversion, fall-back plans, and initialization. The Impact

Assessment should be complete before finalizing the data conversion plan as the impacts and plan for integration could change the plan for data conversion.

d. **User Help Documentation Plan** – Define who will design the online help, initial user manual documentation (I/O examples and an outline of narrative development), and user guides.

e. **Impact Assessment** - The impact of the development effort on existing applications and/or systems must be determined. This must be done before developing an initial data conversion plan.

    i. This includes a review of existing system functions (both automated and manual), input/output, data, interfaces, and environment in order to identify any existing application component potentially affected by the new and/or changed processes and/or data. Assess interfaces to statewide systems, e.g. State Automated Management Accounting System (SAMAS), and People First (state's timesheet system) where such needs might be met.

        1. Developers/Analysts or other OIS technical experts may analyze each requested change in an effort to further understand what is needed.

            a. For an existing system, it must be determined if the existing Software Requirement Specifications are up-to-date with the functionality of the system. This is necessary to truly determine the size of the changes being requested, to then accurately report the impact and figure an estimate of time.

            b. Additionally, an assessment of each impacted portion of a system should be made to see if the user community utilizes it or if it still provides value, before making plans to change or replace it.

    ii. The potential effect on identified components must be documented, e.g. made obsolete, modified, unchanged, etc.

    iii. The owner and/or custodian of the application must be notified of the potential impact.

    iv. This includes applications for which a business office(s) is custodian. Although OIS will not be responsible for remediating the impacted application, this potential impact should be assessed, coordinated and accounted for in the project schedule.

    v. A plan for coordination of the changes to existing applications and/or systems must be developed.

        1. In the event that the new application replaces an existing system(s), a plan must be devised and agreed to by Management Stakeholders to how and when it (they) will be decommissioned. This will cause a significant amount of cost savings (potentially statewide) due to averted confusion, misinformation and unnecessary additional processing.

        2. An impact assessment should also be made for a current application system's data that could be utilized by non-enterprise applications.

f. **Test Strategy -** A written test strategy that outlines the testing portion of the software development cycle must be developed. The test strategy is created to inform the project team about some key issues of the testing process.
   i. The test strategy must identify which types of tests are to be performed (e.g. Unit, Integration System, UAT, etc.) and who is responsible.
   ii. The test strategy must describe the test environment requirements (e.g. Browser versions, hardware, OS levels, etc.).
   iii. The test strategy should incorporate the Critical Success Factors in determining how to organize the test (i.e. identify most important errors or complex processes as early as possible to help lower rework costs)
   iv. The test strategy must identify areas to be tested, areas that cannot be tested, or cannot be fully tested, and what risks will be incurred
   v. The test strategy must identify quality objectives and how they will be measured (e.g. number and severity of defects allowed from one test level to the next)

F. **Project Plan (updated)** - Update the Project Plan as needed from the information gathered during this phase.

4.2.4   Approval of Deliverables

The Requirements deliverables as defined in the Project Plan, Project Deliverables section must be approved by the following:

1. <Business> Functional Coordinator
2. BSSO Program Manager

4.2.5   Phase Approval

Before proceeding to the Design phase, authorization is required. The Project Plan, Stage and Phase Approval section requires formal approval of the Requirements Phase. Authorization including signature is required from the following:

1. <Business> Functional Coordinator
2. BSSO Program Manager

4.2.6   Process

Requirements Phase Process diagram, located on the BSSO SharePoint site.

4.2.7   Tools and Templates

Several deliverables are completed during the Requirements Phase. Templates, checklists, and guidelines are provided as tools during development of these deliverables.

Tools and Templates	Description	Location
System Requirements	A formal written high level document describing what the system must do and how it must be structured.	BSSO SharePoint Site
Software Requirement Specifications	A formal written document(s) detailing the business requirements of the software application to be developed.	BSSO SharePoint Site
Requirements Traceability Matrix	Contains the Software Requirements Specification identifiers for each documented Business requirement and relates it back to the source requirement in the Scope/Baseline Requirement or change request.	BSSO SharePoint Site
Initial Integration Plan	Documents the strategy and plans for OIS applications to be integrated with other Department computer systems, processes and data.	BSSO SharePoint Site
Initial Data Conversion Plan	A formal written document(s) describing the steps necessary for data conversion, fall-back plans, and initialization.	BSSO SharePoint Site
Lessons Learned	Requirements lessons learned	BSSO SharePoint Site
User Help Documentation Plan	Tool to describe the planned approach for user documentation (e.g. Help, manuals, etc.)	BSSO SharePoint Site

4.3   System Design Phase

The purpose of the System Design Phase is to create a technical solution that satisfies the requirements for the system. In this phase of the SDLC, the processes included in the application and defined in User Requirements are detailed and expanded, the data structure refined, and the user interface defined (e.g. Web-based, batch, touch screen, etc.). Although many of the aspects of this Phase are technical, the Functional Expert(s) is again involved in order to assure that the system design answers the needs and requirements.

During the Design phase:
- Processes are studied in greater detail, improvements that offer more effective solutions for business operation are identified, and process actions are detailed.
- Specific data needs are determined.
- Data relationships and identifying characteristics are established.
- A system design is developed and data/process interaction analysis is performed.
- Programs, classes, or objects are identified and program logic, input/output, and databases are designed.
- Program specifications are created and security requirements addressed.
- The impact to, and integration with, current systems and any associated projects is assessed and coordinated.
- The environment(s) in which the application will operate and the optimal information technology tools for the development of the application are selected.
- The documentation from prior phases is updated, additional documentation created, and appropriate management approvals are solicited.

4.3.1   Standards

The following sections define standards for this phase.

4.3.2   Satisfaction of Requirements

The entire design of the application must meet the needs of the Functional Office, as defined in the previous phase.

Before proceeding to the Construction Phase, a design, agreed upon by both the Project Sponsor(s) and the Office of Information Systems, must be obtained.

1. The design may include any additional information (e.g. user documentation, project information gathered previously, spreadsheets, desktop databases, user websites, etc.) necessary to ensure clarity and understanding.
2. The design must map the requirements to the design components (e.g., map requirements traceability matrix to design components).
3. A prototype of the system may be used to demonstrate the system design.

4.3.2.1   Design Consistency and Integration

All applications developed for FDOT shall have a consistent "look and feel" in accordance with FDOT OIS Web Standards. This will provide consistency throughout the Department's computer

environment and facilitate the performance of cross functional activities and the movement of personnel among functional areas of the Department

4.3.2.2   Data Model Design

Data Administration/Database Administration Technical must approve all data changes and additions to the Department's data structure, data models and storage, according to the procedures of that section of the Office of Information Systems.

4.3.2.3   Technical Architecture

The Technical Architecture must be documented describing the components of the overall system architecture and the architectural model. The various components will include hardware, software, (which must fall within the department's general guidelines for hardware/software configurations), technologies, and peripherals. The model will represent the components of the system and their interrelationships.

4.3.2.4   Security Plan

   A. The security requirements (initiated in the Requirements Definition, Requirements phase) will be finalized in the Design phase as the Security Plan. The Security Plan for an application must reflect ownership of and responsibility for the data and processes addressed by the application.
   B. The security design must be documented, reviewed, and accepted by the Department's Security Administrator and the <Business> Functional Coordinator.

4.3.2.5   Test Plan

A test plan documents and details the plan that will be used to verify and ensure that the application meets its requirements.
   - A separate test plan must be created for the types of test identified in the test strategy (e.g., unit test, performance, load, business events, system test, regression).
   - The User Acceptance Test plan (UAT) will be created by development, and will also be used during the Implementation phase.
        o Test case scenarios for UAT are to be based on the User Requirements.
        o UAT scenarios are defined and created by the functional office (utilizing the format of their choosing) with assistance from OIS.
        o The functional office will sign off on successful completion of UAT.

The plan should contain the following elements.
 a) Test Plan components
 b) Test Plan Identifier
 c) Introduction
 d) Test items
 e) Features to be tested
 f) Features not to be tested
 g) Approach
 h) Item pass/fail criteria
 i) Suspension criteria and resumption requirements
 j) Test deliverables
 k) Testing tasks
 l) Environment needs
 m) Responsibilities
 n) Staffing and training needs
 o) Schedule
 p) Risks and contingencies
 q) Approval

4.3.3   Inputs

The following information must be available at the beginning of the Design phase. It will provide the detail needed throughout the development of the design of the application.
 a) Project Plan
 b) System Requirements
 c) Software Requirements Specification
 d) Initial Integration Plan
 e) Conceptual Data Model
 f) Test Strategy

4.3.4   Deliverables

Design deliverables must be identified in the Project Plan, Project Deliverables. Templates for each deliverable are provided in the Tools and Templates section of this phase. The templates provide a standardized format and offer additional instructions.

A. **System Design -** Create a technical solution that satisfies the functional requirements for the system.

    a. **Data Model Design**. The initial goal of a Data Model is to develop and define as complete a Data Model as is possible. It is important to note that the model does typically require modifications over the development of the application.

        i. Entity Relationship Diagram – This is a chart/diagram representing the logical data model relationship of all entity types used by the application and includes the parent, child, and indexed attributes, etc.

        ii. Entity Definition Report – This is a report/list of all entity types used by the application and includes the individual descriptions for each of the tables, files, etc.

        iii. Attribute Definition Report – This is a report/list naming all attributes/data elements contained in each of the tables, files, etc. used by the application and includes their descriptions and characteristics.

        iv. Data Volume Estimates – This report describes the base population, projecting the data volume growth estimates, processing frequency, capacity planning for storage and memory requirements for each of the data structures used by the application.

        v. Data Design Diagrams – These charts/diagrams represent the external interfaces used by the application. They include the purpose and general configuration of the data design elements.

    b. **Process Model Design** - This documentation translates the business process model defined in requirements into a technical application/system process model. The Process model will include such items as:

        i. **Process Definitions** – Identify the process name and purpose. Include the process decomposition by providing the inputs, activities and output for each process.

        ii. **Process Flow** - Show how each process flows from one process to the next.

    c. **Detailed Design** – This documentation represents the visual solution for the application look and feel from a User Interface, Batch and Reporting perspective. It will establish the detail needed to completely define the various technical modules that must be produced to create the new system. Translate all requirements into a set of documentation forming the framework which will be used in application development, testing, and implementation activities.

        i. **User Interface Design** – Define the user interface for the system (visual solution and to define the application "look and feel")

            1. UI Specification

                a. Mock-ups (visual representation)

                b. Navigation

            2. UI Sequence Diagram

      ii. **Batch Process Design** – Define all of the batch processes.
- 1. Batch Specification
  - a. Define Frequency, reports produced and notification to be sent

      iii. **Report Design** – Define all reports
- 1. Report Specification
  - a. Mock-ups (visual representation)
  - b. Frequency
  - c. Other information

  d. **Create/Read/Update/Delete (CRUD) Matrix** (Interaction Analysis) – This matrix illustrates the interaction between the Process model and the Data Model. It helps ensure that each process is directly affecting the correct entity as required and that each entity has associated processes.

  e. **Technical Architecture** – Describe the technical direction, overall technical solution in terms of class diagrams, objects and components.

      i. **Class Diagram** – Unified Modeling Language (UML) based type of static structure diagram that describes the structure of a system by showing the system's classes, their attributes, operations (or methods), and the relationships among the classes.

      ii. **Object Mapping** – The process of unifying data entities and classes. This creates, in effect, a "virtual object database" that can be accessed in the application. For this deliverable, typically the core and any special objects are mapped for future use.

      iii. **System Architecture Description** - Describes the technical direction, overall technical solution in terms of platform(s), operating system(s), network, language(s), hardware, supporting software and tools to be used in the creation and maintenance of the new application.

      iv. **Component Diagram** – Depicts how components are connected together to form the application. Example components could include:
- 1. EBOs
- 2. Services
- 3. Dependencies

      v. **Interface Control Document** – Describes how the application will communicate with external interfaces. Includes configuration, inputs and outputs, exception handling, and other relevant notes.

      vi. **Sequence Diagrams** – Shows how processes operate with one another and in what order. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario.

B. **Test Plan** – Unit test, user acceptance test, business events, system test, and preliminary testing schedule.

C. **Test Case Matrix** – A test case matrix shall be developed that demonstrates test coverage for the application testing. The matrix shall include the test case ID and a brief description of the test to be performed. The Tools and Templates section contains tools to create a test case matrix, and assist with test case development. This document may be updated during the Construction phase. The test case matrix should contain the following elements.
- a. Test Case ID
- b. Functional Process
- c. Description

D.   **Integration Plan** (using the Initial Integration Plan)
   a. **Conversion Plan** – Detailed steps necessary for data conversion. This should include: fall-back plans, data conversion map, and data clean up requirements. Conversion program specifications would be included in the Detailed Design.
   b. **Implementation Strategy** – Initial coordination of construction and installation tasks (e. g. scheduling database functions with Database Administration/Database Administration Technical, request server needs with hardware server group, connection strings, etc.).
   c. **Capacity Plan** – Data storage requirements, process frequencies, and performance requirements.
   d. **Training Plan** – Required training and training responsibilities, training plans for the <Business> Functional Coordinator, training material outline, online training (Training Requirements were previously defined in the Requirements Definition, Requirements phase).
E. **Security Plan** – Details specify authorized personnel; define data access levels; prevent inappropriate access/use of data by unauthorized people; designate Resource Access Control Facility (RACF) profiles/groups or Internet Subscriber Accounts (ISA); and identify steps for coordination with Security Administration (Security requirements were previously defined in the Requirements Definition, Requirements Phase.)
F. **Requirements Traceability Matrix (Updated) –** The RTM should be updated to show which detailed design components and test cases trace back to business requirements.
G. **Project Plan (Updated)**

4.3.5   Approval of Deliverables

The Design deliverables as defined in the Project Plan, Project Deliverables must be approved by the following:

1. <Business> Functional Coordinator
2. BSSO Program Manager
3. Computer Security Office (Security Plan)

4.3.6   Phase Approval

Before proceeding to the Construction phase, authorization is required. The Project Plan, Stage and Phase Approval section requires formal approval of the Design Phase. Authorization including signature is required from the following:

1. BSSO Program Manager
2. <Business> Functional Coordinator

4.3.7   Process

Prepare for System Design

Define Technical Architecture

Define System Standards

Create Database Structure

Prototype System Components

Produce Technical Specifications

☐ **Prepare for System Design,** the impact to, and integration with, current systems and any associated projects is assessed and coordinated, environment(s) in which the application will operate and information technology tools are selected, and training needs of the team members involved in Design are addressed

☐ **Define Technical Architecture,** components of the overall system architecture and the architectural model are described, system hardware/software, and supporting tools identified

☐ **Define System Standards,** common processes, techniques, tools, and conventions that will be used throughout the project are identified in an attempt to maximize efficiencies and introduce consistency throughout the system

☐ **Create Database Structure,** data model is created that meets the user data requirements effectively, efficiently and securely, and optimized to ensure the completeness, accuracy, and reliability of the data

☐ **Prototype System Components,** the solution may be demonstrated, requirements confirmed, or to demonstrate "proof-of-concept"

☐ **Produce Technical Specifications,** various technical modules that must be produced are defined

4.3.8   Tools and Templates

Several deliverables are completed during the Design Phase. Templates, checklists, and guidelines are provided as tools during development of these deliverables.

Tools and Templates	Description	Location
Lessons Learned	Design lessons learned	BSSO SharePoint Site
System Design QC Review Technical Checklist	This checklist confirms that the technical aspects of the design have been established appropriately.	BSSO SharePoint Site
System Design QC Review Analyst Checklist	This checklist confirms that the various design components have been linked to corresponding requirements and can be confirmed by a test condition.	BSSO SharePoint Site
Technical Architecture Deliverable Examples	Examples of Technical Architecture deliverables for the application under development.	BSSO SharePoint Site
User Interface Table	Table used to describe screens or other interfaces	BSSO SharePoint Site
Test Plan	Document used to describe Testing planned for the application	BSSO SharePoint Site
Test Case Tools	Tools that can be used to develop test cases for testing during application development	BSSO SharePoint Site
Security Plan	Document to describe security for the system	BSSO SharePoint Site
Training Plan	Document to describe training required	BSSO SharePoint Site

Tools and Templates	Description	Location
Conversion Plan	Document to describe the data conversion	BSSO SharePoint Site
Integration Plan	Formal document of the Projects Integration Overview	BSSO SharePoint Site

4.4 Construction Phase

The purpose of Construction is to implement the previously created System Design, resulting in the finished application(s) which meets the previously defined User Requirements. This may also include any programs needed to convert existing data into the new application's database.

During the Construction phase:
- A test database environment, incorporating all data requirements, is prepared and populated.
- Programs and other executable components are coded.
- Extensive testing is conducted, both for correct functioning of individual programs and components, as well as for volume performance, system integration, security plan compliance, and Project Sponsor acceptance.
- All interface and environmental issues are resolved.
- The documentation from prior phases is updated
- Help documentation is created
- A training plan is executed and a transition plan into maintenance mode is developed.
- Appropriate management approvals are solicited.
- Timetable for the Implementation plan is confirmed.

4.4.1 Standards

The following sections define standards for this phase.

4.4.2 Construction Environment

Data Structure
- A data structure, as defined by the previously created Data Model Design, will be established in an isolated test environment at both the unit and system test levels.
- These test environment(s) will be used to ensure structure integrity and establish the physical test database(s) to support the testing of programs and other executable components of the application.
- When unit and system test levels reside on different platforms or require different software for their creation and maintenance, project procedures will be established and followed to ensure consistency of the database structure in both unit and system test
- Once construction has begun, no physical database changes (i.e. column names) will be made without Project Manager review and approval.

4.4.2.1 Coding

A. All programs and other application components must be coded and maintained to facilitate ease of future maintenance, as follows:
- Adequate internal program documentation must exist to explain program purpose, development/maintenance history, code functionality, and complex logic.
- The use of a comprehensible, efficient coding style appropriate to the language or development tool is required.

- Outdated code must be removed from programs before promotion to the system test level.

B. It is encouraged that Automated Tests are created to help both construction and future maintainability.
C. All code must meet the applicable OIS standards. These include: .Net Coding Standards, Web Standards and 508 Standards. Each applicable standard must be reviewed by the appropriate group prior to soliciting approvals to implement. It is recommended that informal reviews be requested during the Construction phase to ensure complete compliance by the time the Formal Reviews are requested.

4.4.2.2   Test Levels

A. All new and modified programs will be tested against the unit test database to determine that they perform according to specification against, at least, small amounts of data and with each potential authorized user role (and unauthorized/anonymous).
B. New or modified programs will not be promoted, or moved, to the system test environment until fully unit tested.
C. The system test environment will be used to:
- Validate programs; meet previously defined user requirements, and function according to specifications
- Perform integration testing of all new and modified programs with each other
- Perform integration testing of all new and modified programs with unchanged components
- Perform business event testing
- Evaluate performance
- Perform load testing with concurrent transactions
D. Every program in the application will be run through its written test plan against the new or changed databases.

4.4.2.3   Capacity Testing

In accordance with the previously created Capacity Plan and in conjunction with DA/DBAT and the Server Administration group, load and concurrency testing should be performed to ensure that the application will perform in accordance with OIS web standards and not adversely affect shared resources.

4.4.2.4   Testing

A. The written test plan for the establishment, management, and coordination of the specified tests at both the unit and system test levels must be distributed to all resources assigned to this phase of the project.
B. The written test plan must be enforced and any necessary adjustments or modifications to the test plan must be fully communicated to all parties.

4.4.3   Inputs

The following information must be available at the beginning of the Construction phase. It will provide the detail needed for construction of the application.

> a) Project Plan
> b) System Design
> c) Test Plan
> d) Test Case Matrix
> e) Training Plan
> f) Integration Plan
> g) Security Plan
> h) User Help Documentation Plan

4.4.4   Deliverables

Construction Deliverables must be identified in the Project Plan, Project Deliverables.

A. **Application System**
   a. **Data Model**
      i. Database Tables (Unit Test and System Test), supplementary files, new and/or revised file descriptions, etc. and all data integrity, backup, and recovery requirements established in accordance with Database Administration/Database Administration Technical and Computer Services standards for maintenance.
      ii. Populated and cleansed data, if required.
   b. **Application Environment**
      i. Executable software (Unit Test and System Test), completed, tested and accepted programs and application components, including interface programs, with a versioning capability for recovery.
      ii. Create **User Help Documentation**: online help; user manuals; technical manuals.
B. **Security Plan (updated)** – Updated and get reapproved, if anything changed during this phase.
   a. User Security Authorization list – Documents what users should be in which authorization groups at the time of implementation, if applicable.
C. **Training Package**
   a. **Training Plan (update)** - Materials and preliminary training schedule, securing a location/facility and required resources.
D. **Implementation Plan**
   a. Create a plan detailing each step of the production implementation. This plan will be developed using user notification requirements, system reservation requirements, hardware and software installation plan(s), preliminary operations and production control instructions, equipment installation plan, software distribution plan, integration plan, data conversion plans, etc.
E. **Test Plan (Updating User Acceptance Test Plan)**
F. **Test Case Matrix (Updating User Acceptance Test Case Matrix)**
G. **Project Plan (updated)**

4.4.5   Approval of Deliverables

The Construction deliverables as defined in the Project Plan, Project Deliverables must be approved by the following:

1. <Business> Functional Coordinator
2. BSSO Program Manager

4.4.6   Phase Approval

Before proceeding to the Implementation phase, authorization is required. The Project Plan, Stage and Phase Approval section requires formal approval of the Construction Phase. Authorization including signature is required of the following:

1. <Business> Functional Coordinator
2. BSSO Program Manager

4.4.7   Tools and Templates

Tools and Templates	Description	Location
Implementation Plan	Implementation Plan document	BSSO SharePoint Site

4.5   Implementation Phase

Implementation of the information technology project involves those activities required to move an accepted application into the production arena and ensure its effectiveness.

The Implementation phase of the SDLC requires the coordination of the many groups involved in, or impacted by, the transition plan, including District Information System Managers, Security Administration, <Business> Functional Coordinators, Production Control, Computer Services, Database Administration/Database Administration Technical, and the Functional Stakeholders. The physical data storage will be implemented, new/modified programs installed, and the training plan initiated.

After a reasonable period of operation, a post-implementation review will be conducted and final management and user acceptance obtained. Upon this acceptance, the application will be released to the Project Sponsor, <Business> Functional Coordinator(s).

4.5.1   Standards

A.   Final User Acceptance of the new or enhanced application must be obtained from the Project Sponsor prior to moving the application to production

B.   Any new or postponed work on the application may not be initiated until the current production version has been accepted by the Project Sponsor.

4.5.1.1   Phase Coordination

A.   A phase "kick-off" event shall be held at the beginning of the phase. All resources from both the Office of Information Systems and the Functional Office assigned to the implementation shall attend.

i.   The phase "kick-off" event shall provide an orientation to the project and the goals of the specific phase, introduce participants, and establish communication procedures.

B.   The District Information System Managers must be provided with the implementation schedule and notified of any adjustments that are made.

C.   All user and technical manuals must be finalized, distribution requirements determined, publication effected, and distribution complete prior to full production implementation.

D.   For 'phased' implementations, regular meetings shall be held between the Project Manager and assigned resources (the Project Team) during the implementation period.

4.5.1.2   Training

User training must be conducted in accordance with the project's training plan.

4.5.1.3   Conversion

Conversion and/or the initialization of data must be effected in accordance with the project's conversion plan and must be coordinated with Database Administration/Database Administration Technical.

4.5.1.4   User Acceptance

A.   User Acceptance Testing (UAT) must not be initiated until all programs are in place, functioning correctly according to specification, having passed all reviews (i.e. code review, web standards review, etc.) and fully integrated in the system test environment.

B.   User acceptance must be obtained before any new or modified data structure, program, or other application component is implemented in the production environment.

4.5.1.5   Installation

A.   All programs must be loaded to production in accordance with current production and version control procedures.

   i.   All mainframe programs and executable components must be stored and managed from a controlled central location.

   ii.   Application components that are to reside or operate on a workstation and/or server must be managed at the server level.

4.5.1.6   Post-Implementation Activities

A.   All access authorizations (other than 'read') to production data and/or user owned files that were granted for conversion or implementation purposes must be removed.

B.   Application test level data structures must be retained and must parallel the final, implemented production data structure.

4.5.2   Input

The following information must be available at the beginning of the Implementation phase. It will provide the detail needed for a successful implementation of the developed application.

   a) Project Plan
   b) Application System
   c) Test Case Matrix
   d) Training Package
   e) Implementation Plan

4.5.3   Deliverables

Implementation Deliverables must be identified in the Project Plan.

(A)   Production Application System
(B)   Project Plan (updated)

4.5.4   Approval of Deliverables

The Implementation deliverables as defined in the Project Plan, Project Deliverables must be approved by the following:

- <Business> Functional Coordinator
- BSSO Program Manager

4.5.5   Phase Approval

Before proceeding to the Project Closure Stage phase, authorization is required. The Project Plan, Stage and Phase Approval section requires formal approval of the Implementation Phase. Authorization, including signature is required of the following:

- BSSO Portfolio Manager
- Project Sponsor
- BSSO Program Manager
- Functional Coordinator

4.5.6   Tools and Templates

Tools and Templates	Description	Location
Lessons Learned	Implementation lessons learned	BSSO SharePoint Site

4.6   Stabilization Phase

Stabilization's purpose is to ensure that the product is stable for a reasonably short amount of time (i.e., a week for a very small project), immediately after implementation. The team is on standby to address any problems that may occur until the product is turned over to maintenance.

4.6.1   Standards

A.   Final User Acceptance of the new or enhanced application must be obtained from the Project Sponsor prior to moving the application to production
B.   Any new or postponed work on the application may not be initiated until the current production version has been accepted by the Project Sponsor.

4.6.1.1   Phase Coordination

A phase "kick-off" event shall be held at the beginning of the phase. All resources from both the Office of Information Systems and the Functional Office assigned to the Stabilization Phase shall participate. The phase "kick-off" event shall provide an orientation to the project and the goals of the specific phase and establish communication procedures.

4.6.1.2   Installation

All programs must be loaded to production in accordance with current production and version control procedures.

A.   All mainframe programs and executable components must be stored and managed from a controlled central location.
B.   Application components that are to reside or operate on a workstation and/or server must be managed at the server level.

4.6.2   Input

The following information must be available at the beginning of the Stabilization phase. It will provide the detail needed for a successful implementation of the developed application.

   a) Project Plan
   b) Production Application System

4.6.3   Deliverables

Stabilization Deliverables must be identified in the Project Plan.

(A)   Stable Application System
(B)   Project Plan (updated)

4.6.4   Approval of Deliverables

When a problem occurs that must be repaired, it is an emergency situation and should be handled as such. Typically, the Service Desk will be used with users accepting the repair on the ticket, so there are no phase deliverable approvals.

4.6.5   Phase Approval

Before proceeding to the Project Closure Stage phase, authorization is required. The Project Plan, Stage and Phase Approval section requires formal approval of the Stabilization Phase. Authorization, including signature is required of the following:

1. BSSO Program Manager
2. BSSO Maintenance Manager

4.6.6   Tools and Templates

Tools and Templates	Description	Location
Lessons Learned	Implementation lessons learned	BSSO SharePoint Site

CHAPTER 5 – PROJECT CLOSURE STAGE

5.1   Introduction

This chapter provides details that explain procedures required for the Project Closure Stage.

5.1.1   Purpose

The purpose of Project Closure Stage is to officially acknowledge the completion of the project and perform the project closeout tasks. It ensures that all participants and stakeholders are informed of follow-on activities (e.g. new projects, follow-up work, etc.), and have sufficient opportunity to communicate and coordinate with related projects and/or maintenance team.

5.1.2   Documentation of Work and Deliverables

(A) Documentation of all deliverables of this stage will be initialized and maintained in an approved location.

5.1.3   Stage Coordination

A.   A project closure announcement will be communicated to all key stakeholders, both technical and functional, after the approval of the project closeout report.
B.   A Project Closeout review will be conducted with key stakeholders, both functional and technical, to discuss and review the project delivery process.
C.   When applicable, the project team must conduct a "Transition to Maintenance" handoff meeting to officially transition the application to the maintenance team.

5.1.4   Stage Approvals

The Project Plan, Stage and Phase Approval section requires a formal approval of the Project Closure Stage. Authorization including signature is required from the following:

1.   Project Sponsor
2.   BSSO Portfolio Manager

5.2   Standards

A.   Final acceptance of the new or maintained application must be obtained from the Project Sponsor prior to implementation.

5.2.1   Project Closeout Report

The project closeout report application project deliverables to the satisfaction of the project sponsor, and to communicate final project disposition and status to all participants and stakeholders.

This includes developing a project closeout report, conducting project closure reviews, and when applicable, conducting a transition to maintenance handoff meeting.

5.2.2   Transition to Maintenance Handoff

If the scope of the project is to develop an application or make an enhancement to an existing application the following must occur:

A. A transition to maintenance handoff meeting must be conducted with the BSSO maintenance team. Topics to be covered include:
   i.   Application demonstration
   ii.   Discuss the following application topics
   iii. Application security
   iv.   Database structures and what tables' purposes
   v.   Application code…UI tier, Business tier, Data tier, organization of visual studio solutions projects and directories
   vi.   Application business workflow
   vii. Application dependencies and interfaces to other external systems
   viii. Application components (BJS, Mainframe, Internet, Intranet…)
   ix.   Exceptions to the rules/"Got to Knows"
B. For a new application, set up the service desk (SD) application query, coordinate with SD to create default queues.
C. Create SD ticket(s) for outstanding unresolved issues.
D. Make SD assignments and setting to appropriate maintenance team members
E. Create/Update maintenance team application "Cheat Sheet"
F. Change email group ownership from development team staff to maintenance team BSSO Program Manager, where appropriate
G. Grant maintenance team BSSO Program Manager RACF connect authority to any test RACF groups used by application, where appropriate.
H. The Transition to maintenance report must be compiled documenting:
   i.   Document changes that need to be made to the BSSO application repository
   ii.   Identify unresolved open issues and provide potential resolutions
   iii. Provide actual security documentation…(i.e. RACF reports, AD groups, ISA security) for all environments (e.g. Unit System Test and production)

5.2.3   Post Project Delivery/Post Implementation Review

The post project deliver review evaluates how well the project was delivered based on:

• The project objectives, goals and critical success factors found in the project charter
• The deliverables defined in the project plan

If the project delivered a functioning application, this review will also be known as the Post-Implementation review. The review will be conducted in accordance with Post Project Delivery/Post Implementation Review found in Chapter 6 – Quality Management. Results of the review will be provided to the BSSO Standard Technology Workgroup (BSTWG).

5.3   Input

The following information must be available at the beginning of the Project Closure Stage.

  a) Project Charter
  b) Project Plan
    • Project Closeout Plan
    • Configuration Item Register

5.4   Deliverables

Project Closure deliverables will be identified in the Project Plan, Project Deliverables. Templates for each deliverable are provided in the Tools and Template section of this stage. The templates provide a standardized format and offer additional instructions.

(A) Project Closeout Report
(B) Post Project Delivery Review Report
(C) Application Maintenance Support Information (spreadsheet)

5.5   Tools and Templates

Several deliverables are completed during the Project Closure Stage. Templates, checklists, and guidelines are provided as tools during development of these deliverables.

Tools and Template	Description	Location
Project Closeout Report	Document to capture project closure information (i.e. lessons learned, disposition of issues and risks, project performance metrics (goals and objectives, Project Management, deliverables, lessons learned, etc.)	BSSO SharePoint Site
Application Maintenance Support Info	Spreadsheet that contains pertinent information used by the maintenance team to assist with application maintenance	BSSO SharePoint Site
Post Project Review Report	Report generated documenting the results of the post project/post implementation review.	BSSO SharePoint Site

CHAPTER 6 – QUALITY MANAGEMENT

6.1   Introduction

Project deliverables as defined in the Project Plans Quality Management section will undergo an inspection by an independent review panel to ensure the deliverables comply with the standards as identified in the stage or phase.

6.2   Purpose

The purpose of this chapter is to define the Business System Support Office (BSSO) quality assurance and quality control review standards and processes for deliverables.

6.2.1   Documentation of Work and Deliverables

A. A checklist will be provided (Section 6.3.6) for each stage or phase that requires a Quality Control (QC) Review. The checklist will be used to evaluate deliverables of the IT project.
B. The review panel members will document their findings for each deliverable evaluated.

6.2.2   Quality Control Review Standards

A. The review will address the deliverable for clarity and completeness and adherence to the stage/phase standards.
B. The review must be conducted prior to submitting the deliverables to the users for their review and approval.
C. Deliverable corrections and/or changes will be considered and reconciled based on the recommendations.
D. A deliverable review checklist will be utilized by the review team to conduct the review.
E. The review panel must consist of two or more phase/stage subject matter experts (i.e. Planning by Project Manager, Design by Technical Architect)

6.2.2.1   Model Review Standards

The Model Review is done before the transformation of the model into physical objects. Project cost, in terms of time, resources, and rework, is much greater when changes are identified after physical structures and code objects exist. Recommendations for modifications to the logical data model in order to facilitate execution and/or coding may be incorporated into this review.

A. The Project Manager and Data Analysts must collaborate to ensure the completeness and accuracy of the data and process models.
B. A checklist reference is provided.
C. The review material must be provided to the review panel 10 business days prior to the Model Review.
    i.   If the review materials cannot be provided 10 business days prior to the Model Review meeting, the Project Manager is responsible for coordinating a shorter timeline by all those needed to review. The size of the project and amount of documentation must be assessed for the feasibility of a shorter review time.

D. The review material must consist of:
   i. Entity Relationship Diagram
   ii. Entity Definition Report
   iii. Attribute Definition Report
   iv. Process Diagrams and Definitions
   v. CRUD Matrix
   vi. Any additional supporting documentation which will facilitate timeliness and understanding associated with the project

6.2.3   Coordination

The Project Manager will coordinate with the BSSO Standards and Technology Workgroup (BSTWG) to select the QC review panel, and will schedule the QC reviews. The schedule must provide at least one (1) week prior to the review for the panel to preview the deliverables. Estimates for the QC Review including Lead-time, Review and Resolution timetable can be viewed in Section 6.3.5.

6.2.4   Approvals

Once updates from the findings have been satisfied, the QC review panel will confirm the deliverables have passed the QC review.

6.2.5 Process
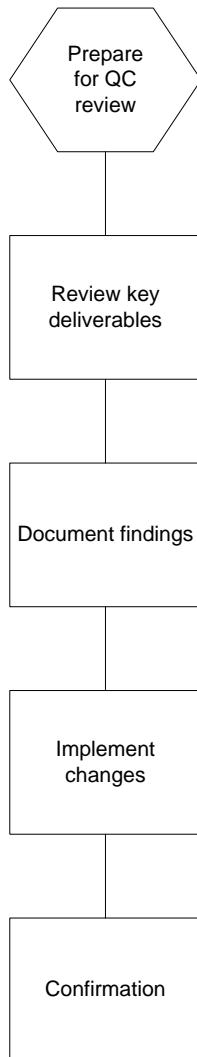
☐ **Prepare for QC review –** the project team will request a review of key phase deliverables and QC panel will be specified.

☐ **Review key deliverables –** where key deliverables are reviewed based on the specified checklist provided.

☐ **Document findings –** where changes required for standards compliance are documented and presented to the project team.

☐ **Implement changes –** where the project team will implement the updates documented by the QC panel

☐ **Confirmation –** where the QC panel confirms the updates were made to the deliverables

☐

Prepare for QC review

Review key deliverables

Document findings

Implement changes

Confirmation

6.3　Quality Control Reviews to be Conducted

Reference the Project QC Review Guide to obtain additional information on QC Reviews. Set in a user-friendly format, the guide includes the following information such as: project phase; QC Review: review lead time; review length; due dates and resolution times; review participants and information on corresponding review checklists.

6.3.1　Project Planning Stage QC Review

The deliverable to be reviewed for the Project Planning Stage is the **Project Plan.**

There will be two reviews conducted for the project planning stage:

A. **Project Plan Review**
A Project Plan checklist will be used to identify items to be verified when confirming the overall project plan has been established appropriately.

B. **Risk Management Plan (RMP) Review**
The Risk Initiation Checklist identifies items to consider when checking if the RMP has been established appropriately. Project risk will be evaluated throughout the project. The Risk Management Assurance, Section 6.4.1.1 and Chapter 8, Risk Management provides additional information in support of reducing risk and exposure throughout the life cycle of the project.

6.3.2　Requirements Phase QC Reviews

The typical deliverables to be reviewed for the Requirements phase include:

A. System Requirements
B. Software Requirement Specification

There is one review conducted during the Requirements phase:

A. **Requirement Review**
The Requirement QC Review Checklist identifies items to be confirmed when verifying whether or not the requirements have been established appropriately.

6.3.3　Design Phase QC Reviews

Design phase reviews takes place during the System Design phase of a project and is performed to avoid costly rework resulting from over-sights or omissions during construction. Design phase reviews must be done before the construction phase can begin.

Deliverables to be reviewed for the Design phase are:

A. Detailed Design, Technical Architecture and Integration Plan
B. Test Plan, Test Case Matrix and Requirements Traceability Matrix (RTM)

C. Data Model, Process Model and CRUD Matrix
D. Security Plan

There will be three reviews conducted during the Design phase:
A. **System Design Review**
    The System Design Review verifies the Detail Design, Technical architecture, Integration Plan, Test Plan, Test Case Matrix and RTM are valid and complete. The review is broken up into two smaller reviews:

    i.   Technical Review – This review will utilize the System Design QC Review Technical Checklist to confirm the technical aspects of the design have been established appropriately.
    ii. Analyst Review – This review will utilize the System Design QC Review Analyst Checklist to confirm the various design components have been corresponding requirements and can be confirmed by a test condition.
B. **Security Plan Review**
    The Security plan must be reviewed and accepted by the Security Office.

C. **Model Review**
    The Model Review verifies that the data and process models are valid and complete. The Model Review is done before the transformation of the Data model into physical database objects. Recommendations for modifications to the logical data model in order to facilitate execution and/or coding may be incorporated into this review.

6.3.4   Construction Phase QC Reviews

Deliverables to be reviewed for the Construction phase include:
A. Application System

There will be three reviews conducted during the Construction phase:
A. **Web User Interface (if applicable)**
    i.   Web Standards Review checklist
B. **Application Code Review**
    a. .Net Code Review
    b. SQL Code Review

6.3.5   QC Review Lead, Review and Resolution Timetable

Phase	QC Review	Review Lead Time[1]	Length of Review[1]	Review report due back to Project Manager[1]	Resolution Time[1,2]	Independent Review Participant(s) (Not from Project)	Review Checklist to Use
Project Planning	Project Plan Review	1 week	½ day	2 days after review	2 days	Project Manager	Project Planning Deliverables Checklist
	Risk Management Plan (RMP) Review	1 week	½ day	2 days after review	2 days	Project Manager	Risk Initiation Checklist
Requirements	Requirements	2 weeks	3 days	3 days after review	2 weeks	Business Analyst Data Analyst	Requirements QC Review Template
Design	System Design – Technical	2 weeks	1 week	1 week after review	2 weeks	Technical Architect[6]	System Design QC Review Technical Template
	System Design - Analyst	2 weeks	1 week	1 week after review	2 weeks	Business Analyst[7]	System Design QC Review Analyst Template
	Model Review[3,6]	2 weeks	1 week	1 week after review	2 weeks	Data Analyst Database Admin Tech (DBAT) Business Analyst Technical Architect	Model Review Checklist
	Security Plan	2 weeks	1 day	1 week after review	2 weeks	Information Security Administration	
Construction	.NET Code Review [4,5]	2 weeks	1 week	2 days after review	1 week	Technical Architect	.NET Code Review Checklist
	Web Standards/ Section 508 Reviews[5]	2 weeks	1 week	2 days after review	1 week	WebMaster	Web Standards Checklist
	SQL Review[4,5]	2 weeks	1 week	2 days after review	1 week	DBAT	SQL Code Review Checklist

[1] All times only include business days; weekends and holidays are not included.
[2] Amount of time allocated to make changes after the review report is received by Project Manager
[3] If applicable, ask Data Analyst if Data Model review is required.
[4] Review can be requested after a successful full system test in the system test environment.
[5] A Confirmation review will be performed to verify that required changes were made.
[6] Reviews Data Model, Process Model and CRUD Matrix
[7] Reviews Detailed Design, Technical Architecture and Integration Plan
[8] Reviews Test Plan, Test Case Matrix and RTM for traceability back to requirements

6.3.6 Quality Control Tools and Templates

QC Review Checklist	Description	Location
Project Planning Stage	QC Review Checklist for Project Plan	BSSO SharePoint Site
	QC Review Checklist for Risk Management in project plan	BSSO SharePoint Site
Requirements Phase	QC Review Checklist for Requirement Phase	BSSO SharePoint Site
Design Phase	Model Review Checklist	BSSO SharePoint Site
	System Design QC Review Analyst Template	BSSO SharePoint Site
	System Design QC Review Technical - Template	BSSO SharePoint Site
Construction Phase	QC Review Checklist for Web User Interface	BSSO SharePoint Site
	QC Review Checklist for Application Code Reviews (.Net)	BSSO SharePoint Site
	QC Review Checklist for Application Code Reviews (SQL)	BSSO SharePoint Site

6.4   Quality Assurance

The International Organization for Standardization defines Quality Assurance as planned and systematic actions necessary to provide adequate confidence that an entity fulfills requirements for quality or success of the project. The BSSO has adopted processes and standards, as defined in this section, to provide excellent products or solutions, based on criteria that meet or exceed industry standards.

6.4.1 Quality Assurance Standards

The following sections define standards for this phase.

6.4.2 Risk Management Assurance

Risk management is vital to the success of a project. Identifying common risk and establishing common responses to address these risk support reducing risk exposure for future projects. A BSSO Risk Review Workgroup (RRWG) will utilize checklists to evaluate risk management activities throughout the life cycle of the projects.

A. The Risk Initiation Checklist identifies items to consider when checking if risk management has been established appropriately.

B. The Risk Progress Checklist identifies items to consider on a regular basis (e.g., monthly) to ensure the project remains focused on risk management, and new risks are identified and tracked.

C. The Risk Completion Checklist identifies items to consider when a project completes, or when a major phase completes, to evaluate the risk management process and results.

6.4.2.1 Post Project Delivery/Post Implementation Review

The post project deliver review evaluates how well the project was delivered based on:

- The project objectives, goals and critical success factors found in the project charter
- The deliverables defined in the project plan

If the project delivered a functioning application this review will also be known as the Post-Implementation review. The results of this review will be used as the basis to update the PDM QC Checklist, Standards and/or processes as needed.

A. The BSSO Portfolio Manager or BSSO Program Manager will determine if a post project delivery review must be conducted.
B. The Post Project Delivery review must be performed after the Project Sponsor and key stakeholders have formally accepted all deliverables for the project.
C. The agenda for the review must contain the scope and objectives of the review based on the project charter and project plan of the project to be reviewed.
D. The Post Project Delivery Review Team (DRT) must receive review material two weeks prior to the actual review date.
E. The Project Manager will provide the Post Project DRT the electronic location of the
    i. Project Charter
    ii. Project Plan
    iii. Configuration Item Register
    iv. Quality Control Review evaluations
F. The DRT will:
    i. Review and evaluate the Critical Success Factors (CSF) identified in the Project Charter to determine if each CSF factor was met.
    ii. Review and evaluate the project delivery process utilized by the project team.
    iii. Identify problems that occurred during the project life cycle (procedural, technical, etc).
    iv. Classify problems that were experienced during the various stages and/or phases of the project delivery process, in order to facilitate resolution.
    v. Review the Project Delivery Methodology (PDM) standards and procedures used by the project.
    vi. Determine if additions, changes, or corrections to existing PDM standards and procedures are required as a result of positive or negative events which occurred during the project.
    vii. Identify any positive or negative issues that need to be elevated to management for resolution and make assignments for the issues to be 'expanded' with written explanations and recommendations for resolution.
    viii. Make recommendations to resolve problems or to improve the process.
    ix. Make recommendations for standard and process improvements.

  x. Identify new PDM standards and/or procedures that may be needed.
G. Provide a Post Project Delivery Review Report to BSSO Standard and Technology Workgroup (BSTWG) and must include:
  i. Meeting agenda, scope, and objectives
  ii. Findings and recommendations
  iii. Issues
  iv. Meeting attendance list or sign-in sheets
  v. Meeting evaluations, if any

CHAPTER 7 – PROJECT MANAGEMENT

7.1   Introduction

Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirement(s). Managing a project typically includes:

- Identifying requirements
- Planning the project activities required to address the various needs, concerns, and expectations of the stakeholders
- Developing and executing a project plan
- Balancing the competing project constraints including, but not limited to:
    - Scope
    - Quality
    - Schedule
    - Budget
    - Resources
    - Risk

7.1.1   Purpose

The purpose of this chapter is to establish project management standards and processes for the Business Systems Support Office. All BSSO managed projects shall be managed in accordance with the standards and processes established in this chapter.

7.2   Standards

The following sections define standards for this phase.

7.3   Project Authority

Identifying the project line of authority (who can make what decisions when), who can accept project deliverables, and who can make additional funding decisions is critical to the success of a project.

A. Project authority must be established in the Project Charter.
B. The Project Manager is accountable for maintaining project scope, cost, and schedule in accordance with the baselines established in the Project Plan.
C. The Project Manager is responsible for monitoring and controlling project activities in accordance with the Project Plan.

7.3.1   Project Estimation Method

An estimate is expected for each major milestone through project design (i.e. Project Planning Stage, completion of Requirements Phase, completion of Design Phase) and/or if a change

request results in a +- 10% change to the current baseline project cost. For non-outsourced projects, it is anticipated there will be two official estimates, Baseline (initial) and post requirements, performed by the Project Estimating Group (PEG).

7.3.2   Change Management

Monitoring and controlling change is critical to the successful delivery of a project. Changes are inevitable. The following are examples of possible situations:

- A customer may wish to modify the application's functionality after signing off on key documents.
- Unexpected events may occur, such as:
  - o Mistakes discovered in the application-derived requirements
  - o Coding errors
  - o National/State emergencies
- Executive management may request a change.
A. Any change to project scope, cost, and/or schedule must invoke the Change Control process.
B. The Project Change Control Process must be documented in the Change Management section of the Project Plan.
C. The Project Manager must establish the Change Control Team (CCT).
D. The Project Manager shall determine the frequency of CCT meetings.
E. All Change Control Requests must be tracked/documented using a Change Control Log.
F. The Project Manager and BSSO Program Manager shall be responsible for ensuring the project team (both functional staff and technical staff) have a clear understanding of the purpose and details of the Change Management Process.

7.3.2.1   Change Control Process

This section will describe the Change Control Process utilized by the Business System Support Office. The BSSO Change Control Process Flow Diagram is also located in the Tools and Templates section of Chapter 3 and this Chapter of this document.

A. All change requests must be initiated with a Change Control Request Form.
B. Once a change request is submitted, the Project Manager will determine if the change request is an issue or the request that needs to be presented to the CCT.
C. All new Change Requests will begin with a disposition of "Initiated".

D. The CCT will then assign a disposition to the Change Request upon evaluation. The disposition of a Change Request can be as follows:

Disposition	Description
Initiated	A Change Request Form has been completed and submitted. The Change Request has been initiated.
Evaluate	The Change Request should be evaluated further to determine the impact to the project. Impact should include cost, scope, or schedule changes to the project.
Rejected	The request was rejected.
Deferred	A deferred request is determined to be desirable; however, the request is not in scope for the project. Request will be deferred to another potential project in the future.
Submit for Authorization	The CCT has approved the Request and now must submit the Request to management for authorization to make the change(s) requested.
Authorization Approved	Management approved the Change Request. This will change the project scope, cost, and/or schedule baselines.
Authorization Rejected	Management rejected the Change Request.

A. If the impact of a single Change Request, or the accumulation of multiple Change Requests over the life of the project, results in an increase or decrease of +/- 10% of the current project baseline cost or schedule, the Change Request must:
   i. Request and obtain a project re-estimate from the Project Estimating Group (PEG).
   ii. Be submitted to Management for authorization.
B. All Change Request results must be documented in the Change Control Request Form.
C. If the Change Request has been authorized, the previously accepted project artifacts (documentation, code, test plans, etc.) must be updated with the change(s).

7.3.3   Risk Management

A key focus of risk management is to anticipate, identify, and address events or occurrences that, left unabated, could negatively impact the success of a project. Risk Plans define work products and processes for assessing and controlling risks. These processes identified in Chapter 8 – Risk Management include risk assessment, which comprises identifying, classifying, analyzing, and prioritizing risk; and risk monitoring and control, which comprises planning, tracking and reporting, reducing, and resolving risk.

7.3.4   Issue Management

Issues are problems that have occurred and/or exist on the project that need to be addressed with a decision.

7.3.4.1   Issue Management Process

A.   A method/process for managing issues during the project must be agreed upon by the Project Sponsor and the Business Systems Support Office.

B.   The Issue Management Process must be developed and agreed upon during the Project Planning Stage.

C.   The Issue Management Process must track issues using an Issue Tracking Log.

D.   The Project Manager shall be responsible for ensuring the project team (both functional staff and technical staff) has a clear understanding of the purpose and process of issue management.

E.   For BSSO, issues must be managed and tracked by the Project Manager.

The Issue Management Process must address the following questions:

a)   What constitutes an issue?

b)   Who can create or update issues?

c)   How will issues be reported?

d)   Where will issues be documented and tracked?

e)   Who will receive/review the issues reports?

f)   How/When will issues be reviewed?

g)   How will issues be resolved?

h)   How will information be communicated?

The Process must also provide an Issue Tracking Log which must include, but is not limited to, the following:

a)   The complete history of issues, including the cancelled or voided issues (no issues will be deleted)

7.3.5   Quality Management

The Quality Management section describes the approach for formally ensuring the quality of project deliverables. How this is done (as defined within the Project Plan) is critical to the success of the project.

(A)   BSSO-managed projects must adhere to the processes and standards established in Chapter 6 Quality Control Reviews of the PDM.

(B)   The project plan must identify which deliverables will undergo an independent review.

(C)   Deliverables that must pass an independent review are listed in Chapter 6 of the PDM.

7.3.6   Configuration Management

The Configuration Management (CM) section describes the approach for formally identifying and controlling project deliverables, known as Configurable Items (CI). CIs may be intermediate or final outputs (e.g., requirement definitions, design specification, databases, test cases, test plans, executable code components, source code components, user documentation, project management artifacts, data, etc.).

CM is an integral function in delivering technology projects because it facilitates the protection of deliverable items and communicates changes that have been made to them. CM, effectively planned and executed, contributes to the production of high quality technology products and avoidance of rework.

7.3.6.1   Configuration Management Process

(A)   How the project will perform CM must be documented in the Project Plan.

(B)   The project must identify which project deliverables will be under CM control.

(C)   A Configuration Items Register must be developed for each project.

(D)   The Project Manager shall be responsible for ensuring the project team (both functional staff and technical staff) have a clear understanding of the purpose and details of the Configuration Management Process.

7.3.6.2   Configuration Items Register

As a critical aspect of CM, a project CI is identified and updated in a Configuration Items Register throughout the life of the project. The Configuration Items Register is a list the project deliverable items. For each Item, specify the:

- Description of the CI
- Version/Revision Date
- Living Document Type or classification of the CI

       a. **Application Living Document** - Documents/deliverables that will exist and be maintained after the application has been implemented into production (i.e. Software Requirement Specification, Security Plan, System Test Case Matrix, User Acceptance Test Case Matrix, Technical Architecture, etc.)

       b. **Product Living Document** - Documents/deliverables that will exist and be maintained after the product has been implemented into production (i.e. Templates for the PDM, PDM Documents, Application Development Plan, Business Study, etc.)

       c. **Project Living Document** - Documents/deliverables that will exist only during the duration of the project (i.e., Project Charter, Project Plan, Project Closeout Report, etc.)

       d. **Other** - Support document that needs to be controlled using CM

           o   Controlled library/repository - Where the CI will be stored

           o   Change Control Information – What process/authority changes the CI

       e. Change Control Request # - What process changed in this document (change control, project, management directive, etc.)

       f. Change Approved by – Who approved the change

       g. Change Approval Date – When was the change approved

7.3.7   Communication Management

Projects must describe the overall high-level approach that will be taken to manage communication for the project in the Communication Management section of the Project Plan. The plan will summarize how Communication Management activities will be accomplished collectively through the use of the Communication Register.

7.4   Tools and Templates

Several deliverables are completed during the managing of a project. Templates, checklists, and guidelines are provided as tools during development of these deliverables.

Tools and Templates	Description	Location
BSSO Formal Change Control Process	Process flow that shows the BSSO Change Control process.	BSSO SharePoint Site
Change Control Request Form	Form used to detail changes to the scope, cost, or schedule for a project.	BSSO SharePoint Site
Risk Register	Tool provides a list of risk identified specifically for the project, including the probability, status, and mitigation triggers for each risk.	BSSO SharePoint Site
Configuration Items Register	Tool provides a list of the control items (documents, deliverables, etc) that will require user and/or management sign off prior to change.	BSSO SharePoint Site
Issue Tracking Log	Tool provides a list of the issues pertaining to this project, and the pertinent information related to each issue	BSSO SharePoint Site
Change Control Log	Tool provides a list of the changes to this project, and the pertinent information related for change control	BSSO SharePoint Site
Communication Register	Tool that contains the project communication activities and details	BSSO SharePoint Site

CHAPTER 8 – RISK MANAGEMENT

8.1   Introduction

A risk is an uncertain event or condition that, if it occurs, has an effect on at least one project objective. Objectives can include scope, schedule, cost, and quality. A risk may have one or more causes and, if it occurs, may have one or more impacts. A cause may be a requirement, assumption, constraint, or condition that creates the possibility of negative or positive outcomes.

8.1.1   Purpose

Project risk has its origins in the uncertainty present in all projects. Known risks are those that have been identified and analyzed, making it possible to plan responses for those risks. The purpose of this chapter will be to describe the risk management approach used by the Business System Support Office (BSSO) to identify, assess, monitor, and control project risks.

8.2   Standards

A.   A Risk Management Plan (RMP) must be documented in the Project Plan. The RMP contains explanation of who, what, when, and how the project will address risk.

B.   The Project Manager (PM) and BSSO Program Manager shall be responsible for ensuring the project team (both functional staff and technical staff) have a clear understanding of the purpose and details of the Risk Management Process.

C.   Risks relevant to the project must be identified and recorded in the Risk Register.

D.   The Project Risk Review Team (PRRT) must prioritize and rank all risks identified for project, and agree on a risk response strategy for each identified risk.

E.   The frequency the PRRT meets must be established in the RMP.

8.2.1   Risk Management Process

A key focus of risk management is to anticipate, identify, and address possible future events or occurrences that, left unabated, could negatively impact the success of a project.

As Figure 8-1 shows, the BSSO uses a five (5) step process to manage the risks for its IT projects.
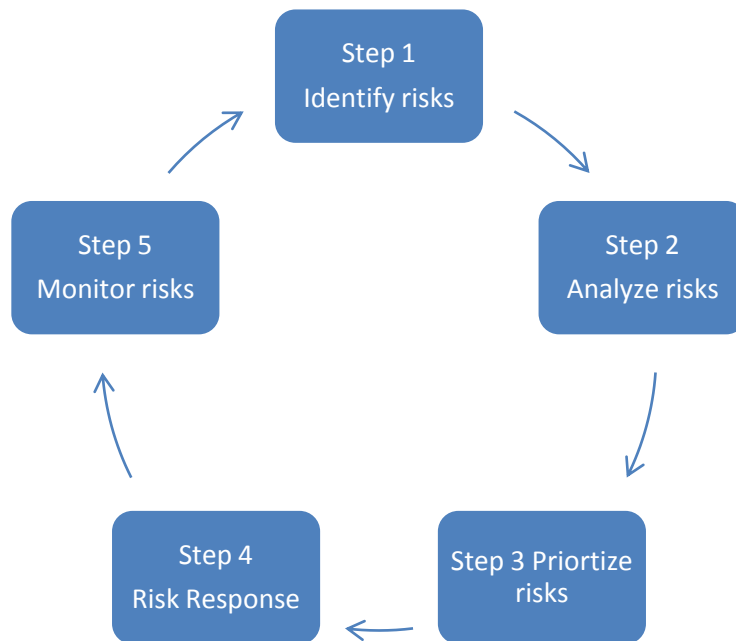
Figure 8-1: Risk Management Process, the five step process BSSO uses to manage IT project risks

Step 1 - Identify risks: Identify risks that are relevant to the project and could be encounter anytime during the project.

Step 2 - Analyze risks: Analyze the risks to determine what is driving them, how great their impact might be, and what is the likelihood of the risk occurring (probability).

Step 3 - Prioritize risks: Establish a risk short list. The list will be used to determine the most important risks to track and respond to.

Step 4 – Risk Response Strategy: Plan the action(s) that will be taken to mitigate the risks on the short list.

Step 5 – Monitor Risks: Monitor, on a regular basis, the progress of the risks, risk response plans that have been initiated, and risks that have been adequately resolved. This is also where new risks will be identified.

8.2.1.1   Identify Risks

Risk identification is the process of determining which risks are relevant to the project and documenting the characteristics of the risk.

For Information Technology projects, BSSO utilizes two types of risk categories, Business Risk and Project Risk.

1) Business Risk categories, used for Business studies include:

    a. Strategic
    b. Technology
    c. Change Management
    d. Communication
    e. Fiscal

2) Project Risk categories, used for projects are:

    a. Mission and Goals
    b. Program Management
    c. Decision Drivers
    d. Organization Management
    e. Customer/User
    f. Project Parameters
    g. Product Content
    h. Deployment
    i. Development Process
    j. Development Environment
    k. Project Management
    l. Project Team
    m. Technology
    n. Maintenance

The process of risk identification is assisted by the use of risk factor tables that capture indicators of commonly encountered risks. A source of potential risks can be found in the Risk factor tables found in the tools and template section of this document. Project risks can also be derived from the risks identified in a Business study done prior to the initiation of the project. These sources should be used to prompt initial thoughts of risks for either the Business study or project.

When the relevant risks have been identified, the risk must be added to the Risk Register.

8.2.1.2   Analyze Risks

Risk analysis is the process of examining each risk to refine the risk statement, isolate the cause/trigger, quantify the probability of occurrence, and determine the nature and impact of possible effects, and determine the risk exposure (severity).

To determine if a risk should be prioritized, it's important to know the severity of the risk. The significance of the negative impact will be determined by the severity rating and the risk tolerance threshold (RTT) will be used to determine whether the risk should be tracked.

Risk Tolerance Threshold (when do I monitor and track the risk)

A Risk Tolerance Threshold should be established, such that any risk analyzed to be over a certain severity rating will be considered over the tolerance threshold level. The risk tolerance threshold will be established on a project by project basis. The project risk tolerance threshold must be documented in the RMP of the project plan.

Typically, if the risk severity rating is moderate or higher:

1) The risk should be tracked.

2) A risk response strategy should be developed for the risk

For tracked risks, if the severity rating becomes high or very high:

1) The mitigation or contingency plan must be initiated

2) The risk response must be monitored until risk is resolved

To calculate the risk severity, multiply the probability of the risk occurring times the impact of the risk. Use the Severity Rating table below to assign probability and impact values.

Determine Risk Severity

Risk Probability X Risk Impact = Severity Rating

Severity Rating Table

Risk Probability Scale	Risk Impact Scale	Severity Rating Range	Risk Level (Response Tolerance Threshold)
.1	.1	.01-.08	Very Low
.3	.3	.09-.24	Low
.5	.5	.25-.48	Moderate
.7	.7	.49-.80	High
.9	.9	>.81	Very High

Once the severity has been calculated, compare the calculated value to the table above to determine the response tolerance. The severity rating will be used to establish the risk tolerance threshold.

8.2.1.3   Prioritize Risks

For those risks meeting/exceeding the risk tolerance threshold, the PRRT must prioritize and rank the risks. The Top 5 (or other count) risks should establish a risk response strategy.

8.2.1.4   Risk Response Strategy

Assigning risk response strategies is the process of examining each risk and identifying one or more options to address the risk. Only the highest ranked risk items may be included.

Descriptions of response strategies for risks that have a negative impact on the project are as follow:

1) **Accept the risk**, with no investment of effort or cost. This is appropriate when the cost of responding to the risk exceeds the exposure, and the exposure is acceptable

2) **Transfer the risk to someone else**, or agree to share the risk. Essentially, the negative impact is shifted to a third party.

3) **Avoid the risk by funding and staffing** the efforts to reduce the probability that the risk will become a problem.

4) **Mitigate the risk by funding and staffing the efforts to reduce the loss** associated with the risk should it become a problem.

5) **Establish contingency plans for significant risks that cannot be mitigated or otherwise resolved**. These contingency plans are executed only under certain predefined conditions. Contingency management, the additional work required to handle the risk, must be budgeted and planned if the contingency event or condition occurs. Events that establish a trigger point for execution of the contingency plan must be clearly defined.

As a result of assigning a risk responses, a Risk Item form or its equivalent, must be developed for the Top 5 (or other count) risk identified and the Risk Register must be updated with the risk response strategy identified.

8.2.1.5   Monitor Risks

A project must monitor identified risk. A project will monitor risk in order to:

• Identify new risks

• Evaluate existing risks

• Determine if the trigger points for execution of contingency plans have occurred

• Track the execution and effectiveness of risk response strategies

• Determine if a risk has been resolved and close the risk

8.2.2   Risk Management Tools

There are three (3) primary tools used to manage risks:

1. Risk Management Plan
2. Risk Item Form
3. Risk Register

8.2.2.1   Risk Management Plan

The Risk Management Plan (RMP) documents who, what, when and how the project will manage risk. The RMP is developed during the Project Planning Stage as part of the project plan.

8.2.2.2   Risk Item Form

The Risk Item form is used to provide a detailed status on each of the Top 5 (or other count) ranked risk items that are assigned a risk response strategy. Only the highest ranked risk items may risk item form. The form provides information such as:

All risk factors must be identified which are relevant to the project and their severity rating determined.

   a)   Risk Statement – What is the risk

   b)   Risk Consequence – What is consequence if the risk is not addressed

   c)   Probability Percentage, Impact, Severity Rating, Current Risk Rank

   d)   Risks Response Strategy

   e)   Dates for starting and completing response strategy

   f)   Trigger for initiating a contingency plan

   g)   Date the risk was resolved and closed

A Risk Item template is included in the Tools and Template section of this document.

8.2.2.3   Risk Register

All project risks will be identified and documented in the risk register. The risk register will be used to track to risk response strategies to ensure risk conditions do not get out of control. The risk register is used to provide a status on each of the risk identified for a project.

The risk register must include:

   a)   Title of risk

   b)   Risk Category

   c)   Probability, Impact, Severity Rating

   d)   Current Risk Rank

   e)   Previous reporting period Risk Rank

   f)   Risk Response strategy

   g)   Response Status, individual assigned to manage risk/risk response and due date

A Risk Register template is included in the Tools and Template section of this document.

8.2.3   Tools and Templates

Several deliverables are completed during the managing of a project. Templates, checklists, and guidelines are provided as tools during development of these deliverables.

Deliverable/Tool	Description	Tools
Risk Register	Tool to track a list of risk identified specifically for the project.	BSSO SharePoint Site
Risk Item Form	Tool to describe an individual risk to the project	BSSO SharePoint Site
Risk Factor Tables	Tool to provide a list of common General Project Risk Factors	BSSO SharePoint Site
	Tool to provide a list of common Commercial Off the Shelf (COTS) Risks Factors	BSSO SharePoint Site
	Tool to provide a list of common Software Project Risk Factors	BSSO SharePoint Site
	Tool to provide a list of common Software Acquisition Risk Factors	BSSO SharePoint Site

Appendices

Appendix	Title
E	Lessons Learned
F	Development Methodology Transition History

Appendix A: PDM Document Revisions

This appendix contains all document revisions for the Project Delivery Methodology (PDM). This appendix is used to maintain a log of revisions and updates issued to this manual. All summaries of revisions that accompany transmittals will be filed in this section. The Business Systems Support Office (BSSO) will maintain this section when changes occur.

Current Revisions

Version	Date	Name	Description
1.0	2/5/2012	PDM Update Team	Re-write of ISDM. Changed name to Project Delivery Methodology
1.0	2/13/2012	David Davis	Typos/grammar corrections
1.1	4/27/2012	David Davis/Donna Young	Significant content, format, and grammar corrections
1.1	5/2/2012	David Davis	Removed "Develop and refine system, and user acceptance test plans " from Developer role and responsibility.
1.1	5/16/2012	David Davis	Fixed hyperlinks
1.1	5/23/2012	David Davis	Fixed Hyperlinks
1.2	6/28/2012	David Davis/Donna Young	Significant changes to Chapter 4 content; format and grammar changes
1.2	7/11/2012	David Davis	Replaced Functional Specification with Software Requirements Specification
1.3	8/21/2012	David Davis	Implemented several suggestions from PDM suggestions identified between 6/28/2012 & 8/21/2012.
1.4	8/30/2012	David Davis	Added description to the System Design Review
1.5	1/14/2013	David Davis/Claudia Anderson	Revised Project Planning Approval of Deliverables, Minor heading change for requirements,

Appendix B: Roles and Responsibilities

1.1 Introduction

The following describes the roles of people involved in the methodology, and their responsibilities. Their responsibilities are defined as applicable to application and system development.

1.2 Executive Level

This section describes Executive Level roles within a project.

1.2.1 Information Resource Management Executive Leadership Team

Role – The Information Resource Management Executive Leadership Team (IRMELT) provides direction and prioritization for information technology resources and projects that are estimated at over 1,500 hours of effort. The group usually consists of the Department Assistant Secretaries and the Chief Information Officer (CIO).

Responsibilities include, but are not limited to:

a. Assigning priorities for Departmental information technology resource efforts (i.e. application development).
b. Providing feedback to Management Stakeholders, Business Systems Support Office Manager, and Project Teams.

Detailed information on the roles and responsibilities of the Information Resource Management Council is available in Departmental procedure 325-090-004, Information Resource Management Council.

1.2.2 Information Technology Management Steering Team

Role – The Information Technology Management Steering Team (IT-MST) provides direction and prioritization for information technology resources and projects that are estimated at 1,500 hours of effort or less. The group usually consists of the Department Assistant Secretaries and the Chief Information Officer (CIO).

Responsibilities include, but are not limited to:

A. Assigning priorities for Departmental information technology resource efforts (i.e. application development)
B. Providing feedback to Management Stakeholders, Business Systems Support Office Manager, and Project Teams

1.2.3 Management Stakeholder Workgroup

Role – The Management Stakeholder Workgroup provides functional management oversight for the application projects.

Responsibilities include, but are not limited to:

A. Participation in periodic meetings of the membership; attendance at other meetings as deemed appropriate
B. Providing resources in the form of personnel and budget for the development effort
C. Approving project schedules and work plans
D. Prioritizing work efforts
E. Resolving or recommending final action for business issues
F. Communicating project status and activity to the Department's Executive Management
G. Recommending business process improvements
H. Coordinating external communication efforts with the Project Team
I. Delegating certain responsibilities to the Functional Stakeholders or a Task Group as needed
J. Providing feedback to Project Teams

Suggested Composition:

The composition of the Management Stakeholder Workgroup is determined by the Project Sponsor and may vary, depending on the type of project. The following are possible members: Voting Members:

- Assistant Secretaries and/or District Secretaries
- Chief Information Officer
- Project Sponsors of related or dependent Departmental systems and applications

Non-Voting Members:

- Business Systems Support Office Manager
- Project Manager
- Office of Inspector General staff
- Functional Coordinator(s) of related Departmental systems and applications

1.2.4 Chief Information Officer

Role – The Chief Information Office coordinates and manages the information resources management policies and activities within the Florida Department of Transportation.

Responsibilities include, but are not limited to:
A. Coordinating and facilitating the Department's information resources management projects and initiatives
B. Developing and implementing Departmental information resources management policies, procedures, and standards
C. Developing and implementing Departmental policies and procedures specifically for the review and approval of the Department's purchases of information technology resources
D. Advising the Department's Executive Management regarding the information resources management needs of the Department
E. Assisting in the development and prioritization of the information resources management schedule of the Department's legislative budget request

1.2.5 Executive Sponsor

Role – The Executive Sponsor is a chairperson of the subject business process improvement, analysis, and design efforts. The Executive Sponsor acts as a visionary and motivator and instills the project with a purpose and a sense of mission. The Executive Sponsor introduces the project within the organization and demonstrates commitment to its success.

Responsibilities include, but are not limited to:

a. Being accountable for ensuring the Business study and scope of the system address established business objectives and are clearly defined at the inception of the project.
b. Attending Management Stakeholders meetings and others, as deemed necessary.
c. Promoting, articulating, and providing leadership for the vision and strategy of the project to the organization, or other external entities, throughout the project's life cycle.
d. Facilitating resolution of resource issues.
e. Assisting in the presentation of status updates and system deliverables to the Management Stakeholders and users at key times.
f. Providing feedback to the Project Team.
g. Working with and supporting the Project Manager to better educate the functional users of their role in the application development process, i.e. the importance of gathering needed business information and communicating project information with other users within their functional area.

1.3 Information Technology

This section explains specific Information Technology roles and responsibilities.

1.3.1 BSSO Portfolio Manager

Role – The BSSO Portfolio Manager provides leadership and facilitation to the Program Managers of the development and maintenance of applications taken on by the Business Systems Support Office. The BSSO Portfolio Manager ensures proper methodology support is provided for BSSO application development projects and maintenance efforts. The BSSO Portfolio Manager also represents the application development and maintenance perspective within Office of Information Systems management and to other Offices or work groups within the Department as required.

Responsibilities include, but are not limited to:

A. Initiating application projects (either new development or enhancements) by obtaining IRMELT authorization, and supporting the project initiation, developing the initial schedule and budget, and approving the project
B. Holding BSSO Program Managers accountable for their development project team's work and/or production application maintenance work
C. Developing, revising, implementing, monitoring, and reporting on scope, staffing, scheduling and budgeting plans for application development projects and maintenance support efforts
D. Directing the development, implementation and monitoring of the standards, policies, procedures, and deliverables related to application development and maintenance

E. Coordinating with the offices within Office of Information Systems to ensure consistency and integration with other projects/technologies direction and ensure that needed support of development and maintenance activities is provided

F. Coordinating with Offices within the Department to ensure that application development efforts initiated outside of the Office of Information Systems are properly integrated with the Department's enterprise data and process models

G. Coordinating with Offices within the Department to ensure final confirmation and acceptance of the application

H. Serving as the Contract Manager over all application development efforts

1.3.2 Quality Assurance Team

Role - Instruct and support the application development Project Teams in the proper application of the Project Delivery Methodology to produce quality deliverables to help ensure the success of the project. Provide guidance to the project in all aspects of the methodology and deliverables once reviewed for quality. The Team may have different participants depending on the deliverables to be evaluated.

Responsibilities include, but are not limited to:

A. Participate in reviewing application development deliverables as required using established standards and quality control review checklists

B. Serve as quality assurance and standards expert on application development deliverables as needed

C. Participate in proposed process improvements for the PDM as needed

1.3.2.1 Quality Control Review Panel

The Quality Control Review Panel (QRP) conducts Quality Control reviews for the project stages and/or phase deliverables.
The QRP must be made up of at least two participants, who will be selected based on the deliverables to be evaluated.

1.3.2.2 Change Control Team (CCT)

The Change Control Team (CCT) is responsible for reviewing and determining the outcome of all change requests submitted to the project during the project life cycle. The CCT will meet as often as necessary, as changes are introduced throughout the project, to discuss potential impacts or changes to the scope, schedule or budget. If the CCT approves a change, the CCT must then seek authorization from the Executive Sponsor, Project Sponsor, BSSO Portfolio Manager, or combination of those stakeholders, depending on the type of impact the change will have on the project.

The CCT can have as many members as needed with a minimum of four people. The suggested make up of the team should be the following:

- Project Sponsor

- BSSO Program Manager
- <Business> Functional Coordinator
- Project Manager

The project change management plan must identify the frequency the CCT meetings.

1.3.2.3 Project Risk Review Team

The project risk review team (PRRT) is responsible for reviewing and determining the outcome of all risks submitted to the project during the project life cycle.

The PRRT can have as many members as needed with a minimum of three people. The suggested make up of the team should be the following:

- BSSO Program Manager
- <Business> Functional Coordinator
- Project Manager

1.3.2.4 BSSO Risk Review Workgroup

The BSSO Risk Review Workgroup (BRRG) is responsible for monitoring risks across all projects. The group is responsible for performing quality assurance reviews and monitoring projects that contain very high risk issues.

The BRRG can have as many members as needed with representatives from the following:

- BSSO Program Managers
- BSSO Portfolio Manager
- At least one Project Manager

1.3.2.5 BSSO Project Coordinator

Role: The BSSO Project Coordinator provides oversight to projects to ensure project teams follow the PDM methodology, processes and project deliverables adhere to PDM Quality Control standards.

Responsibilities include, but are not limited to:

a. Oversight authority for the project with respect to standards and quality assurance
b. Ensuring project team follows the BSSO methodology and adheres to standards
c. Ensuring key deliverables are reviewed for completeness and adherence to standards
d. Ensuring project stays within defined project scope
e. Ensuring formal change control process is invoked and followed, and decisions made are enforced

1.3.3 BSSO Program Manager

Role - The BSSO Program Manager provides leadership to Project Managers and facilitates development projects assigned to the development team. The BSSO Program Manager manages work performance of all resources on the development team (DOT and contracted). The program manager is a BSSO employee designated as the primary contact for coordinating

development and maintenance services for a specific application. BSSO Program Managers are designated for all applications for which the Office of Information Systems is a custodian.

Responsibilities include, but are not limited to:

a. Holding direct authority over Project Teams in terms of following the methodology, adherence to standards, budgeting, and scheduling of applications resources

b. Assessing the work effort involved for application requests and the resulting impact to other work efforts

c. Coordinating with the Functional Coordinator to establish priority levels for requests reported

d. Ensuring production applications are supported

e. Effectively applying resources to requests

f. Overseeing the work performed

1.3.4 Project Manager

Role - The Project Manager is accountable for maintaining project scope, cost, and schedule in accordance with the baselines established in the Project Plan. The Project Manager plans, assigns, and oversees the deliverables provided by team members.

Responsibilities include, but are not limited to:
  A. Performing project management activities and functions for the project
     i. The Project Manager is responsible for monitoring and controlling project activities of all project members for the project
     ii. Assisting the Business Systems Support Office Manager in the planning of application development projects and anything that entails
     iii. Developing strategic policy/planning directives for the development project
     iv. Developing, maintaining, and administering detailed project schedules reflecting the priorities and the workload of the Project Team
        a. Identifying resource requirements
        b. Assigning work activities
        c. Identifying project milestones
        d. Performing monthly quality assurance reviews of the project schedule
  B. Ensuring thorough and effective communication of all aspects of the project
     i. Acting as the primary project contact for the Management Stakeholders
     ii. Planning, preparing for, coordinating, and participating in Functional Stakeholder meetings and the activities of partnering groups
     iii. Coordinating project presentations to management and other groups as requested
     iv. Coordinating and/or attend multi-team analysis and design meetings, as necessary, to address interface and integration issues
     v. Providing status reports to Management and Functional Stakeholders and the Business Systems Support Office Manager on a regular basis
     vi. Providing monthly, quarterly and annual updates to the various monitoring groups, if applicable

    vii. Interacting with other external agencies regarding the structure and nature of the development or maintenance effort

    viii. Reviewing the project on a regular basis with the Project Team, users and other involved sections within the Office of Information Systems to determine priorities, identifying and resolving issues, and coordinating tasks

    ix. Initiating, reviewing, and/or approving scope and/or application change control requests, as needed, in accordance with current change control procedures

    x. Coordinating the implementation of all project strategies and plans

C. Ensuring the quality and effectiveness of all deliverables

    i. Producing and/or monitoring and reviewing the creation and update of project deliverables

    ii. Producing project strategies and plans

    iii. Ensuring that all application components meet established standards for design, programming, testing, documentation, and accuracy

    iv. Coordinating and tracking all reported application problems to a satisfactory conclusion

    v. Coordinating the creation and/or maintenance of project notebooks

    vi. Initiating and participating in the development, review and update of policies, procedures, and guidelines pertaining to application development and maintenance

    vii. Requesting and participating in technical, product, and process reviews as needed or required

D. Directing the activities of the Project Team

    i. Facilitating the reengineering of the business and the analysis, design, and development of information systems to support the reengineered business

    ii. Planning, preparing for, and participating in scheduled Joint Application Design sessions, structured interviews or other working sessions as a facilitator, scribe/analyst or participant

    iii. Facilitating the interaction with the business offices

    iv. Appointing Task Groups as needed for the development effort

    v. Directing and facilitating functional and technical activities related to the design, creation, modification, and testing of all application components at all levels, no matter the computer platform

    vi. Directing and facilitating activities related to the preparation and confirmation of both user and project documentation

    vii. Directing data conversion activities including: current system data and process mapping; development of conversion program specifications; coding and testing of conversion programs; verification of data conversion and subsequent data cleansing activities

viii. Directing activities necessary for the timely population of test data for all test levels and platforms

ix. Developing test schedules for unit, system, integration, performance, regression, and user acceptance testing; develop system test plan cycles

x. Monitoring the progression of the unit, system, integration, performance, regression, and user acceptance testing phases on all platforms

E. Coordinating the development and resolution of issues

i. Monitoring the identification and development of application issues reported and resolutions; maintaining an issue resolution log

ii. Facilitating issue resolution through appropriate management channels

F. Satisfying user requirements and information technology needs

i. Preparing confirmation documents, demonstrations, and other presentations for Management and Functional Stakeholders, Office of Information Systems Management, Project Sponsor, and other user groups

ii. Conducting walk-throughs, demonstrations, and confirmation reviews of project deliverables with development and maintenance team members, Management and Functional Stakeholders, Central Office and Districts user groups

iii. Assisting the users with acceptance testing

iv. Coordinating the final user acceptance of the application and the post implementation acceptance by the support groups

1.3.5 Business Analyst

Role – The Business Analyst represents the Business Systems Support Office and the Stakeholder(s) during the development life cycle. The Business Analyst is responsible for ensuring that their individual work effort complies with all applicable parts of the Office of Information Systems Project Delivery Methodology.

Responsibilities include, but are not limited to:

A. Providing assistance to the Project Manager, as appropriate, with project management activities, functions, and confirmations such as the following

i. Assisting in the development and revision of the project deliverables

ii. Planning, preparing for, and participating in scheduled team and Stakeholder meetings, partnering sessions, Joint Application Design sessions, structured interviews, or other working sessions

iii. Assisting with walk-throughs of the application components, the preparation of confirmation documents to present to the business users, and otherwise assist in confirmation efforts as necessary or requested

iv. Assisting with the development of test schedules and system test plan cycles

v. Assisting in obtaining user sign-off for the application as needed or requested

B. Following the prescribed methodology in developing the appropriate deliverables
   i. Interacting with the business users to identify and transform the functional business needs to a model, diagram, screen or report specification, edit criteria, etc.
   ii. Assisting with solicitation, creation and revision of various project documents and/or deliverables for the Requirements and Design Phases
   iii. Developing user help and system documentation
   iv. Assisting with the identification of training material and data requirements
C. Targeting the conversion of current system applications
   i. Participating in current system data and process modeling sessions; represent the current system perspective
   ii. Analyzing current system data changes and exceptions within current systems
D. Providing technical data processing expertise
   i. Participating in the development and revision of project strategies, and functional plans
   ii. Validating technical design of database elements against the requirements and participate in model reviews
   iii. Analyzing data and process integration points between existing applications impacted by the project
E. Satisfying user interface and/or data conversion requirements
   i. Writing and/or reviewing conversion and/or user interface specifications
   ii. Developing and refining comprehensive unit, system, and user acceptance test plans and scripts for both application components and conversion efforts
   iii. Progressing and supporting testing tasks; identifying, and utilizing test data load programs and test validation reports; supporting all testing phases, including the monitoring of user acceptance testing
   iv. Writing and/or assisting with any required documentation content for training materials, help pages or user manuals
   v. Testing and analyzing results of completed application and conversion programs, interfaces, and other application components during all testing phases; documenting and applying corrections as needed
F. Preparing for the production environment including: developing production support documentation; supporting or conducting training for the system users

1.3.6 Developer

Role – The Developer represents the Business Systems Support Office during the development life cycle. The Developer is responsible for ensuring that their individual work effort complies with all applicable parts of the Office of Information Systems Project Delivery Methodology.

Responsibilities include, but are not limited to:

A. Targeting the conversion of current system applications
    i. Creating and refining crosswalks between current and proposed system data
    ii. Mapping existing data and processes to proposed system components
    iii. Developing and testing conversion data validation tools
    iv. Performing data conversion tasks (such as preparing production data for conversion), confirming conversion results, and progressing any follow-up data cleansing activities necessary
B. Providing technical data processing expertise
    i. Raising technical issues when a functional requirement imposes unusual technical needs
    ii. Participating in Task Groups as necessary
C. Satisfying user interface and/or data conversion requirements
    i. Reviewing conversion and/or any user interface specifications
    ii. Developing, refining and executing comprehensive unit test scripts for both application components and conversion efforts
    iii. Coding and documenting assigned programs, and other application components according to specifications and standards such as:

    - Screen layouts

    - Dialog flows

    - Batch procedures

    - CA-GEN Process Action Diagrams (PADs)

    - Edit and external action blocks

    - Procedure Action Diagrams (PRADs)

    - Web components such as html and active server pages (*.htm and *.asp files)

    iv. Progressing testing tasks; identifying, developing, and utilizing test data load programs and test validation reports; supporting all testing phases, including the monitoring of user acceptance testing; constructing, maintaining and supporting the workstation unit test environment for personal and/or Project Team use
    v. Testing completed application and conversion programs, interfaces, and other application components during all testing phases; documenting and applying corrections as needed
D. Preparing for the production environment including: creating Job Control Language (JCL) for batch programs and report submission; constructing load modules; migrating program code; developing operations documentation; supporting or conducting training for the system users

1.3.7 Software Architect

Role – The Software Architect (or System Architect) is responsible for the development of the overall vision that underlies the project solution, and transforms that vision through execution

into the solution. They work very closely with developers to ensure proper implementation. Application or Software Architects work at a level of detail that demands involvement in actual coding, and will function best with a substantial background in software development.

Responsibilities include, but are not limited to:
A.   Limiting choices available during development by
    i.   Choosing a standard way of pursuing application development
    ii.   Creating, defining, or choosing an application framework for the application
B.   Recognizing potential reuse in the organization or in the application by
C.   Observing and understanding the broader system environment
D.   Creating the component design
E.   Having knowledge of other applications in the organization
    i.   Software architects can also:
      a. Subdivide a complex application, during the design phase, into smaller, more manageable pieces
      b. Grasp the functions of each component within the application
      c. Understand the interactions and dependencies among components
      d. Communicate these concepts to developers

1.3.8 Web Master

Role - Manage all technical aspects of the Department's Intranet and Internet environments.

Responsibilities include, but are not limited to:
A.   Coordinating Internet and Intranet test web site permission for developers
B.   Coordinating publication of Florida Department of Transportation websites to the Intranet and Internet
C.   Providing technical assistance in web development

1.3.9 Database Administration/Database Administration Technical

Role - Ensure compliance with data and database administration policies. Act as custodian of Departmental data. Includes:
- Data Analyst
- Database (Technical) Analyst

1.3.9.1 Data Analyst (DA)

Role - Represent Data Administration to ensure that appropriate standards are followed in the development of data definitions, entity relationships and other logical model components.

Responsibilities include, but are not limited to:
A.   Attending Joint Application Design sessions and other information gathering meetings as required in order to create and/or revise Entity Relationship Diagram(s)
B.   Reviewing and confirming data model

C. Assessing data integration analysis between proposed interfacing systems and data impact assessment activities

D. Participating in current system data and process modeling sessions

E. Assisting in the review of current system data conditions and exceptions and provide input to the data crosswalks between current and proposed systems

F. Supporting the development of conversion program specifications and follow-up data cleansing activities

G. Entering appropriate information into the Department's data dictionary and data modeling tools, including physical and business names for entities and attributes

H. Promoting the sharing of data (objects)

I. Performing consistency and completeness checks on model components

J. Assisting stakeholders in defining code values to be used, being sure to assess any potential conflicts of existing codes already defined in the official metadata repository. Subsequently, also defining them within the Department's official code tables and development environment

1.3.9.2 Database Technical Analyst (DBAT)

Role - Represent Database administration to ensure the proper performance, integrity and physical security of the data.

Responsibilities include, but are not limited to:

A. Assisting in the development, confirmation and revision of the implementation plan, conversion plan and the data conversion fall back plan

B. Supporting the analysis of data integration points between projects and assist with the validation of migration efforts between Project Teams' data models

C. Performing technical reviews of data and process models

D. Raising technical issues when a functional requirement imposes unusual technical needs

E. Supporting the conversion effort including: assisting current system and data analysis efforts; executing conversion or data cleansing programs; refreshing test data environments

F. Transforming Entity Relationship Diagram objects into physical structures and construct databases for both the testing and production environments. Confirming technical design, adding referential integrity, and migrating/generating Data Definition Language code for creating or modifying tables

G. Monitoring and evaluating performance during testing

H. Monitoring and evaluating performance during the post implementation phase, making technical modification improvements as necessary

I. Performing necessary steps to migrate objects to production

J. Assisting with the development and confirmation of operations documentation

1.3.10 Enterprise Model Coordinator

Role - Provide security and consistency for the use of the central CASE (CA-GEN) tool encyclopedia.

Responsibilities include, but are not limited to:
A. Control overall use of the encyclopedia and maintain the encyclopedia environment
B. Establish and enforce policies, procedures, and standards regarding use of the encyclopedia
C. Facilitate the sharing of business model constructs, where appropriate
D. Develop and maintain business data/process stewardship role responsibilities and assignments
E. Assure appropriate encyclopedia backup and recovery

1.3.11 Technical Support Personnel (Hardware and Software)

Role - Provide technical guidance, training, and problem resolution for all Project Team members. Provide an effective technical environment for application development and maintenance. Provide technical expertise to the project in the production of the deliverables and the application of development tools to completed specifications. Transfer knowledge of development tools to the Programmer/Analysts.

Responsibilities include, but are not limited to:
A. Support the Project Teams with the resolution of problems/questions related to application development languages and tools, in acquiring technical hardware and software, and in resolving environmental issues.
    i. Establish the design and construction development environments
    ii. Create Process Action Diagrams (PRADs) and screen templates and customize other generic standards to address the project's unique characteristics
    iii. Assist in capacity planning
    iv. Assist in application performance tuning
    v. Assist in interface analysis
    vi. Resolve problems with the functionality of development tools
    vii. Assist the Project Manager, as appropriate, with project issue resolution
B. Assist the Project Team in:
    i. Developing, documenting, reviewing, and confirming project deliverables in each development phase
    ii. Satisfying user interface and/or data conversion requirements
    iii. Preparing for the production environment
    iv. Performing data and process integration
C. Support technical database design
    i. Validate technical design of database elements
    ii. Perform consistency and completeness checks on data model segments

   iii. Provide technical design coordination with Database Administration/Database Administration Technical when needed

D. Act as technical representative for product and process reviews

   i. Progress walk-throughs with Project Team members; review completed Process Action Diagrams and batch procedures to ensure objects meet established standards and documented business requirements

   ii. Participate in the data and model reviews

E. Act as technical representative for functional transition of applications systems

F. Test and manage the installation of development tool releases

G. Review and distribute pertinent information from web sites and software subscription media

H. Act as the technical representative for Departmental teams addressing platform and environment issues

I. Provide recommendations for application development procedures and standards; assist the Project Manager with the development of standards and procedures

1.3.12 FDOT Enterprise Library Architects

FDOT's Enterprise Library Architects oversee FDOT's Enterprise Library (FEL). FEL is a collection of helper functions and Enterprise Business Objects (EBOs.)

Role - Perform system architecture reviews, technical system design reviews, technical quality control reviews and code reviews

1.3.12.1 FDOT Enterprise Library Coordinator

The FDOT Enterprise Library Coordinator manages the FDOT Enterprise Library Architects.

1.4 Information Security Administration

Role - Represent the Department's security procedures and policies is reviewed and consistency with Florida Statutes and Florida Administrative Code Rules.

Responsibilities include, but are not limited to:

A. Participating in or being made aware of initial project planning sessions that may pertain to potential or pending application security issues

B. Developing/confirming the security approach for the system's authentication and/or authorization methods as specified through the application security plan

C. Possibly confirming or suggesting portions of the test plan(s) related to security

D. Performing required actions to implement desired security through the Resource Access Control Facility (RACF), Active Directory and/or other designated control

1.5 Information Technology in the District

This section explains specific Information Technology roles and responsibilities within the District.

1.5.1 Technical Services and Support (TSSO) Office

Role - Ensure appropriate DOT Data Center, DOT Network, and District technology systems resources are available (statewide) for implementation of the application.

Responsibilities include, but are not limited to:
  A. Directing the activities of:
    • Technical Services and Support Managers
    • District Data Center Technical Support Personnel
    • Wide Area Network Manager
  B. Overseeing daily operations and maintaining the DOT Data Center and Network Infrastructure
  C. Supporting the Department's statewide networking infrastructure
  D. Supporting personal computers and local/wide area networks for the Department Offices

1.5.1.1 Technical Services and Support Manager (TSSM)

Role - Ensure their own District information technology systems and services are available for implementation of the application, primarily through the oversight of their District's data center technical support personnel.

Responsibilities include, but are not limited to:
  A. Supporting and maintaining district networks, personal computers, and related equipment
  B. Providing system access and specialized security to district and consultant personnel as authorized
  C. Directing the activities of District Data Center Technical Support Personnel

1.5.1.2 District Data Center Technical Support Personnel

Role - Provide technical guidance, assistance and problem resolution relating to their District environment. Provide technical expertise to the Project Team.

Responsibilities include, but are not limited to:
  A. Providing important input concerning the existing computing environment and infrastructure and determining whether the infrastructure can support the proposed application; and ongoing District projects (technology-related or otherwise) that could affect the implementation of the application.
  B. Involvement in application projects that will require the upgrade or implementation of software, hardware, or networking equipment within their District.
  C. Assisting in capacity planning
  D. Assisting in application performance tuning
  E. Assisting in interface analysis
  F. Assisting in resolving computer environment issues
  G. Assisting the project manager, as appropriate, with project issue resolution

1.6 Functional Area

The Functional Area is the Business office of the Department that the application supports. The Functional Area is frequently referred to as the Business or User Office.

1.6.1 Project Sponsor and Project Suite Owner

The Project Sponsor is the manager responsible for the function that is supported by the application. If the business function falls under the direction of two managers, co-owners may be established. If there are more than two managers responsible, a Project Suite Owner must be appointed by the Secretary or appropriate Assistant Secretary.
Role - Ensure that security controls related to access and integrity of the application and data are in place. Ensure that the needed resources from the Functional Office are available to serve in various roles throughout the application's life cycle.

Responsibilities include, but are not limited to:
A. Implementing sufficient security controls within their area of responsibility to ensure that access to data files and programs is limited to those authorized.
B. Identifying sensitive, confidential, and confidential/exempt data and the personnel authorized to view and manipulate that data.
C. Establishing and maintaining sufficient controls within the appropriate area of responsibility to ensure accuracy and completeness of data, and ensuring that data comes from the correct source for the intended use.
D. Assigning dedicated resources, such as a Functional Coordinator and Functional Experts, to application development or maintenance projects.

Refer to Departmental Information Systems Office procedures for further details.

1.6.2 Functional Stakeholders

Role - Provide functional management oversight of the application project for which they have been delegated responsibility. Provide direction to the Project Team in regard to project strategy and planning.

The Functional Stakeholders should include Business Area Managers with the authority to make recommendations/decisions affecting the functional area they represent.

Responsibilities include, but are not limited to:
A. Attend Joint Application Design sessions, Functional and Management Stakeholders and scheduled team meetings, as appropriate.
B. Give direction and make recommendations on the functional design of the application.
C. Resolve issues, act as a sounding board for different solutions to business problems, be proactive in reengineering the business processes, confirm deliverables from a business function perspective, and keep the user community advised of new or revised business decisions.
D. Participate in the development of project scope and prioritization.
E. Provide oversight to ensure the system works correctly and operates within acceptable performance limits.

F. Review prototypes of and the application's user interface and other design components; recommend changes that would improve the effectiveness of the system design as it relates to business functionality.
G. Review plans for implementing the application(s) and recommend changes to improve these plans.
H. Review system training plans to ensure they will meet the needs of the future system users.
I. Approve or reject project scope change control requests in accordance with established change control procedures.
J. Appoint Task Groups as needed to assist in the development effort.
K. Appoint empowered personnel to attend team interviews or Joint Application Design sessions.
L. Provide strategy and planning feedback to the Project Team.
M. Coordinate the appointment of Functional Experts.

1.6.3 Functional Coordinator and Functional Suite Coordinator

These positions are also known as the **<Business> Functional Coordinator** and **<Business> Functional Suite Coordinator**.

Role - Serve as a dedicated resource from the Functional Office assigned to serve as liaison between the Office of Information Systems and the Functional Office. The role of the Functional Coordinator will exist beyond the project, throughout the life of an application. The Functional Coordinator may act as an agent for the Project Sponsor. In systems where more than two applications make up an integrated suite, a Functional Suite Coordinator will be assigned. The Functional Suite Coordinator assumes all the responsibilities of a Functional Coordinator, but with the added responsibilities detailed below.

Responsibilities may include, but are not limited to:
A. Provide on-going communication and coordination between the Office of Information Systems and the user's Functional Office(s) during application development and after implementation into maintenance.
B. Coordinate with the appropriate Functional Experts to ensure that the business requirements of the application project are satisfied. The Functional Coordinator is accountable for the accurate representation of all business requirements within the application project.
C. Coordinate and assist in the creation of the system acceptance criteria and functional user acceptance test plans. Coordinate the timely completion of the functional user acceptance testing of proposed system components, whether under a development project or maintenance.
D. Act as the single point of contact for application production support with the end-users. This will include: assisting users with end-user reporting, general application usage questions, training of new users, confirming application defects reported, distribution of manuals and information, and submitting Application Systems Service Requests (service requests) as a result of business process changes or improvements suggested by application users.
E. Provide approval to progress any application development effort from one phase to another, including final approval to move application modifications to the production environment.

F. Administer or request the security access authorizations for users of the application. Requesting user authorizations using the Automated Access Request Form (AARF) system.

G. Communicate important application information to the application users, such as coordinated changes forthcoming and training opportunities.

H. Facilitate the prioritization of outstanding service requests for enhancements to the application with affected business offices when multiple service requests exist.

1.6.4 Functional Suite Coordinators

A. Coordinate and communicate with each Functional Coordinator and the Business Systems Support office on issues that affect the overall suite of applications.

B. Coordinate and prioritize service requests among the Functional Coordinators within the suite.

C. Coordinate and manage application suite development projects and production support during maintenance.

D. Coordinate and manage user notifications for suite issues.

E. Provide suite coordination for system integration testing.

1.6.5 Functional Expert

Role - Provide information based on professional experience, sound judgment and knowledge of transportation systems and business processes. Experts are resources from business offices that participate in project activities on an as needed basis. Functional Experts should be empowered to offer recommendations for business process improvement opportunities and support their implementation through improved application processes and information systems.

The assignment of specific Business Area Experts to the application development effort, rather than to a specific phase of a project is encouraged in order to promote consistency throughout the life of the project.

Responsibilities may include, but are not limited to:

A. Provide an accurate representation of all business requirements within the application project

B. Plan, prepare for and participate in, as appropriate, scheduled Stakeholder and team meetings, partnering sessions, Joint Application Design sessions, structured interviews, or other working sessions as a functional expert, facilitator or scribe/analyst

C. Participate in Task Groups as necessary

D. Draft letters, memos, issue papers, research documentation, meeting minutes, scope change control requests, etc., when deemed necessary

E. Review the documented results of meetings and/or sessions from a business process and function view point and be prepared to either approve the results or recommend changes to the documentation

F. Provide expertise in, and representation for, business process functions:

      i. During the identification of business processes, system information, and batch reporting requirements

      ii. During the development and/or maintenance of the data and process models, and the walk through of these models with other functional experts.

      iii. During the mapping of data and process modeling from "current" system to "proposed" system

G. Assist in the identification and resolution of issues; provide independent investigation and research for business issues or concerns raised during meetings and/or sessions

H. Act as a user community liaison for dissemination of project or application information obtained through participation in development projects and/or maintenance support, to both superiors and subordinates, as well as other Functional Experts

I. Participate in data conversion activities including: analyzing data changes and exceptions within current systems; assisting the development of conversion program specifications; developing and testing validation tools; establishing test plans related to data conversion; confirming conversion results; progressing any follow-up data cleansing activities necessary; preparing conversion data for production

J. Participate in the development and revision of content for project deliverables

      i. Baseline documents and/or enhancement release contracts

      ii. User Interface specifications, data validation/edit criteria, dialogue flows, entity life cycles, expected effects, prototypes, and process logic diagrams

      iii. Unit and system testing strategies, cycles, plans, and schedules

      iv. User Documentation and on-line Help

      v. Training plans and schedules

      vi. Training materials for both instructors and users, including identifying training topics/Business study examples and data requirements, developing evaluation forms, and providing training data

      vii. Implementation plans

      viii. Operations documentation

      ix. Conversion plans, conversion specifications, data conversion fall back plan, data conversion criteria and tools

K. Plan, prepare for and participate in the presentation of project deliverables to Functional and/or Management Stakeholders and/or other department personnel as deemed necessary

L. Participate in testing, consisting of but not limited to: unit, system, interface, full data integration, regression, performance, and user acceptance, within project schedule time frames

      i. Identify test data requirements for all testing scenarios; identify test validation reports; provide test validation report requirements and specifications

      ii. Review and approve system test plans and documentation

      iii. Test completed application components

M. Provide initial and on-going training to the business office staff, and other Department personnel, in the use of implemented computer systems

N. Travel to District Offices as deemed necessary

O. Conduct training pilots and train system trainers and system users

P. Assist the Project Manager and/or the Functional Coordinator, as appropriate, with confirmation of deliverables

1.7 Other Roles and Responsibilities

The following roles and responsibilities may be assigned to appropriate FDOT personnel or consultant staff as needed to affect a successful application development effort.

1.7.1 Task Groups

Role - Perform a specified segment of work, within a specified period of time, as a supplemental resource.
Task Groups may be established by the Management Stakeholders, Functional Stakeholders, or the Project Manager. Membership may be comprised of representation from Project Teams, Office of Information Systems sections, other Department of Transportation offices, or consultants.

Responsibilities include, but are not limited to:

Q. Conduct meetings

R. Review materials

S. Collect and compile data

T. Perform research and prepare supporting documentation

U. Formulate recommendations to support resolution of business process issues, or other issues

V. Participate in the presentation of recommendations to the Project Manager, Functional Stakeholders, Management Stakeholders, IRMELT or business user groups

W. Provide feedback to the Project Team

1.7.2 Review Facilitator

Role - Coordinate and conduct impartial, structured, information gathering meetings.

Responsibilities include, but are not limited to:

A. Establishing review scope and objectives, prepare and distribute an agenda Organize and prepare materials for the review session(s)

B. Identifying PDM standards and procedures used by the project team. To determine scope of review

C. Facilitating the discussions between all participants with the ultimate goal of capturing and refining review needs

D. Encouraging participation, avoid conflicts where possible and build consensus

E. Consolidating review results and provide report to project manager

1.7.3 Review Scribe

Role - Record information about the Joint Application Design session.

Responsibilities include, but are not limited to:
  A. Manual documentation of information gathered or systemic documentation of information gathered
  B. Participating in the review session by asking for clarification or by pointing out information discrepancies
  C. Preparing a report of the findings, recommendations and issues from the review meeting and provide the report to the review facilitator

1.7.4 Office of Inspector General Staff

Role - Record pertinent information about the application project, if assigned by the Office of Inspector General.

Responsibilities include, but are not limited to:
  A. Manual documentation of information gathered or systemic documentation of information gathered
  B. Participate in the meetings and/or session by asking for clarification or by pointing out information discrepancies

1.7.5 Word Processor

Role - Provide administrative support in the development of text material. Support would include word processing, web page development, the creation and maintenance of spreadsheets, the entering of a high volume of text material into any tools, the building of the on-line help user interface, or other documentation.

Responsibilities include, but are not limited to:
Creating the required material according to the prescribed standards for project deliverables, such as technical architecture documents, presentation materials, interface documents, training materials, test plans, user documentation, etc.

1.7.6 Contract Manager

Role - A Department employee responsible for enforcing performance of the contract terms and conditions, serving as liaison with the vendor and ensuring that the contractual terms have been complied with prior to processing the invoice for payment.

Responsibilities include, but are not limited to:
  A. Assisting the FDOT Procurement Office by providing them with the specifications or scope of services, the quantities, special conditions or requirements, time frames, pricing information, budget authority and evaluation criteria, as applicable

B. Understanding the contract terms and conditions and know the scope and limitations of its authority

C. Verifying the vendor's actual performance to the contract terms and agreed upon performance indicators and verifying receipt of deliverables before approving invoice payment. Ensuring timely approval of invoices

D. Comparing and tracking payments against contractual terms and verifying that payment requests comply with the contract and that expenditures are properly supported and documented

E. Informing management, in a timely manner, of any technical or contractual difficulties encountered

F. Informing the vendor of failures to comply with technical requirements of the contract or failure to show a commitment to customer satisfaction, particularly if the vendor does not make corrections, while ensuring such information provided to the vendor is documented including any subsequent events such as meetings or correspondence

G. Performing final inspection/acceptance of all work and deliverables required under the contract, including the review/approval of reports

H. Maintaining a file that contains the contract and any modifications, all contract correspondence, inspections, records, memos, conversation with the contractor and invoices/vouchers

I. Monitoring cost-reimbursement contracts by performing a periodic head count, examining timesheets/cards and sign-in sheets, reviewing the overtime and maintaining spreadsheets to track direct costs and expenses

J. Reviewing vendor required progress reports, documentation which can often uncover potential cost overruns, late deliveries and poor vendor performance

1.7.7 Post Project Delivery Review Team

Role: This team will review the project delivery process after the project has reached project completion. The Post Project Delivery Review Team (DRT) consists of the following members:

a. Review Scribe
b. The Project Manager
c. Key user stakeholders
d. Selected members of the Project Team
e. When applicable, a representative from Data Administration
f. When applicable, a representative from Database Administration
g. When applicable, a representative from Security Administration
h. Other involved persons as deemed appropriate by the Review Facilitator

Responsibilities:

a. Review and evaluate the Critical Success Factors (CSF) identified in the Project Charter to determine if each CSF factor was met.
b. Review and evaluate the project delivery process utilized by the project team
c. Identify problems that occurred during the project life cycle (procedural, technical, etc).

d. Classify problems that were experienced during the various stages and/or phases of the project delivery process, in order to facilitate resolution.

e. Review the Project Delivery Methodology (PDM) standards and procedures used by the project.

f. Determine if additions, changes, or corrections to existing PDM standards and procedures are required as a result of positive or negative events which occurred during the project.

g. Identify any positive or negative issues that need to be elevated to management for resolution and make assignments for the issues to be 'expanded' with written explanations and recommendations for resolution.

h. Make recommendations to resolve problems or to improve the process.

i. Make recommendations for standard and process improvements.

j. Identify new PDM standards and/or procedures that may be needed.

1.7.8 Model Review Team

Role: This team will perform the Model Review which consists of the Logical Data model, Process model and Create, Read, Update and Delete (CRUD) matrix. The Model Review Team consists of the following:

a. Review Facilitator

b. Project Team Members:
   - Project Manager
   - Data Analyst
   - Business Analyst

c. Experts from within BSSO who may or may not be specifically assigned to the project:
   - Data Administration representative
   - Database Administration representative
   - When applicable, a representative from Applications affected by the project
   - When applicable, Maintenance Team representative
   - Other involved persons as deemed appropriate by the Project Manager

Responsibilities:

a. Walk through the prepared documentation for comments and recommendations by the Model Review Team.

b. Review and evaluate the data model for completeness, standards violations and consistency.

c. Recommend relevant modification to facilitate execution and/or coding efficiencies may be incorporated into this review.

Appendix C: Additional Standards

This appendix provides references to additional standards that must be followed.

Standard	Standard Maintained by	Enforced by	Location
Web Application Standards	BSTWG	WebMaster	BSSO SharePoint Site
Multimedia Development Standard	BSTWG	WebMaster	BSSO SharePoint Site
.Net Coding Standards	FEL/BSTWG	FEL and WebMaster	BSSO SharePoint Site
SQL Review Standard	BSTWG	DBAT	BSSO SharePoint Site
SharePoint Application Standards	TBD	WebMaster	TBD
SharePoint Site Structure Standards	TBD	WebMaster	TBD

Appendix D: Definitions

Acceptance Testing: A demonstration of the satisfaction of functional requirements to the functional experts by their use of the application in the System Test environment. The functional expert's verification that the system meets their needs and performs as designed.

Application: A computer based information system that supports a specific business function of the Department. An Application includes both manual and computerized procedures for source transaction origination, data processing and record keeping, and report preparation. Synonym: System.

Application Component: A simple part, or a relatively complex element regarded as a part, of a System or Application.

Application Software: A computer program that performs tasks such as word processing, database management, communications, financial computations, graphic presentation, document management, and engineering design and analysis.

Business Rule: The underlying business process that is addressed by a specific function within a computer application. The overall design of the application should mirror the logical structure and flow of all related business rules. Business Rules should be documented and presented to appropriate Functional Office representatives for confirmation to ensure that the design and construction of the application or maintenance release will be completed correctly.

Business Process: Business processes are the practices or collection of actions performed by the Business (End-User) Office to produce a completed service or task, from start to finish.

Change Management: A method to monitoring and controlling change within the project. See Chapter 7 Project Management, PDM.

Configuration Management: An approach to formally identifying and controlling project deliverables. See Chapter 7 Project Management.

Constraints: Outside influences that can have an impact on an application development effort or maintenance release. Constraints are items that are not within the control of OIS.

Consultant: Individuals working for companies contracted to perform work on Department projects.

Database: A file or a collection of files (and any necessary indexes to those files) which store data.

Data Dictionary: Those databases established and maintained by Data Administration for the purpose of metadata documentation, standardization, and sharing of data throughout the Department.

Technical Services and Support Manager (TSSM): This title refers to the Department employees responsible for Information Technology support functions (depending on district organization, this may or may not include Engineering/CADD) in their respective geographical areas. In addition, the Central Office, Motor Carrier Compliance, State Materials Office, and Tolls Data Center have Department employees who represent their area as a TSSM. These Department employees typically are Data Center Directors or Data Processing Managers.

End-user: The person or persons who use a computer application.

End-User System: A computer system designed to support the business functions of the office such as word processing, financial calculations, graphical presentations, and information sharing. Responsibility for the system resides in the user office and not with OIS.

Entity: A single occurrence of an item of interest to the business and about which data can be kept.

External Application/System: A computer software application that is customarily not housed on Department hardware and not maintained by OIS.

Functional Application Suite Coordinator (FASC): See Roles and Responsibilities.

Functional Expert: See Roles and Responsibilities.

Functional Office: The functional area within the Department, including both the Central Office and District counterparts, whose activities are supported by the application.

Integration: Bringing together hardware, software, the use of compatible data and/or procedure(s) to create a functioning application.

Interface: An application component, data and/or procedure(s), which form a common boundary between incompatible applications.

Joint Application Design (JAD): A method that allows end users and information technology professionals to design a computer application from the user's perspective. It focuses on the design in an organized, controlled way. The joint approach encourages commitment, participation, and consensus, so that the resulting application meets the user's requirement, reduces rework time, and increases satisfaction.

Living Documents: Refers to a documents relative life span. "Project" living documents relative life span is for the duration of the project. "Application" living documents relative life span is for the duration of the application.

Management Steering Stakeholders: (replaces the MSC) See Roles and Responsibilities.

OIS Application Coordinator: See Roles and Responsibilities.

OIS Application Environment: There are three (3) development environments within OIS for computer applications, two for test and one for production. The two test environments are

referred to as Unit Test and System Test. The progression of source code goes from Unit Test to System Test to Production. Production is considered "Go Live" or real world being implemented that the end customer uses.

Output: Information or data originating from a database, presented in an organized format as either a report, screen display or another file.

Pilot: A trial period used to evaluate how well the actual application components will work in the production environment. During this time period, every attempt is made to identify all real and potential problems, to operate under the production mode and execute a "Real Team" production test. During the pilot, the existing system, whether manual or automated, is still in operation. Analysis is conducted at the end of the pilot to assess how well the application accomplished the goals and objectives for which it was developed, what modifications are needed, what enhancements are desired and whether to continue with large-scale implementation.

Procedure: 1) A method of carrying out a business process. 2) (CASE) A method of executing zero, one, or more processes; also called a 'procedure step, single-step procedure, multi-step procedure'. 3) Specific operating requirements and instructions that implement policy, statutes, rules and other regulations; and prescribe responsibilities, methods, processes and schedules for activities. This definition has been taken from SOS 025-020-002, Standard Operating System.

Production: The technical environment in which a completed software/hardware system resides for the purpose of repeated, regular use by the functional area for which the system was developed in order to produce accurate, approved results.

Program: 1) The source code for a set of instructions executed by the mainframe computer of the Department, and identified by documentation with a name, and stored in a central storage library as a single entity, whether or not its function is dependent on other programs. 2) An executable system component, whether that component is compiled or interpretive (e.g. source code, load module, CLIST, '.exe' microcomputer file).

Project: A temporary endeavor undertaken to create a unique product, service or result. The temporary nature of projects means a definite begin and end. A project can be a new development effort or an enhancement. For the purpose of this methodology, maintenance efforts are not considered projects.

Project Documentation: The accumulated documentation of the components and deliverables of a project, including depositing information/metadata to be recorded in the FDOT Application Repository. This may be maintained in an FDOT Intranet web site and/or other approved electronic location (i.e. SAN folder). Whichever method is chosen, there must be backup processes in place to ensure that this documentation can be recovered in case of emergency.

Project Charter: The Project Charter provides a consistent method to identify the scope of work to be completed by a project. It is an agreement between the stakeholders and BSSO so the appropriate FDOT Management approval can be sought and before significant resources are

committed and expenses incurred. The Project Charter represents the initial scope of work for the requested IT project.

Project Plan: A definition of the scope of work, time, and resources required to complete a project. The critical components of a project plan are the project scope and project management plan.

Project Scope: Establishes the boundaries of the project.

Project Sponsor: The Department manager or delegate responsible for the project which is supported by the (Information) resource. The definition of Owner has been taken from SOS 325-060-701, Custodian and Owner Responsibilities - Data & Software. If the business function an owner is responsible for falls under the direction of two or more managers, co-sponsorship may be established.

Project Team: Representatives of the Office of Information Systems and the Functional Office that progress the activities within an application development or maintenance release project.

Prototype: A preliminary version of a program, screen or report developed to facilitate communication and confirmation efforts between the Functional Office and the BSSO Project Team. No actual work is implemented; work is only progressed to evaluate if the technology will accomplish and compliment the business process.

Risk: An uncertain event or condition that, if it occurs, has an effect on at least one project objective. Objectives can include scope, schedule, cost and quality. A risk may have one or more causes and, if it occurs, it may have one or more impacts. A cause may be a requirement, assumption, constraint, or condition that creates the possibility of negative or positive outcomes.

Regression Testing: A test phase in application development where, as new modules are integrated into the system and the added functionality is tested, previously tested functionality is re-tested to assure that no new module or changes have corrupted the system.

System: A collection of programs accessing and/or updating a Database which, taken together with the type of data stored in the Database, address a unified aspect of the ongoing business of the Department. Synonym: Application.

System Software: Support programs that enable Application Software to run smoothly on a specific configuration of hardware.

System Testing: The testing of all of the individual programs which make up an application. System Testing includes testing to ensure the proper functioning of programs against large amounts of data (volume testing) and that the system functions as a coherent whole (integration testing).

Test Case: A set of conditions or variables under which a tester will determine whether an application or software system is working correctly or not (Wikipedia).

Test Scenario: Hypothetical stories to help the tester work through a complex problem or test system. The ideal scenario test is a credible, complex, compelling or motivating story the outcome of which is easy to evaluate. These tests are usually different from test cases in that test cases are single steps whereas scenarios cover a number of steps (Wikipedia).

Test Strategy: An outline that describes the testing approach of the software development cycle. It is created to inform project managers, testers, and developers about some key issues of the testing process (Wikipedia).

User: See End-user.

Unit Test Environment: A collection of files or a database of limited capacity created to ensure the proper functioning of programs.

Unit Testing: The testing of a single system component or module in order to test the detailed logic and accuracy of performance. Unit testing is generally performed by the programmer of the module. Unit testing does not test how well the individual module works with other modules, that type of testing is done during System Testing.

Validation: Ensuring that a task was done and that results are consistent, e.g. validating that unit testing was done and that test results are consistent.

Verification: Proving or demonstrating accuracy, e.g. ensuring through testing that a program does what it should do.

Work Breakdown Structure (WBS): The work breakdown structure is a deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables, with each descending level of the WBS representing an increasingly detailed definition of the project work.

Work Package: A deliverable or project work component at the lowest level of each branch of the work breakdown structure.