

SYSTEMS DEVELOPMENT LIFECYCLE (SDLC) GUIDE

U.S. Department of Agriculture, Food and Nutrition Service
Office of Information Technology



August 31, 2017

Version 2.0



National Office – Park Office Center
3101 Park Office Drive
Alexandria, VA 22012

APPROVAL

OFFICE OF INFORMATION TECHNOLOGY

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APPLICABILITY

This document applies to the IT Governance Branch under the Portfolio Management Division (PMD) of the Office of Information Technology (OIT) at the Food, Nutrition, and Consumer Services (FNCS). This document is approved for internal release.

EFFECTIVE DATE

This document is effective immediately upon approval.



DOCUMENT REVISION HISTORY

VERSION	DATE	AUTHOR	CHANGE DESCRIPTION
1.0	09-12-2012	Catherine Howard	Created the document
1.1	02-25-2013	Syed Jaffery	Updated deliverable list and added modular/iterative development information.
1.2	03-08-2013	Kevin Russ	Updated figure 1 and added stakeholders
1.3	11-06-2013	Kevin Russ	Updated Deliverable list and footnotes.
1.4	12-24-2013	Panum Group	Updated SDLC High-Level Governance Diagram
2.0	8/31/2017	Panum Group	Added additional detail from USDA IT Governance Guidebook and Agile Hybrid Scrum Approach used by FNCS.

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ACRONYM LIST

REFERENCE	DEFINITION
A&A	Assessment and Authorization
AAR	Acquisition Approval Request
ADB	Application Development Branch
AO	Authorizing Official
CIO	Chief Information Officer
CONOPS	Concept of Operations
COR	Contracting Officer's Representative
COTR	Contracting Officer's Technical Representative
EVM	Earned Value Management
Fibonacci sequence	A set of numbers that starts with a one or a zero, followed by a one, and proceeds based on the rule that each number is equal to the sum of the preceding two numbers. $F(0) = 0, 1, 1, 2, 3, 5, 8, 13, 21, 34$
FIPS 199	Standards for Security Categorization of Federal Information and Information Systems
FNCS	Food, Nutrition and Consumer Services
FNS	Food and Nutrition Service
IBR	Integrated Baseline Review
IPT	Integrated Project Team
IRR	Implementation Readiness Review
ISO	Information Security Office
IT	Information Technology
ITG	Information Technology Support Group
IV&V	Independent Verification and Validation
JIRA	Issue and project management software tool developed by Atlassian
Kano Model	A theory of product development and customer satisfaction developed in the 1980s by Professor Noriaki Kano, which classifies customer preferences into five categories: Must Be Quality, One-dimensional Quality, Attractive Quality, Indifferent Quality, Reverse Quality
MoSCoW	Must haves, Should haves, Could haves, Won't haves
O&M	Operations and Maintenance
O&MB	Operations and Maintenance Branch
OA	Operational Analysis
OCIO	Office of the Chief Information Officer
OIT	Office of Information Technology
OMB	Office of Management and Budget
ORR	Operational Readiness Review
PDR	Preliminary Design Review
PERT	Program Evaluation & Review Technique
PIA	Privacy Impact Assessment

PIR	Post Implementation Review
PM	Project Manager
PMB	Program Management Branch
PMD	Portfolio Management Division
PPA	Project Process Agreement
PSR	Project Selection Review
PTA	Privacy Threshold Analysis
PWS	Performance Work Statement
SDLC	Systems Development Lifecycle
SME	Subject Matter Expert
SOO	Statement of Objectives
SORN	System of Records Notices
SOW	Statement of Work
SRS	System Requirements Specification
TD	Technology Division
UAT	User Acceptance Testing
USDA	United States Department of Agriculture
VPAT	Voluntary Product Accessibility Template
VRR	Validation Readiness Review
Walking Skeleton	A minimal initial implementation of an application's architecture that includes and connects the basic components of the system. With Agile story mapping, the first horizontal row represents a "walking skeleton", a barebones but usable version of the product

1 PURPOSE AND SCOPE

This document details the United States Department of Agriculture (USDA) Food and Nutrition Service (FNS) systems development lifecycle (SDLC). This process is used for all USDA FNS Office of Information Technology (OIT) projects related to information system and application development, developed either contractually or in-house. The SDLC is applicable across all FNS environments (e.g., workstation, server, mobile, etc.).

The SDLC is used in conjunction with policy and guidelines for the security SDLC, records management, and acquisition and procurement. It is important to note that no system can go live unless it goes through the security assessment process. Further, while all phases of the SDLC are applicable to all software development projects, the specific steps, participants, and reviews and approvals vary depending upon project size (as a function of cost). Information on project size as a determinant of SDLC project categorization is detailed in [Appendix A](#).

For projects that do not involve software development and do not follow the SDLC process, a non-SDLC process has been established that will provide a review of possible impact on systems, applications, and users; and alignment with overall goals and strategic plan. The non-SDLC process is much simpler than the SDLC process, and ensures a structure and set of governance, and the guidance required to ensure predictability and consistency across all projects. The process for non-SDLC projects is shown in [Addendum A](#).

2 SDLC OVERVIEW

The SDLC guides the process for custom software development projects and requires various documents and deliverables for each phase. It is the Information Technology (IT) business process for the delivery of custom software development projects. The SDLC provides a structure and set of governance for FNS software development efforts. It provides the guidance required to ensure predictability and consistency across software development projects. The FNS SDLC framework allows for tailoring of the process to include customizing, waiving or combining particular SDLC phases, activities, deliverables or project reviews based on the specific project requirements or specific business needs. Tailoring is completed during the Requirements Gathering & Analysis phase of the project and is documented in the Project Process Agreement (PPA). Project Managers (PM) document the reason why specific phases, activities, deliverables or reviews were adjusted.

The SDLC has eight phases (Initiation, Requirements Gathering & Analysis, Design, Development, Integration & Testing, Implementation, Operations & Maintenance, and Disposition) that serve as checkpoints for managing OIT projects from cradle to grave. Benefits of the SDLC include:

- Improved system integration and alignment to organizational objectives
- Increased compliance with current and planned enterprise architecture
- Improved assurance that systems are maintainable
- Reduced system redundancies and improved cost-effectiveness
- Reduced project scope creep through enhanced up-front needs analysis
- Improved consistency, repeatability, flexibility, and transparency
- Strengthened controls and accountability
- Enhanced user, manager, and stakeholder involvement

FNS utilizes two different approaches when implementing SDLC projects: the Waterfall method and the Hybrid Agile Scrum method. The Waterfall method moves through the eight phases in sequential order with each successive phase leveraging the documentation and knowledge gained from the previous phases. The Hybrid Agile Scrum method incorporates all eight phases, but moves through several phases using Sprint cycles to meet the expectations and satisfy the needs of all stakeholders and department standards. Key success factors include the transparent and consistent practical application of the industry best Agile practices throughout the project. The Hybrid Agile Scrum approach does not take the place of the Waterfall, but instead combines several phases to allow for incorporation into the existing SDLC. Both the Waterfall and Hybrid Agile Scrum approaches share the Initiation, Implementation, Operations & Maintenance (O&M), and Disposition phases. The Program Management Branch (PMB) leads the project throughout the first six phases of the SDLC (Initiation, Requirements Gathering & Analysis, Design, Development, Integration & Testing, and Implementation) and transitions it over to the Operations and Maintenance Branch (O&MB) for the last two phases (O&M and Disposition).

The processes for both the Waterfall and Hybrid Agile Scrum approaches are discussed in detail in the following subsections.

2.1. Waterfall SDLC

The Waterfall approach encompasses eight phases: Initiation, Requirements Gathering and Analysis, Design, Development, Integration and Testing, Implementation, O&M, and Disposition. The progress moves steadily through each phase with the next phase beginning upon the completion of the prior phase. Required phase deliverables, reviews, and approvals can differ depending upon project size¹ and stakeholders² involved.

A graphic diagram of the Waterfall model is depicted below in Figure 1.

¹ Project size is detailed in [Appendix A](#)

² Stakeholders are defined in [Appendix E](#)

Figure 1. Waterfall SDLC Overview



2.1.1. Phase 1: Initiation

The Initiation phase begins once the Customer Intake process has been completed. Once the Initiation phase begins, it follows the SDLC process throughout the entire project lifecycle from Initiation through Disposition.

From the Customer Intake process, an initial assessment of the potential OIT system/application development effort has been completed and approved, with the PM assigned to the project. Once this is completed and the project moves into the Initiation phase, a framework is established for project success, including establishing processes for defining, planning, controlling and communicating about the project.

Deliverables³ due in this phase includes:

Figure 2. Initiation Phase Deliverables

Phase 1: Initiation Deliverables
<ul style="list-style-type: none"> • Business Case (FNS758; FNS755) • Acquisition Plan / Strategy

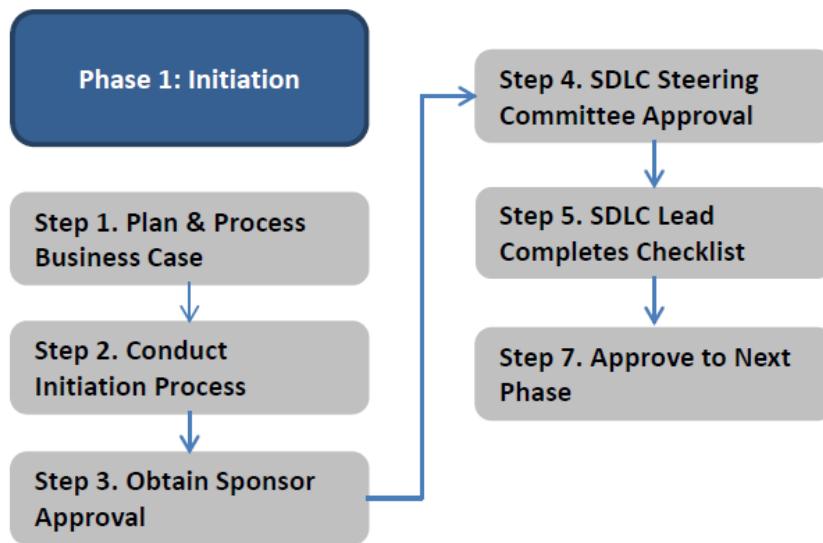
³ A comprehensive deliverables list by project size is shown in [Appendix B](#)



- Acquisition Approval Request
- Alternative Analysis
- Cost Benefit Analysis
- Procurement Documents with Information Security Office (ISO) input (e.g., Statement of Work (SOW) / Performance Work Statement (PWS) / Statement of Objectives (SOO))

The Initiation phase includes activities, reviews and approvals as identified in the flowchart below.

Figure 3. Initiation Phase Overview



Upon successful completion of Step 7. “Approve to Next Phase”, the project progresses to the Requirements Gathering and Analysis phase.

2.1.2. Phase 2: Requirements Gathering and Analysis

This phase transforms the needs and high-level requirements specified in earlier phases into measurable, testable, traceable, complete, consistent, and stakeholder-approved requirements. Defining requirements helps ensure development of the required capability on time and within budget.

Deliverables⁴ due in this phase (and could be started earlier in the lifecycle) includes:

Figure 4. Requirements Gathering & Analysis Phase Deliverables

Phase 2: Requirements Gathering and Analysis Deliverables
<ul style="list-style-type: none"> • Privacy Threshold Analysis (PTA) • Privacy Impact Analysis (PIA) • Project Process Agreement (PPA)

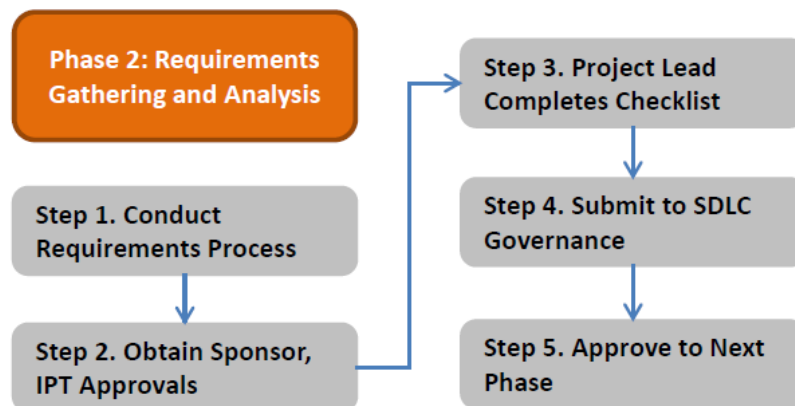
⁴ A comprehensive deliverables list by project size is shown in [Appendix B](#)

Phase 2: Requirements Gathering and Analysis Deliverables
<ul style="list-style-type: none"> • Project Management Plan (includes Quality Control Plan, Risk Management Plan, WBS/Schedule, Change Management Plan, Communication Management Plan, Procurement Management Plan, Staff Management Plan and Cost Management Plan) • Integrated Project Team Charter • System of Records Notices (SORN) • Electronic Information System Questionnaire for Records Management Scheduling • System Requirements Specification (SRS) • Concept of Operations • Requirements Traceability Matrix • FIPS 199 - Standards for Security Categorization of Federal Information and Information Systems

A critical governance body is established in this phase: the Integrated Project Team (IPT). The IPT should consist of the following core members: Project Lead, Developers, Business Leads, Technical Representative, Security Representative, and Contracting Officer’s Technical Representative (COTR). Associate members should include representatives from Governance, Network, Telecommunications, Records, O&M, and the Contracting Office. The IPT is documented in this phase and functions through the Implementation phase.

The Requirements Gathering and Analysis phase includes activities, reviews and approvals as identified in the flowchart below.

Figure 5. Requirements Gathering and Analysis Phase Overview



Upon successful completion of Step 5. “Approve to Next Phase”, the project progresses to the Design phase.

2.1.3. Phase 3: Design

The purpose of the Design phase is to transform requirements into complete and detailed system design specifications. During this phase, the physical characteristics of the system are designed, the operating environment is established, major subsystems and their inputs and outputs are defined, and processes are allocated to resources. The project concept is further developed to describe how the business will operate once the approved project is implemented (i.e., becomes a “system”), and to assess the impact on employee and customer privacy. Additionally, security certification and assessment activities begin with the identification of security requirements and the completion of a high-level vulnerability assessment.

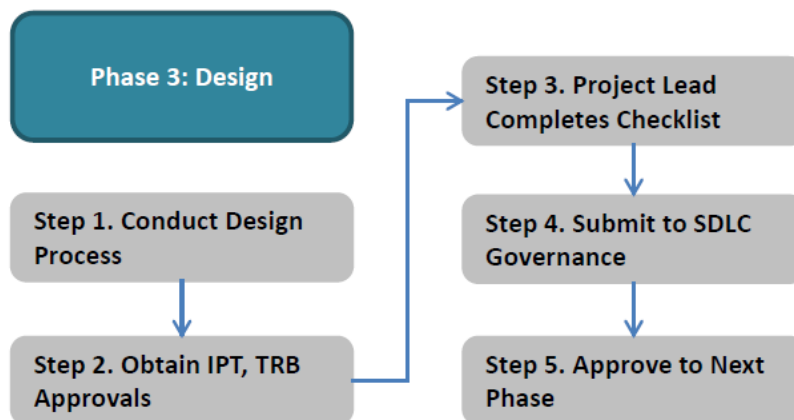
Deliverables⁵ due in this phase (and could be started earlier in the lifecycle) includes:

Figure 6. Design Phase Deliverables

Phase 3: Design Deliverables
<ul style="list-style-type: none"> • System Design Document • Configuration Management Plan/Change Control Board Charter • Contingency Plan (includes Security Business Impact Assessment and Disaster Recovery Plan) • Domain Name Request

The Design phase includes activities, reviews and approvals as identified in the flowchart below.

Figure 7. Design Phase Overview



Upon successful completion of Step 5. “Approve to Next Phase”, the project progresses to the Development phase.

⁵ A comprehensive deliverables list by project size is shown in [Appendix B](#)

2.1.4. Phase 4: Development

The purpose of the Development phase is to convert the system design prototyped in the Design phase into a working system that addresses all documented system requirements. Further, everything requiring user input or approval must be documented in this phase.

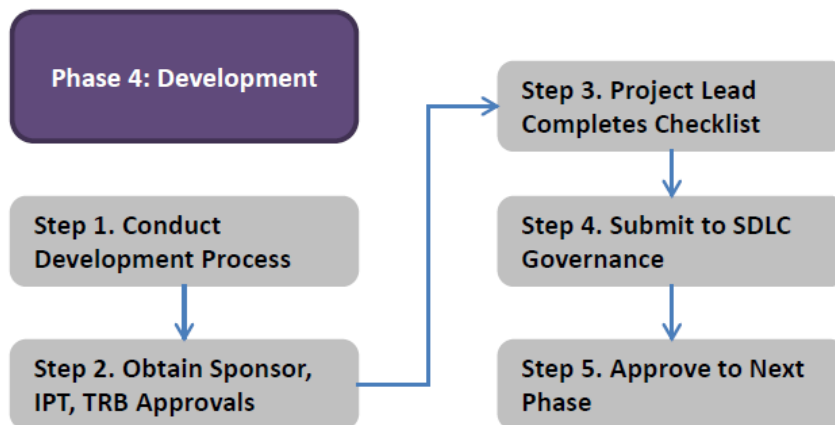
Deliverables⁶ due in this phase (and could be started earlier in the lifecycle) includes:

Figure 8. Development Phase Deliverables

Phase 4: Development Deliverables
<ul style="list-style-type: none"> • Test Plan • Data Conversion Strategy (if applicable) • Earned Value Management (EVM) Report • Configure Development, Testing & Training Environments (if applicable) • Develop Software/System

The Development phase includes activities, reviews and approvals as identified in the flowchart below.

Figure 9. Development Phase Overview



Upon successful completion of Step 5. “Approve to Next Phase”, the project progresses to the Integration & Testing phase.

2.1.5. Phase 5: Integration & Testing

The purpose of the Integration & Testing phase is to lay the foundation for a smooth and successful implementation. Key activities in this phase include:

- Attaining user input or approval as defined in the prior phase (Development)
- Preparing detailed logic specifications for each system module
- Testing and integrating units into larger components

⁶ A comprehensive deliverables list by project size is shown in [Appendix B](#)

- Preparing the technical environment for the system

This phase focuses on achieving proof that the system meets all requirements; functions according to design parameters; and satisfies all business, technical, and management stakeholders. Additionally, prior to installing and operating the system in a production environment, the system must undergo security authorization activities, as necessary.

Deliverables⁷ due in this phase (and could be started earlier in the lifecycle) includes:

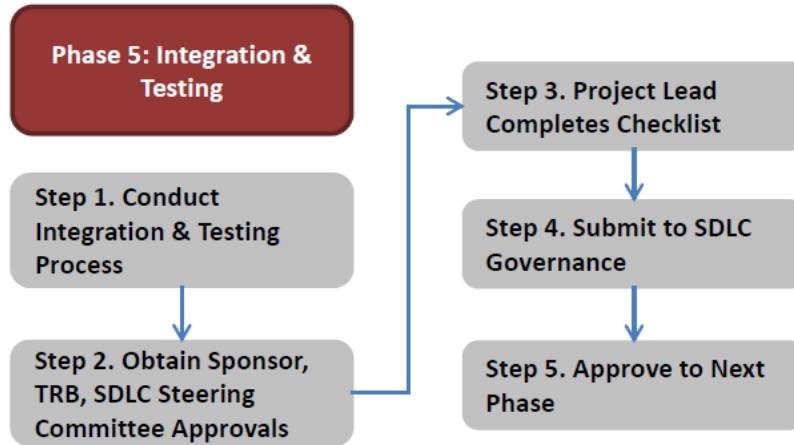
Figure 10. Integration & Testing Phase Deliverables

Phase 5: Integration & Testing Deliverables
<ul style="list-style-type: none"> • Transition Plan • Operations & Maintenance Manual • User Acceptance Testing (UAT) Sign-off • System Security Plan • Interconnection Security Agreement(s) (if applicable) • Contingency Plan Test (CPT) Report • Security Assessment Plan (also known as Security Test & Evaluation Plan) • Security Assessment Report (includes Security Requirements Traceability Matrix) • Plan of Action & Milestones (POA&Ms) • Vulnerability/App Scan Results • Release Management Plan • Training Manual • User Manual • Test Results • Section 508 Voluntary Product Accessibility Template (VPAT) and/or Certification

The Integration & Testing phase includes activities, reviews and approvals as identified in the flowchart below.

⁷ A comprehensive deliverables list by project size is shown in [Appendix B](#)

Figure 11. Integration & Testing Phase Overview



Upon successful completion of Step 5. “Approve to Next Phase”, the project progresses to the Implementation phase.

2.1.6. Phase 6: Implementation

The purpose of the Implementation phase is to deploy and enable operations of the new information system in the production environment. Successful completion of the Implementation phase should comprise both system deployment and training on the system.

Deliverables⁸ due in this phase (and could be started earlier in the lifecycle) includes:

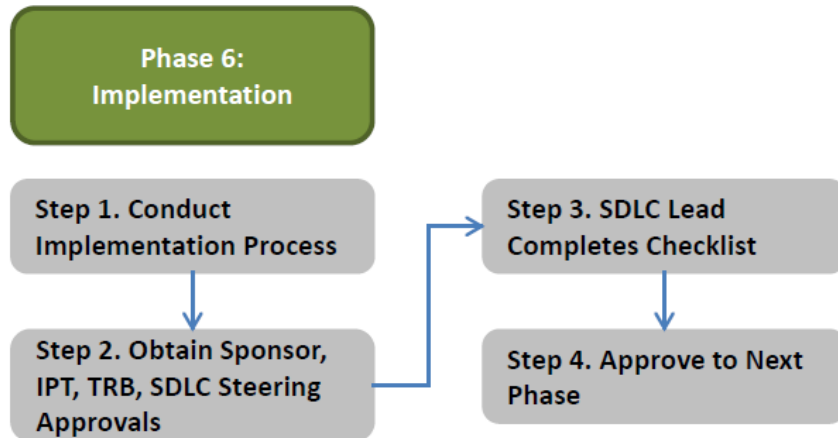
Figure 12. Implementation Phase Deliverables

Phase 6: Implementation Deliverables
<ul style="list-style-type: none"> • Installation Document • Concurrency Review Memo • Operations Readiness • Life Cycle Cost • Project Closeout • Performance Measures • Authority to Operate • Application Guide • Source Code

The Implementation phase includes activities, reviews and approvals as identified in the flowchart below.

⁸ A comprehensive deliverables list by project size is shown in [Appendix B](#)

Figure 13. Implementation Phase Overview



Upon successful completion of Step 4. “Approve to Next Phase”, the project progresses to the O&M phase.

2.1.7. Phase 7: Operations & Maintenance

The purpose of the O&M phase is to ensure the information system is fully functional and performs optimally until the system reaches its end of life. The system is monitored for continued performance in accordance with user requirements, and needed system modifications are incorporated. The operational system is periodically assessed through In-Process Reviews to determine how the system can be made more efficient and effective. Operations continue as long as the system can be effectively adapted to respond to an organization’s needs. At the point when modifications or changes are identified as necessary, the system may re-enter the Initiation phase.

During this phase, the project is transitioned from PMB to O&MB to maintain and ensure continued functionality and optimal performance for the remainder of the project lifecycle.

Deliverables⁹ due in this phase (and could be started earlier in the lifecycle) includes:

Figure 14. Operations & Maintenance Phase Deliverables

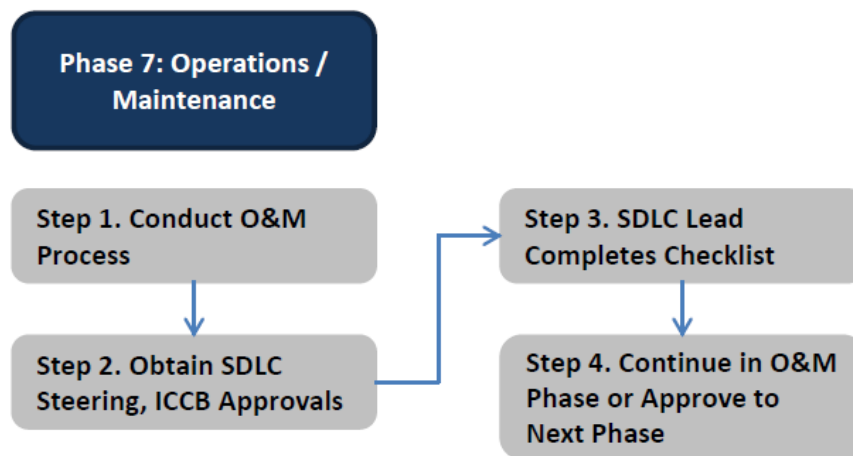
Phase 7: Operations & Maintenance Deliverables
<ul style="list-style-type: none"> • System Post Implementation Review Report • Operational Analysis (including Operational & Performance Metrics) • Annual Review/Updates Required: <ul style="list-style-type: none"> ○ Systems Security Plan ○ Contingency Plan (includes Disaster Recovery Plan) ○ System Risk Management Plan

⁹ A comprehensive deliverables list by project size is shown in [Appendix B](#)

Phase 7: Operations & Maintenance Deliverables
<ul style="list-style-type: none"> ○ Configuration Management Plan/Change Control Board Charter ○ Life Cycle Cost ○ Concurrency Review Memo ● Routine Maintenance ● Authority to Operate (Every 3 Years)

The O&M phase includes activities, reviews and approvals as identified in the flowchart below.

Figure 15. Operations & Maintenance Phase Overview



Upon advancement to Step 4. “Continue in O&M Phase or Approve to Next Phase”, the project is determined by the team and stakeholders to either continue operating or advance to the Disposition phase.

2.1.8. Phase 8: Disposition

The purpose of the Disposition phase is to shut down the operational system in a controlled manner. The disposition activities allow for the orderly termination of the system and preserve the vital information about the system so that some or all of the information may be retrieved in the future, if necessary. Particular emphasis is given to proper preservation of the data processed by the system, so that the data is effectively migrated to another system or archived in accordance with applicable records management regulations and policies for potential future access.

Deliverables¹⁰ due in this phase (and could be started earlier in the lifecycle) includes:

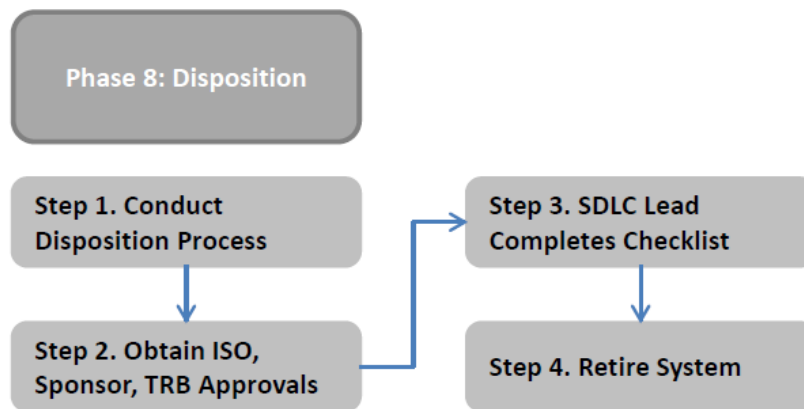
¹⁰ A comprehensive deliverables list by project size is shown in [Appendix B](#)

Figure 16. Disposition Phase Deliverables

Phase 8: Disposition Deliverables
<ul style="list-style-type: none"> • System Disposition Plan • System Disposition Checklist • Post-Termination Review Report • Disposition Memo

The Disposition phase includes activities, reviews and approvals as identified in the flowchart below.

Figure 17. Disposition Phase Overview



Upon successful completion of Step 4. “Retire System”, the system is discontinued from service.

2.2. Hybrid Agile Scrum SDLC

The Hybrid Agile Scrum approach follows the eight phases shown in the Waterfall method, but it replaces the Requirements Gathering & Analysis phase with Sprint Zero and combines the Design, Development, Integration & Testing phases into one phase with one or more iterative Sprints.

The purpose of the Hybrid Agile Scrum approach is to use an iterative approach to perform planning, requirements, analysis, design, development and testing phases. It does not replace these phases, but performs them in short iterations. The Hybrid Agile Scrum approach guides the process for agile software development projects and requires various documents and deliverables. FNS allows freedom for incorporating agile associated industry-leading practices; however, requests a minimum structure to ensure consistency and predictability across projects.

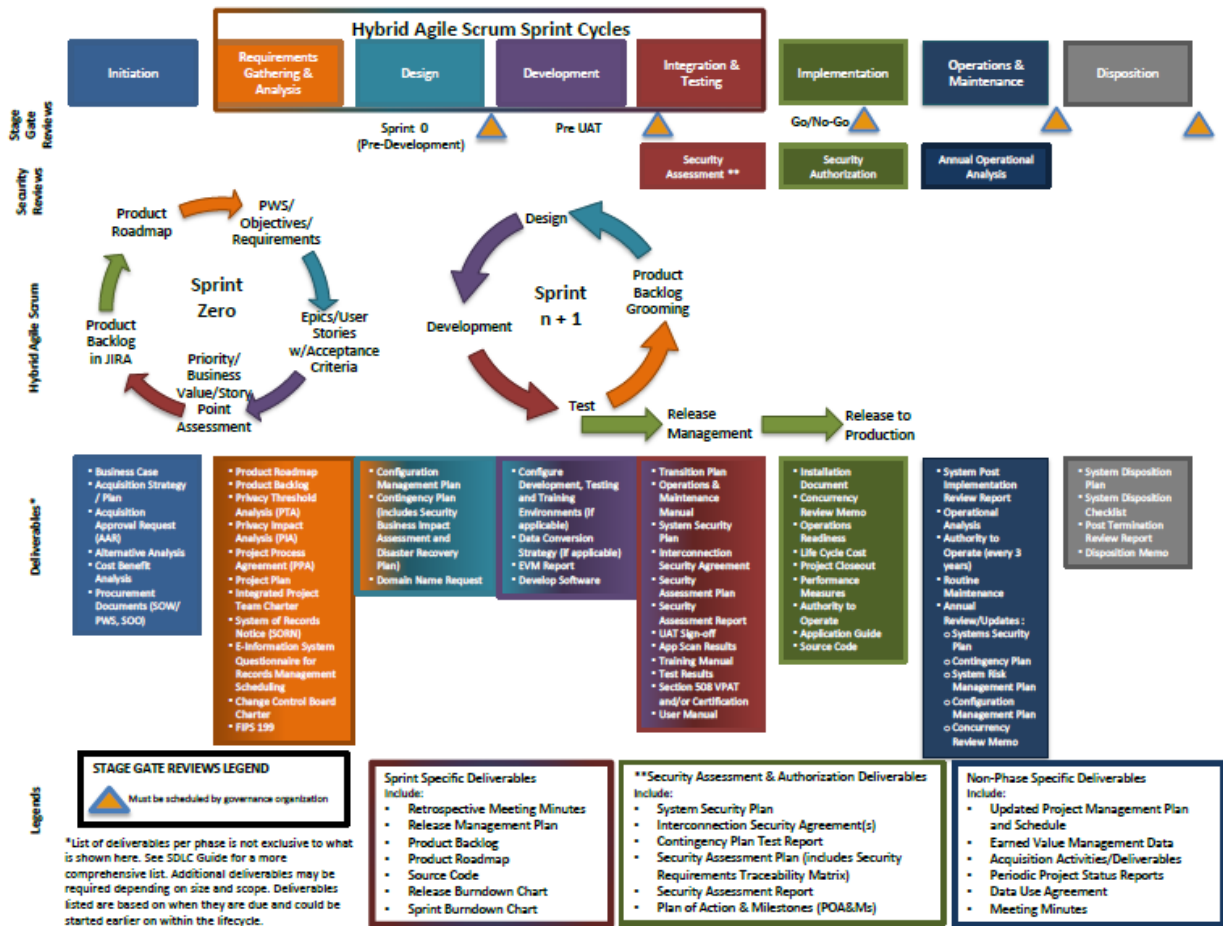
Industry best practices applicable to Hybrid Agile Scrum projects include:

- Agreed to baseline effort (total story points) established during Sprint Zero planning, and prior to proceeding with development efforts.

- Value-based decomposition and prioritization utilized as a planning tool in which requirements are progressively elaborated and prioritized so they can be pulled into the development process.
- Incremental delivery of the simplest solution that will work (a “plain vanilla” version) and then incremental addition of more features until the final product is built. At a minimum, applying a quarterly release schedule.
- Generally a two to four weeks Sprint/iteration length. This timeframe is short enough to allow the team to hear about changes frequently, yet long enough to allow time for work to get done and to produce new functionality without being so frequent that it is disruptive to the business.
- Use of products and tools that take a minimal amount of time to update and keep current. As a result of the frequent reprioritization of work and high rates of changes, tools like work breakdown structures and Program Evaluation Review Technique (PERT) charts are not recommended (but can still work on agile projects). Instead, FNS allows Agile teams to use tools like Product Roadmaps (as a release planning technique), osmotic communication, tacit knowledge, face-to-face conversation, and other more interactive communication methods.
- Address spikes as early as possible, with the intention of eliminating or reducing risks to minimize the project’s risk profile or reaching fast failure. If the project is too risky or it is proven through spikes that a successful outcome is unattainable, it is better to know as early as possible so that funds can be redirected toward other initiatives that are more likely to succeed.

A graphic diagram of the Hybrid Agile Scrum model is depicted below in Figure 18.

Figure 18. Hybrid Agile Scrum SDLC Overview



2.2.1. Phase 1. Initiation

The Initiation phase for the Hybrid Agile Scrum approach follows the same steps and requires the same deliverables as the [Waterfall Initiation phase](#). Please refer to that section of the document for additional details.

Upon successful completion of Step 7. “Approve to Next Phase”, the project begins following the Hybrid Agile Scrum Sprint Cycles, which combine phases two through five (Requirements Gathering & Analysis, Design, Development, and Integration & Testing) into iterative Sprint cycles.

2.2.2. Phases 2-5. Hybrid Agile Scrum Sprint Cycles

Deliverables¹¹ in these phases include:

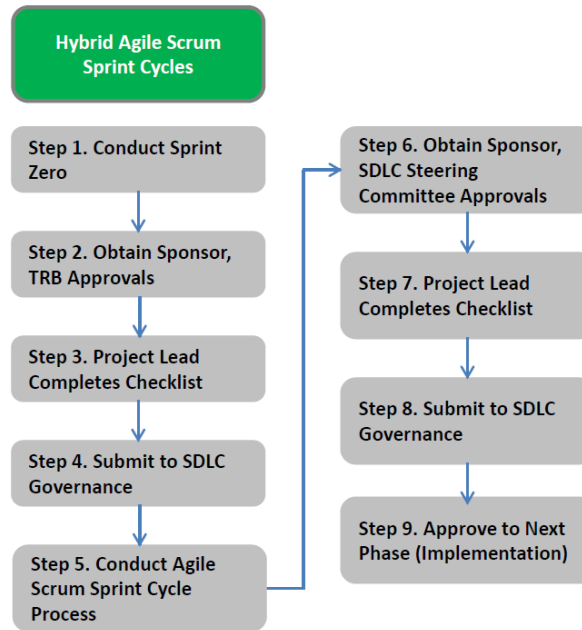
¹¹ A comprehensive deliverables list by project size is shown in [Appendix B](#)

Figure 19. Hybrid Agile Scrum Sprint Cycles Deliverables

Hybrid Agile Scrum Sprint Cycles Deliverables
<ul style="list-style-type: none"> • Retrospective Meeting Minutes • Release Management Plan • Product Roadmap • Product Backlog • Release Burndown Chart • Sprint Burndown Chart • Privacy Threshold Analysis (PTA) • Privacy Impact Analysis (PIA) • Project Process Agreement (PPA) • Project Management Plan (includes Quality Control Plan, Risk Management Plan, WBS/Schedule, Change Management Plan, Communication Management Plan, Procurement Management Plan, Staff Management Plan and Cost Management Plan) • Integrated Project Team (IPT) Charter • System of Records Notices (SORN) • Electronic Information System Questionnaire for Records Management Scheduling • FIPS 199 - Standards for Security Categorization of Federal Information and Information Systems • Configuration Management Plan/Change Control Board Charter • Contingency Plan (includes Security Business Impact Assessment and Disaster Recovery Plan) • Domain Name Request • Configure Development, Testing & Training Environment (if applicable) • Data Conversion Strategy (if applicable) • Earned Value Management (EVM) Report • Transition Plan • Operations/Maintenance Manual • System Security Plan • Interconnection Security Agreement(s) (if applicable) • Contingency Plan Test (CPT) Report • Security Assessment Plan (also known as Security Test & Evaluation Plan) • Security Assessment Report (includes Security Requirements Traceability Matrix) • Plan of Action & Milestones (POA&Ms) • UAT Sign-Off • Vulnerability / App Scan Results • Training Manual • Test Results • Section 508 VPAT and/or Certification • User Manual

The Hybrid Agile Scrum includes activities, reviews and approvals as identified in the flowchart below.

Figure 20. Hybrid Agile Scrum Phase Overview



Upon successful completion of Step 9. “Approve to Next Phase”, the project progresses to the Implementation phase.

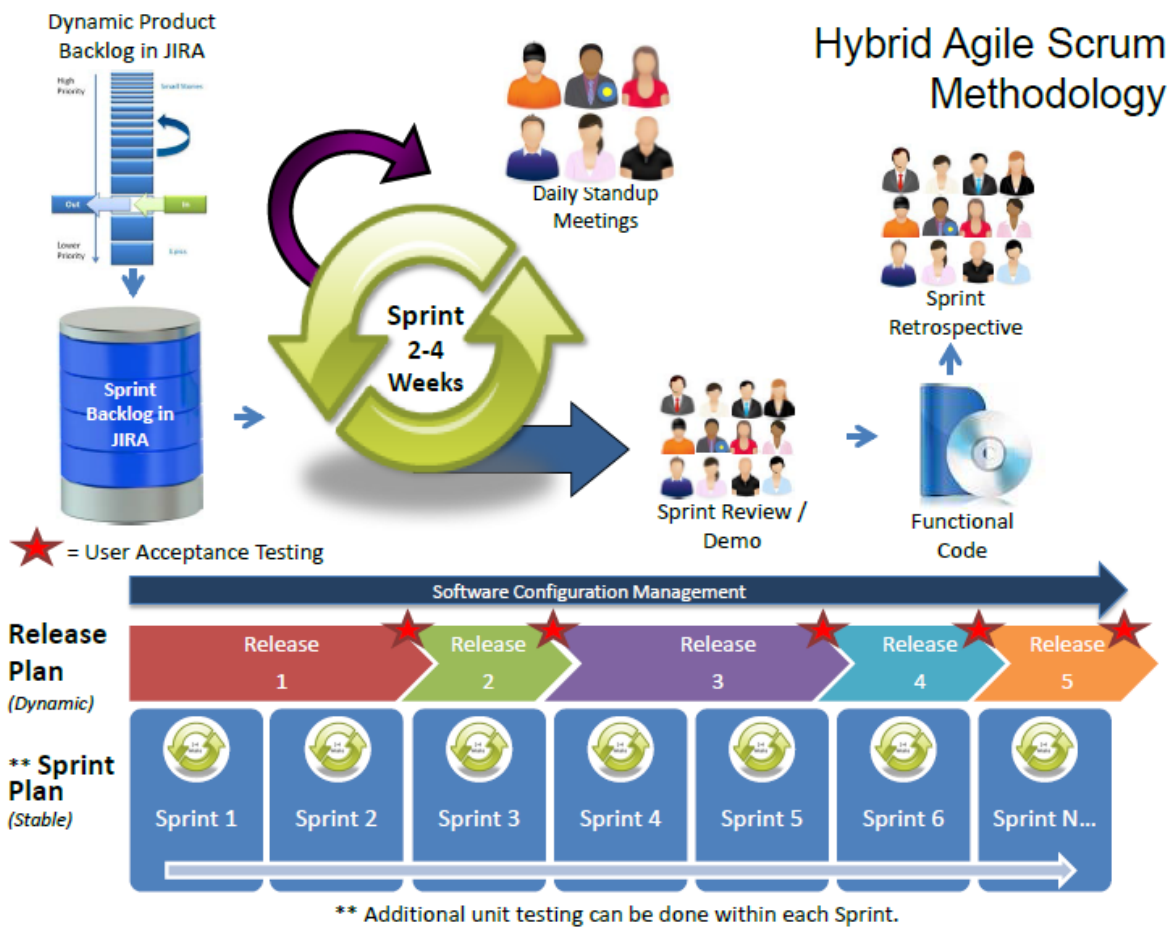
The JIRA automated tool shall be utilized to keep historic records of all Sprint-related activities and FNS provides projects with the option to use FNS JIRA licenses if they do not retain the software. JIRA is the tool for tracking the Product Backlog, Sprint Backlog, Velocity Charts, Burndown Charts, Bugs/Issues, and Risks. There are specific stakeholders considered vital to a successful agile project and at least one individual must be designated as responsible for each key role shown in Figure 21.

Figure 21. Roles and Responsibilities for Hybrid Agile Scrum

Role	Responsibility
Project Sponsor – Champions and sponsors the project within their organization	<ul style="list-style-type: none"> • Ensures accountability for the realization of project benefits • Ensures oversight of the project management function • Manages senior stakeholders
Product/Business Owner – Represents the business or user community and is responsible for determining what features will be in the product release	<ul style="list-style-type: none"> • Serves as liason between the development team and customers • Defines and prioritizes the features of the application, and adjusts features and priority • Accepts or rejects work results and has final say on product functionality • Keeps users/stakeholders apprised of status and obtains their feedback
USDA FNS Program Manager – Responsible for providing management and oversight of all the projects within the Release/Sprint	<ul style="list-style-type: none"> • Serves as liason between the project sponsor and senior management • Manages the Scrum Master/PM to ensure that the requirements and timelines promised to the Project Sponsor and Product/Business Owner are met
Scrum Master/PM – Responsible for ensuring that the solution that the team builds meets requirements and timelines delivers the most value	<ul style="list-style-type: none"> • Facilitates all meetings • Supports the Product/Business Owner • Ensures the team has what is needed to deliver the work in each Sprint
Sprint Team - Responsible for translating the business requirements into technical requirements and for building the solution based on the business requirements	<ul style="list-style-type: none"> • Develops the user stories, test cases and project documentation • Works with the development team to support testing. • Supports the Scrum Master/PM • Designs, develops, integrates, tests and documents the work completed during the Sprint

Figure 22 provides an overview of the Hybrid Agile Scrum process.

Figure 22. Hybrid Agile Scrum Methodology



2.2.2.1. Sprint Zero

Sprint Zero replaces the Requirements phase of the SDLC. Prior to the project entering a Sprint, the Scrum Master/PM begins planning the upcoming Sprint cycle and begins the development of the project management plan, the project schedule, scope statement and the project charter. The Scrum Master/PM meets with the Product/Business Owner for the Project Kick-Off Meeting and discusses the Agile process, sets expectations and discusses the high-level project release strategy, and populates the product backlog. The Product/Business Owner and Scrum Master/PM also develops a plan for UAT, Training and Deployment. The Scrum Master/PM begins planning for the requirements and builds the timeline into the project schedule.

The Scrum Master/PM, Product/Business Owner, and ISO meets to discuss initial high-level system requirements as it relates to security controls and data management. The Scrum Master/PM and ISO work closely to ensure information required during the Security Review is provided in the System Security Plan that the Sprint Team prepares. ISO studies and analyzes the

security implications of the technical alternatives to ensure the alternatives address all aspects or constraints imposed by security requirements.

Once the Scrum Master/PM and the Product/Business Owner have had their kick-off meeting, the Scrum Master/PM schedules between two to four sessions with the Product/Business Owner, Stakeholders, and the Sprint Team to gather the User Stories and acceptance criteria in the Product Backlog. They group the User Stories into Themes and Epics, and the stakeholders are encouraged to identify all user stories pertinent to the task at hand. However, the cumulative total of these user stories cannot exceed the baseline effort accepted by the Government as part of the contractor's proposal. This is where Sprint Zero plays a vital role in setting expectations for the project.

The Product/Business Owner prioritizes each user story by assigning an appropriate Business Value utilizing the Fibonacci sequence, and the Scrum Master/PM captures the agreed upon acceptance criteria for each user story. The Sprint Team evaluates and assigns story size estimates (i.e., story points) to each user story in the Product Backlog, utilizing an Agile estimation technique (Fibonacci sequence) to reach a Cumulative Amount of Story Points for the project.

By associating the baseline effort of story-points from the accepted Sprint Team to the now prioritized and risk-adjusted Product Backlog, the Product/Business Owner can now ascertain which user stories will meet the baseline effort and be completed as part of the effort. The Product/Business Owner may elect to reprioritize user stories to ensure the most important are included as part of the baseline effort, or the Product/Business Owner may elect to perform other tradeoff and reprioritization techniques (such as the MoSCoW method, Kano Model, and Walking Skeleton).

Each project is tailored to the specific needs of the project. During Sprint Zero, the Scrum Master/PM works with the Sprint Team and the Product/Business Owner to plan the schedule based on the anticipated level of effort and scope of the project to be delivered and create a Product Roadmap. The Product Roadmap provides a high to mid-level view of how the product or solution develops over time and shall encompass the anticipated Sprint Velocity of the Sprint Team, and the Sprint Cadence (normally within a 4-week duration) spread over the life of the project.

2.2.2.2. Sprint Cycles

An Agile Hybrid Scrum project may contain one or more sprints based on the Product Roadmap developed during Sprint Zero where the number of required Sprints are determined. The Product Backlog is the location where all requirements (i.e., technical functionality for the system, System Change Requests) reside. Through the backlog grooming process, each user story receives documented acceptance criteria, which is clarified and understood by

both the Government and Sprint Team throughout the life of the project. The Government Product/Business Owner prioritizes all user stories, and the user stories with the highest priority are assigned to the next Sprint (iteration), from this risk-adjusted Product Backlog. The entire Product Backlog is maintained in the JIRA automated tracking tool.

The Sprint is a two to four weeks iteration where user stories from the Sprint Backlog are analyzed, designed, developed, and tested creating a piece of the system that is functional and implementable code. On the first day of every Sprint, a Sprint Planning Session is conducted and results in a Sprint Backlog containing user stories that have been reviewed, analyzed, and selected by the Sprint Team (based on Product/Business Owner prioritization) to be worked on during a Sprint. During the Sprint on a daily basis, the Sprint Team and Scrum Master meet to provide updates on progress on commitments made by the team called the “Daily Stand-up Meeting”. Risks or issues that are affecting the successful completion of the Sprint are also identified, documented, and managed based on the Risk Management Plan. During the Daily Stand-up Meeting (which normally lasts for 15 minutes), the Sprint Team will discuss: (a) what has been completed, (b) what will be completed today, and (c) what obstacles or impediments are currently being experienced/faced by the team. This allows the Scrum Master to play an active servant-leadership role and remove impediments impacting the team’s progress.

On the last day of the Sprint, the functional and implementable product is presented at a Demonstration Meeting to the stakeholders and Product/Business Owner. During this meeting, each user story in the Sprint is presented to the Product/Business Owner, and he/she either “Accepts” or “Rejects” the changes. Any user stories that are accepted by the Product/Business Owner are staged for release. Any user stories that are “rejected” by the Product/Business Owner are placed back into the Product Backlog for future analysis and prioritization during a Backlog Grooming Session.

At the end of each sprint, the Sprint Team conducts a retrospective that is used as the primary learning, reflection, and readjustment events on agile projects. The Sprint Team discusses what went well, what can be done better in future Sprints, and ways to improve the execution of future Sprints. The purpose of this is to foster continuous improvement and efficiencies. Documenting and subsequently implementing the Lessons Learned at the end of each Sprint (Retrospective) offers a number of benefits for the team and project, including:

- Improved productivity
- Improved capability
- Improved quality
- Improved capacity

The Scrum Master/PM documents (via Meeting Minutes) each Sprint Retrospective, and deliver to the Contracting Officer’s Representative (COR)

for review and acceptance within 3 business days of each Sprint/Iteration ending based on contractual requirements of each individual project.

At the end of each Sprint, the accepted code is ready for production, but is usually held or bundled into a larger software release. A Software Configuration Management repository tool should be used to hold the product generated during each Sprint. Strict Software Configuration Management practices are to be followed to ensure proper baseline management and version control. Accepted user stories are then staged for release based on the approved release strategy.

2.2.2.3. Release Management

Planning for releases is conducted during Sprint Zero and documented within the Product Roadmap. Releases may contain one or more Sprints based on many factors that are specific to each project. The product (source code) created by each Sprint grouped into one release must be merged and installed into a test environment. The Sprint Team shall perform a regression test to ensure that all integration activities were performed successfully. The Scrum Master/PM then hands off the application to the User Acceptance stakeholders for final testing and acceptance. Once a successful UAT is performed and the Government formally accepts the release, the project moves to the Implementation phase.

2.2.3. Phase 6. Implementation

The Implementation phase for the Hybrid Agile Scrum approach follows the same steps and requires the same deliverables as the [Waterfall Implementation phase](#). Please review that section of the document for additional details.

2.2.4. Phase 7. Operations and Maintenance

The O&M phase for the Hybrid Agile Scrum approach follows the same steps and requires the same deliverables as the [Waterfall O&M phase](#). Please review that section of the document for additional details.

2.2.5. Phase 8. Disposition

The Disposition phase for the Hybrid Agile Scrum follows the same steps and requires the same deliverables as the [Waterfall Disposition phase](#). Please review that section of the document for additional details.

3 CONTROLS / ASSUMPTIONS

Both the Waterfall and Hybrid Agile Scrum approaches calls for a series of comprehensive management controls. These include:

- Lifecycle management should be used to ensure a structured approach to information systems development and operation.

- Each project must have an accountable sponsor.
- A project manager must be appointed for each system project. A system project can include both a FNS project manager and a vendor project manager, if applicable.
- A comprehensive project management plan is required for each system project.
- Data Management and security must be emphasized throughout the lifecycle.
- A project may not proceed until resource availability is assured.

4 DOCUMENTATION

This lifecycle methodology specifies which documentation shall be generated during each phase. Some documentation remains unchanged throughout the systems lifecycle while others evolve or are revised to reflect results from analyses performed in later phases. Each of the documents produced are collected and stored per OIT policy.

5 APPENDIX

[System Category – Project Sizes](#)

[SDLC Phase Requirements – Waterfall and Hybrid Agile Scrum](#)

[SDLC Project Process Flow – Waterfall and Hybrid Agile Scrum](#)

[Stage Gate and Project Reviews](#)

[Stakeholders – Defined](#)

[Executive Committee Charter](#)

6 ADDENDUM

[Non-SDLC Projects](#)

APPENDIX A – SYSTEM CATEGORY – PROJECT SIZES

Select from following categories to determine a project's appropriate SDLC process:

- i. Small Project
 - a. Expected cost is less than \$25,000
 - b. Project Management methodology is required
 - c. Risk and complexity are low
 - d. An individual unit is involved
 - e. Expected duration is less than 4 months

- ii. Medium Project
 - a. Expected cost is \$25,000 to \$500,000
 - b. Project Management methodology is required
 - c. Complexity is medium to high
 - d. Multiple people/departments are involved
 - e. Expected duration is less than a year

- iii. Large Project
 - a. Expected cost is greater than \$500,000
 - b. Full Project Management methodology is required
 - c. Expense, risk, or complexity are high
 - d. Large number of people/departments are involved
 - e. Anticipated lifecycle is long

If a project does not meet the list of criteria for any one specific project size listed above, the exact project size will be determined by the SDLC Committee during the Requirements Gathering & Analysis phase when the Project Process Agreement (PPA) is documented.

APPENDIX B – SDLC PHASE REQUIREMENTS

Waterfall Phase Requirements

Phase 1 - Initiation

Phase	1 – Initiation			
Inputs	<ul style="list-style-type: none"> N/A 			
Outputs / Deliverables	Outputs / Deliverables	Project Size <i>(Checkmark denotes required)</i>		
		Small	Medium	Large
	Business Case: FNS758	✓	✓	✓
	Business Case: FNS755		✓	✓
	Acquisition Plan / Strategy		✓	✓
	Acquisition Approval Request		✓	✓
	Alternative Analysis			✓
	Cost Benefit Analysis		✓	✓
	Procurement Documents – SOW/PWS, SOO (with ISO input)	✓	✓	✓
Stakeholders	<ul style="list-style-type: none"> Project Sponsor Office of Information Technology Project Manager (OIT PM) 			

Phase	1 – Initiation
	<ul style="list-style-type: none"> Subject Matter Experts (SMEs)

Phase 2 – Requirements Gathering and Analysis

Phase	2 - Requirements Gathering and Analysis			
Inputs	<ul style="list-style-type: none"> Business Case 			
Outputs / Deliverables	Outputs / Deliverables	Project Size <i>(Checkmark denotes required)</i>		
		Small	Medium	Large
	Privacy Threshold Analysis (PTA)	✓	✓	✓
	Privacy Impact Analysis (PIA)	✓	✓	✓
	Project Process Agreement (PPA)	✓	✓	✓
	Project Management Plan (includes Quality Control Plan, Risk Management Plan, WBS/Schedule, Change Management Plan, Communication Management Plan, Procurement Management Plan, Staff Management Plan and Cost Management Plan)	✓	✓	✓
	Integrated Project Team Charter	✓	✓	✓
	System of Records Notices (SORN)	✓	✓	✓
	Electronic Information System Questionnaire for Records Management	✓	✓	✓

Phase	2 - Requirements Gathering and Analysis			
	Scheduling			
	High-Level System Requirements Specification (SRS)	✓		
	System Requirements Specification (SRS)		✓	✓
	Concept of Operations ¹²	✓	✓	✓
	Requirements Traceability Matrix	✓	✓	✓
	FIPS 199 - Standards for Security Categorization of Federal Information and Information Systems ¹³	✓	✓	✓
Stakeholders	<ul style="list-style-type: none"> • Project Sponsor • SMEs • OIT PM 	<ul style="list-style-type: none"> • Business Analyst • IPT 		

¹² Concept of Operations is optional for large projects.

¹³ As required by Information Security Office (ISO)

Phase 3 - Design

Phase	3 – Design			
Inputs	<ul style="list-style-type: none"> • Business Case • Project Management Plan • System Requirements Document 			
Outputs / Deliverables	Outputs / Deliverables	Project Size <i>(Checkmark denotes required)</i>		
		Small	Medium	Large
	System Design Document	✓	✓	✓
	Configuration Management Plan/Change Control Board Charter ^{14 15}	✓	✓	✓
	Contingency Plan ¹⁶ (Includes Security Business Impact Assessment and Disaster Recovery Plan)		✓	✓
Domain Name Request		✓	✓	
Stakeholders	<ul style="list-style-type: none"> • Project Sponsor • SMEs • OIT PM • Business Analyst 		<ul style="list-style-type: none"> • Network Managers • Developers • End Users • IPT 	

¹⁴ Configuration Management Plan is optional for small projects.

¹⁵ As required by Information Security Office (ISO)

¹⁶ As required by Information Security Office (ISO)

Phase 4 - Development

Phase	4 – Development			
Inputs	<ul style="list-style-type: none"> • System Requirements Document • System Design Document 			
Outputs/ Deliverables	Outputs/ Deliverables	Project Size <i>(Checkmark denotes required)</i>		
		Small	Medium	Large
	Test Plan	✓	✓	✓
	Data Conversion Strategy	✓	✓	✓
	EVM Report		✓	✓
	Development, Testing & Training Environments	✓	✓	✓
Stakeholders	<ul style="list-style-type: none"> • OIT PM • Business Analyst • Developers • Testers • IPT 			

Phase 5 – Integration and Testing

Phase	5 - Integration and Testing			
Input	<ul style="list-style-type: none"> System Requirements Document System Design Document Project Plan Test Plan 			
Outputs / Deliverables	Outputs / Deliverables	Project Size <i>(Checkmark denotes required)</i>		
		Small	Medium	Large
	Transition Plan	✓	✓	✓
	Operations/Maintenance Manual	✓	✓	✓
	UAT Sign-Off	✓	✓	✓
	System Security Plan ¹⁷		✓	✓
	Interconnection Security Agreement(s) (if applicable) ¹⁸		✓	✓
	Contingency Plan Test (CPT) Report ¹⁹		✓	✓
	Security Assessment Plan (also known as Security Test & Evaluation Plan) ²⁰		✓	✓
	Security Assessment Report (includes Security Requirements Traceability Matrix) ²¹		✓	✓

¹⁷ As required by Information Security Office (ISO)

¹⁸ As required by Information Security Office (ISO)

¹⁹ As required by Information Security Office (ISO)

²⁰ As required by Information Security Office (ISO)

²¹ As required by Information Security Office (ISO)

	Plan of Action & Milestones (POA&Ms) ²²		✓	✓
	Vulnerability / App Scan Results	✓	✓	✓
	Release Management Plan	✓	✓	✓
	Training Manual	✓	✓	✓
	User Manual	✓	✓	✓
	Test Results	✓	✓	✓
	Section 508 VPAT and/or Certification	✓	✓	✓
Stakeholders	<ul style="list-style-type: none"> • OIT PM • Business Analyst • Developers 		<ul style="list-style-type: none"> • SMEs • OIT PM • Testers • IPT 	

²² As required by Information Security Office (ISO)

Phase 6 – Implementation

Phase	6 – Implementation			
Inputs	<ul style="list-style-type: none"> Project Management Plan System Requirements Document System Design Document Test Plan 			
Outputs / Deliverables	Outputs / Deliverables	Project Size <i>(Checkmark Denotes required)</i>		
		Small	Medium	Large
	Installation Document ²³	✓	✓	✓
	Concurrency Review Memo ²⁴		✓	✓
	Operations Readiness	✓	✓	✓
	Life Cycle Cost	✓	✓	✓
	Project Closeout	✓	✓	✓
	Performance Measures		✓	✓
	Authority to Operate ²⁵		✓	✓
	Application Guide ²⁶	✓	✓	✓
	Source Code	✓	✓	✓

²³ Installation document is optional for small projects
²⁴ As required by Information Security Office (ISO)
²⁵ As required by Information Security Office (ISO)
²⁶ Application guide is optional for medium and large projects



Phase	6 – Implementation	
Stakeholders	<ul style="list-style-type: none"> • OIT PM • Business Analyst • Project Sponsor • SMEs • Network Managers 	<ul style="list-style-type: none"> • Developers • Contractors • IPT • IT Governance Support Group (ITG)

Phase 7 – Operations & Maintenance

Phase	7 – Operations & Maintenance			
Inputs	<ul style="list-style-type: none"> • Project Management Plan • System Requirements Document • System Design Document • Test Plan • Test Results • Installation Document • Application Guide 			
Outputs / Deliverables	Output / Deliverables	Project Size <i>(Checkmark Denotes required)</i>		
		Small	Medium	Large
	System Post Implementation Review Report		✓	✓
	Operational Analysis (includes Operational and Performance Metrics)	✓	✓	✓
	Annual Updates Required: <ul style="list-style-type: none"> • Systems Security Plan²⁷ • Contingency Plan (includes Disaster Recovery Plan)²⁸ • System Risk Management Plan²⁹ • Configuration Management Plan/Change Control Board Charter³⁰ • Life Cycle Cost • Concurrency Review Memo³¹ 		✓	✓
Routine Maintenance	✓	✓	✓	

²⁷ As required by Information Security Office (ISO)

²⁸ As required by Information Security Office (ISO)

²⁹ As required by Information Security Office (ISO)

³⁰ As required by Information Security Office (ISO)

³¹ As required by Information Security Office (ISO)

	Authority to Operate (Every 3 Years) ³²		✓	✓
Stakeholders	<ul style="list-style-type: none"> ITG O&MB 			

Phase 8 – Disposition

Phase	8 – Disposition			
Inputs	<ul style="list-style-type: none"> Project Management Plan System Requirements Specification System Design Document Test Plan Test Results Installation Document Application Guide 			
Outputs / Deliverables	Outputs / Deliverables	Project Size <i>(Checkmark denotes required)</i>		
		Small	Medium	Large
	System Disposition Plan	✓	✓	✓
	System Disposition Checklist	✓	✓	✓
	Post Termination Review Report	✓	✓	✓
	Disposition Memo ³³	✓	✓	✓
Stakeholders	<ul style="list-style-type: none"> ITG O&MB 			

³² As required by Information Security Office (ISO)

³³ As required by Information Security Office (ISO)

Hybrid Agile Scrum Phase Requirements

Phase 1 – Initiation

The Initiation phase for the Hybrid Agile Scrum approach follows the same requirements as the [Waterfall Initiation phase](#). Please review that section of the document for additional details.

Phases 2 through 5 – Requirements Gathering through Integration & Testing

SDLC	Hybrid Agile Scrum			
Inputs	<ul style="list-style-type: none"> Performance Work Statement Project Objectives Requirements Procurement Documents 			
Outputs / Deliverables	Outputs / Deliverables	Project Size <i>(Checkmark denotes required)</i>		
		Small	Medium	Large
	Retrospective Meeting Minutes	✓	✓	✓
	Release Management Plan	✓	✓	✓
	Product Roadmap	✓	✓	✓
	Product Backlog	✓	✓	✓
	Release Burndown Chart	✓	✓	✓
	Sprint Burndown Chart	✓	✓	✓
	Privacy Threshold Analysis (PTA)	✓	✓	✓

	Privacy Impact Analysis (PIA)	✓	✓	✓
	Project Process Agreement (PPA)	✓	✓	✓
	Project Management Plan (includes Quality Control Plan, Risk Management Plan, WBS/Schedule, Change Management Plan, Communication Management Plan, Procurement Management Plan, Staff Management Plan and Cost Management Plan)	✓	✓	✓
	Integrated Project Team Charter	✓	✓	✓
	System of Records Notices (SORN)	✓	✓	✓
	Electronic Information System Questionnaire for Records Management Scheduling	✓	✓	✓
	FIPS 199 - Standards for Security Categorization of Federal Information and Information Systems ³⁴	✓	✓	✓
	Configuration Management Plan / Change Control Board Charter ^{35 36}	✓	✓	✓
	Contingency Plan (includes Security Business Impact Assessment and Disaster Recovery Plan) ³⁷		✓	✓
	Domain Name Request	✓	✓	✓
	Configure Development, Testing, Training Environments	✓	✓	✓
	Data Conversion Strategy (if applicable)	✓	✓	✓

³⁴ As required by Information Security Office (ISO)

³⁵ Configuration Management Plan is optional for small projects

³⁶ As required by Information Security Office (ISO)

³⁷ As required by Information Security Office (ISO)

	EVM Report		✓	✓
	Transition Plan	✓	✓	✓
	Operation/Maintenance Manual	✓	✓	✓
	System Security Plan ³⁸		✓	✓
	Interconnection Security Agreement(s) (if applicable) ³⁹		✓	✓
	Contingency Plan Test (CPT) Report ⁴⁰		✓	✓
	Security Assessment Plan (also known as Security Test & Evaluation Plan) ⁴¹		✓	✓
	Security Assessment Report (includes Security Requirements Traceability Matrix) ⁴²		✓	✓
	Plan of Action & Milestones (POA&Ms) ⁴³		✓	✓
	UAT Sign-Off	✓	✓	✓
	Vulnerability / App Scan Results	✓	✓	✓
	Training Manual	✓	✓	✓
	Test Results	✓	✓	✓
	Section 508 VPAT and/or Certification	✓	✓	✓

³⁸ As required by Information Security Office (ISO)

³⁹ As required by Information Security Office (ISO)

⁴⁰ As required by Information Security Office (ISO)

⁴¹ As required by Information Security Office (ISO)

⁴² As required by Information Security Office (ISO)

⁴³ As required by Information Security Office (ISO)

	User Manual	✓	✓	✓
Stakeholders	<ul style="list-style-type: none"> • ITG • O&MB • Sprint Team • Scrum Master/PM 	<ul style="list-style-type: none"> • Product/Business Owner • USDA FNS PM • Project Sponsor 		

Phase 6 – Implementation

The Implementation phase for the Hybrid Agile Scrum approach follows the same requirements as the [Waterfall Implementation phase](#). Please review that section of the document for additional details.

Phase 7 – Operations & Maintenance

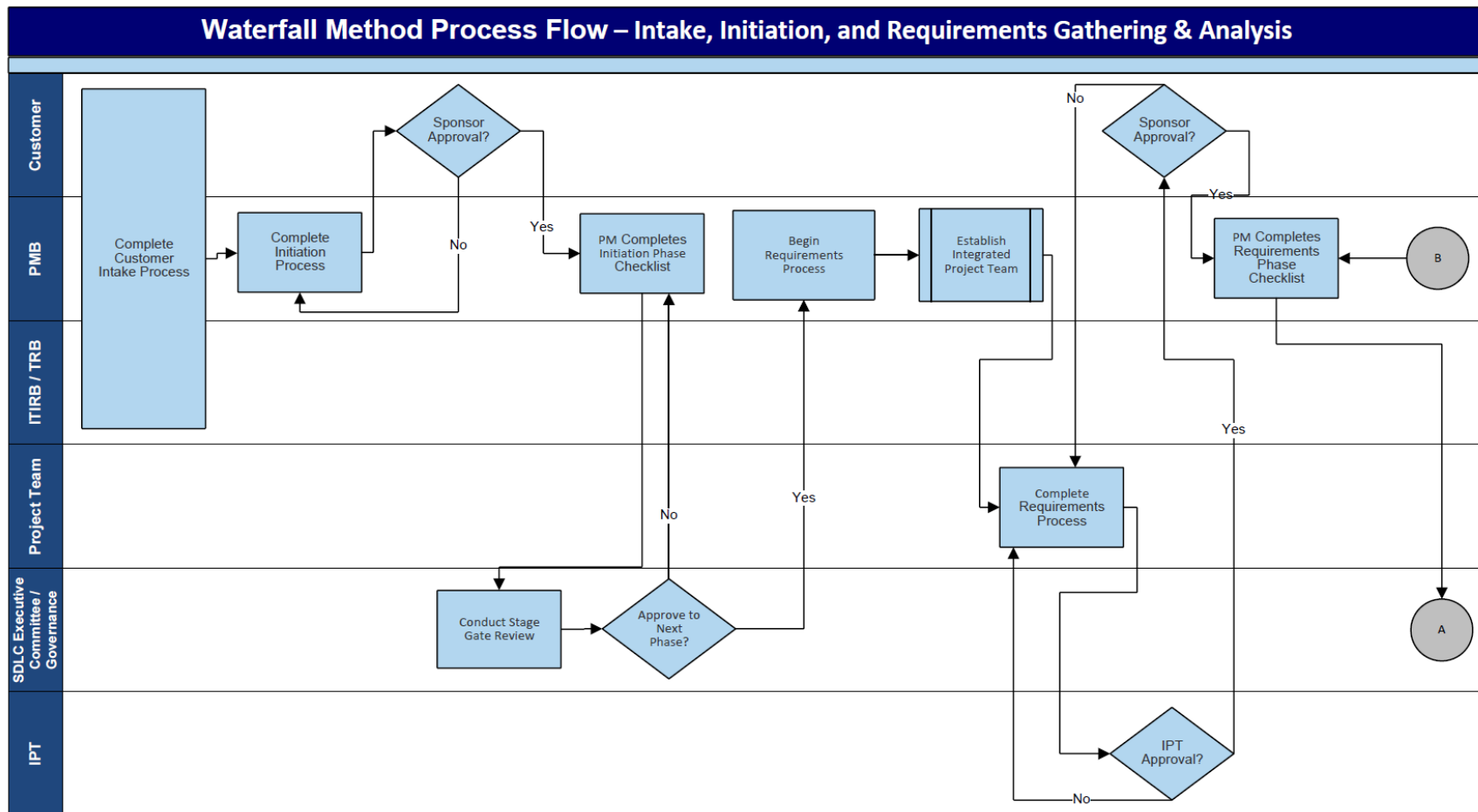
The O&M phase for the Hybrid Agile Scrum approach follows the same requirements as the [Waterfall O&M phase](#). Please review that section of the document for additional details.

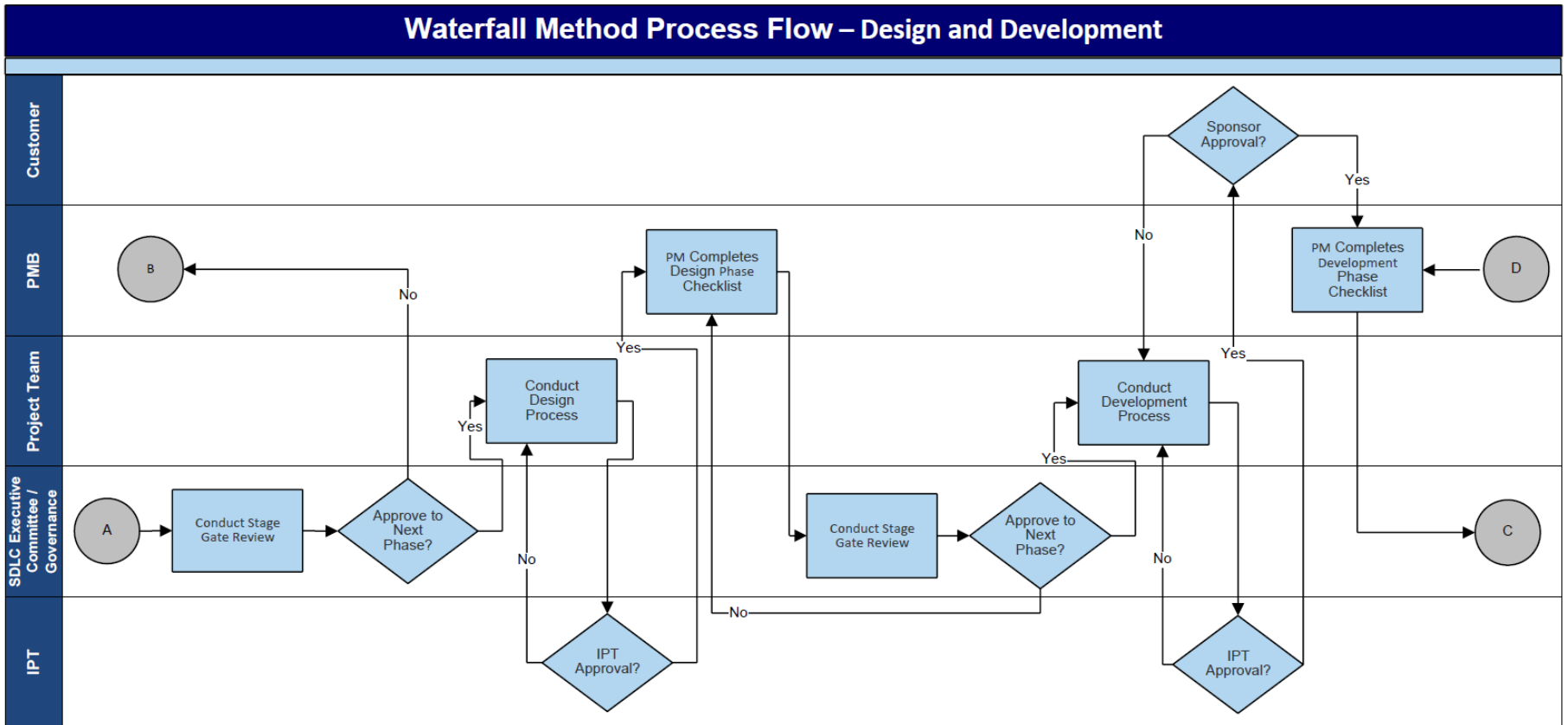
Phase 8 – Disposition

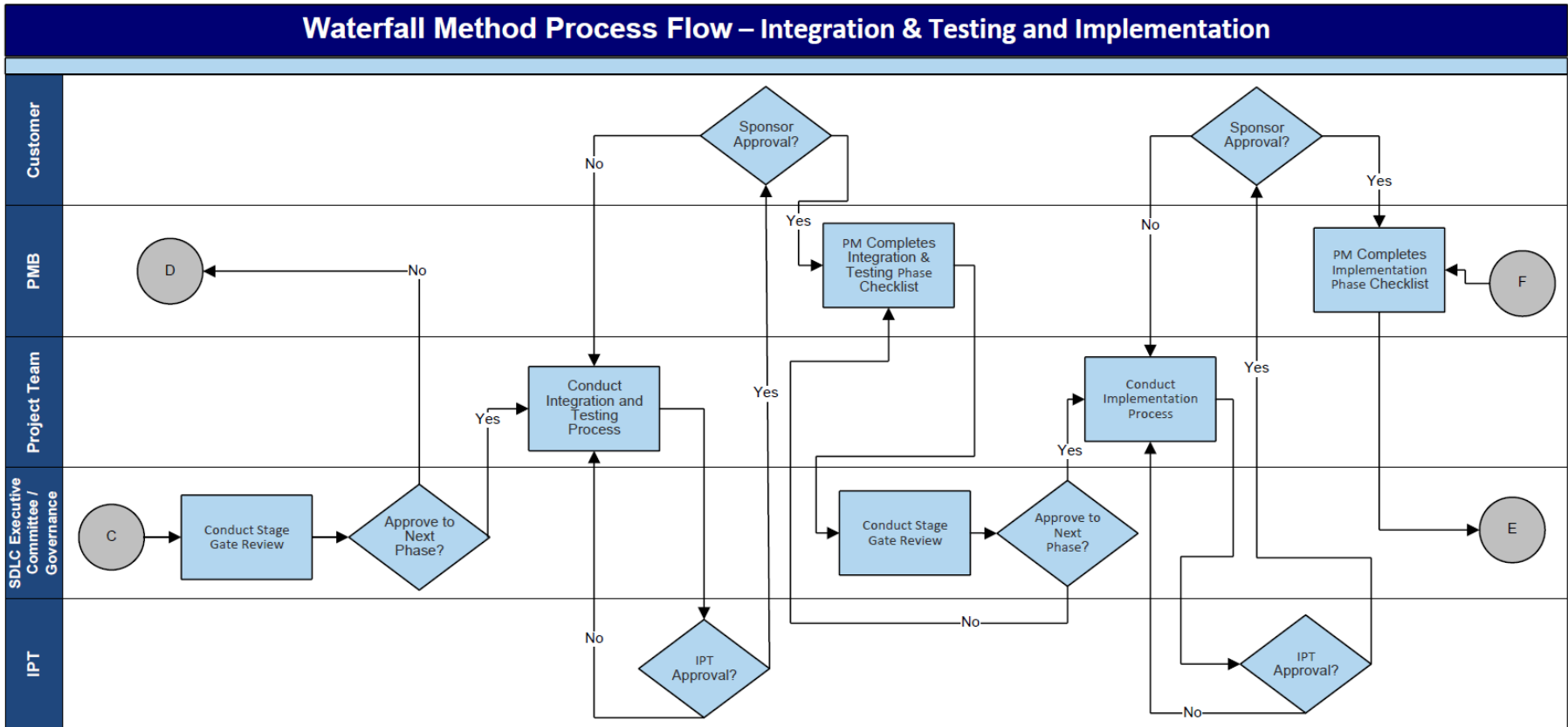
The Disposition phase for the Hybrid Agile Scrum approach follows the same requirements as the [Waterfall Disposition phase](#). Please review that section of the document for additional details.

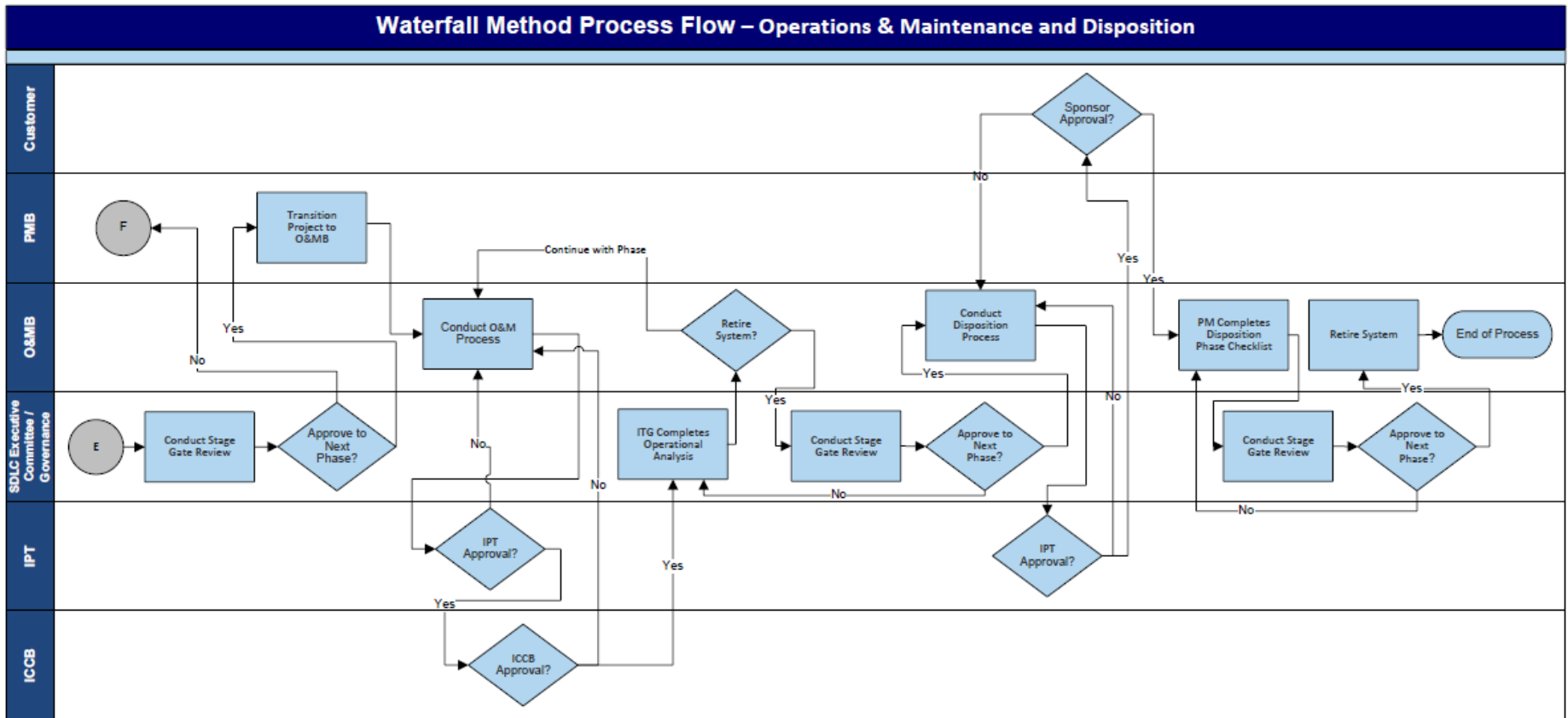
APPENDIX C – SDLC PROJECT PROCESS FLOW

Waterfall Method Process Flow

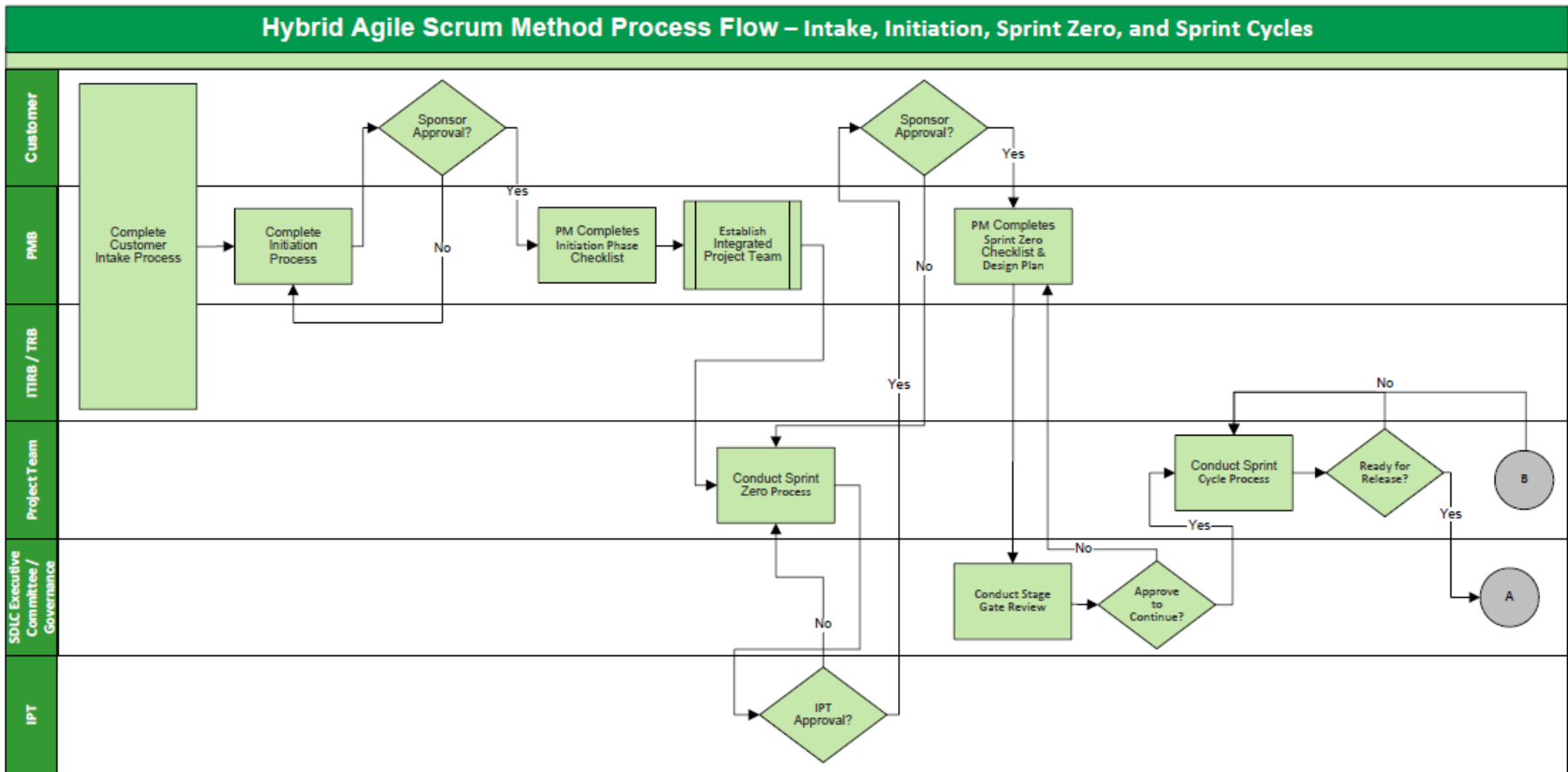


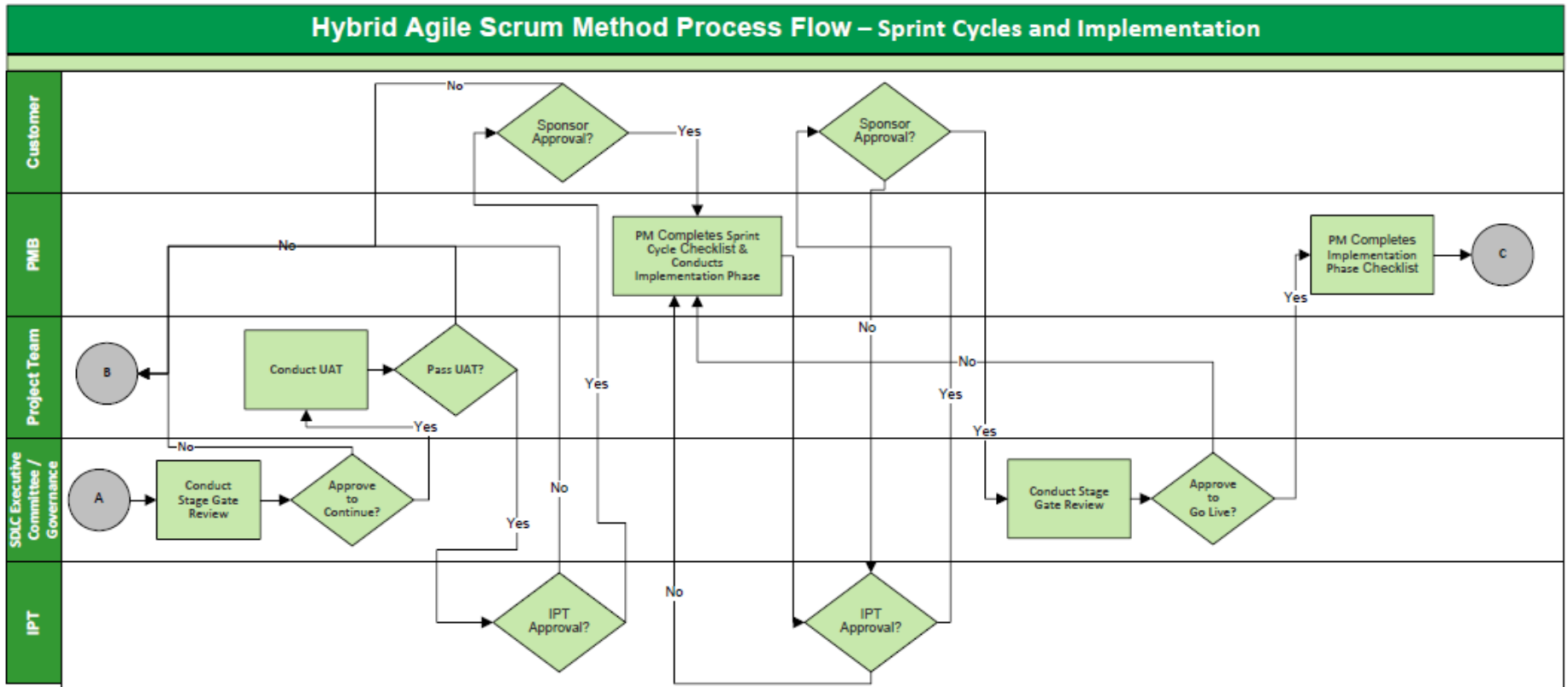


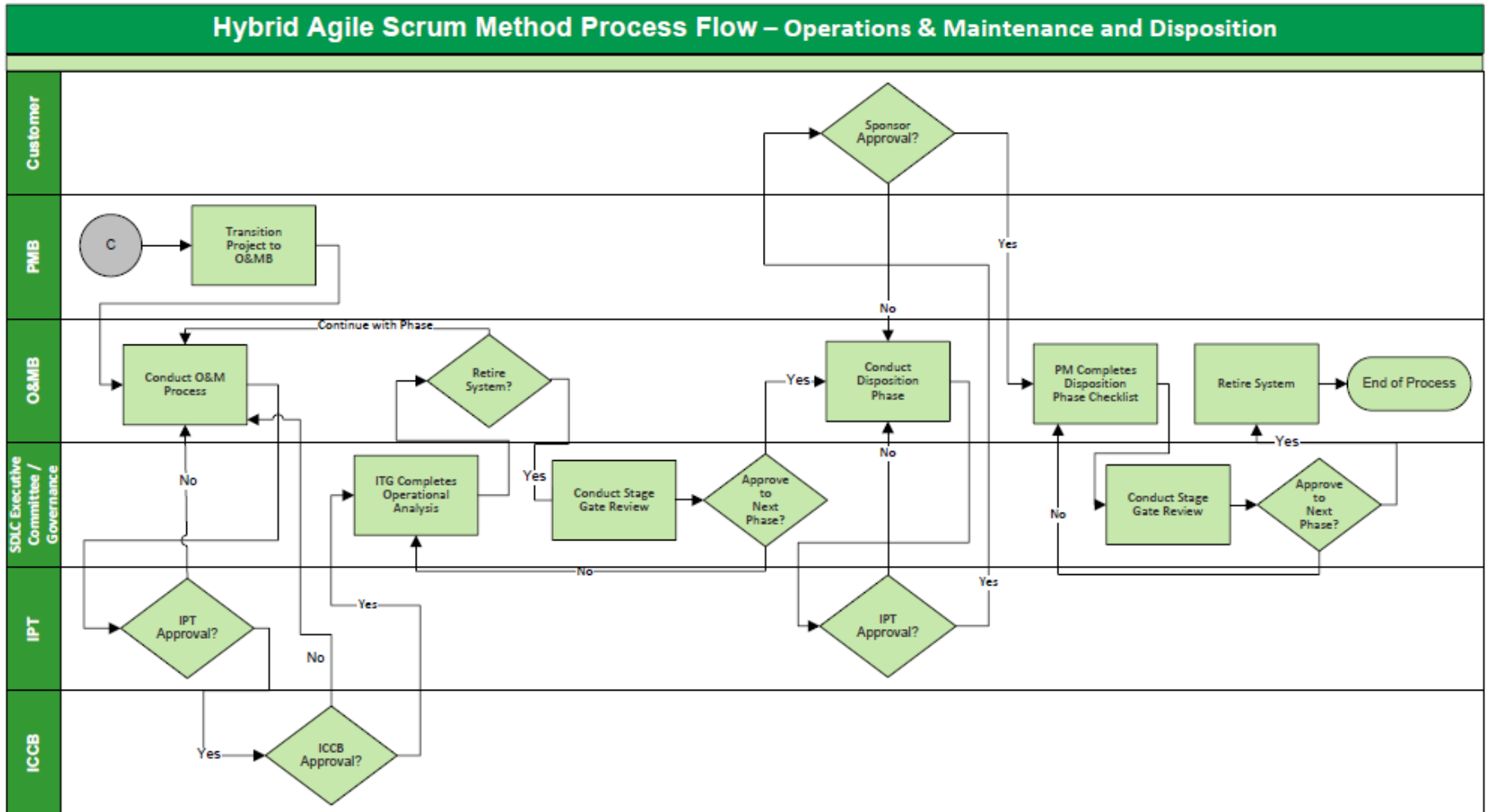




Agile Hybrid Scrum Method Process Flow







APPENDIX D – STAGE GATE AND PROJECT REVIEWS

A high-level overview of the Stage Gate Review process (i.e., High-Level SDLC Governance) is in [The Systems Development Lifecycle \(SDLC\) Stage Gate Review Practice Guide](#).

Stage Gate Reviews underlie the SDLC methodology from project management and governance perspectives. The SDLC, divided into phases, requires satisfying Stage Gate requirements (see [Appendix B](#) for more detail) in order to advance along the lifecycle process.

The Stage Gate Review evaluates and authorizes a project to progress from one lifecycle stage to the next. It is a collaborative practice in which all participants play an important role in assessing the project’s status and quality. This collaborative process enables the IPT, SDLC Executive Committee, Project Sponsor and Portfolio Management to make informed decisions about project readiness for the next stage of lifecycle development. It provides the Project Manager/Lead and the Product/Business Owner with an independent body to confirm that deliverables comply with project requirements and align with Agency policies, OMB regulations, and Federal laws.

Stage Gate reviews verify that the agreed upon deliverables have been satisfactorily produced for a given SDLC stage in order to approve advancement to the next phase. If any project milestones have not been met, the IPT documents the actions required to address noted concerns. The emphasis of the Stage Gate Review is:

- The successful accomplishment of lifecycle objectives per stage
- Informing IPTs of plans for the next life cycle stage
- Informing IPTs of the risks associated with moving into the next life cycle phase

Since each project, product, and investment is different, the Stage Gate Review(s) will incorporate and address individual project characteristics. Each Stage Gate Review is conducted according to the project tailoring defined in the Project Process Agreement (PPA) deliverable. Additionally, a Stage Gate Review Checklist document and Phase Review Presentation is completed for each Stage Gate.

For continuity and convenience, the following tables contain brief descriptions of the Stage Gate Reviews and Project Reviews for both Waterfall and Hybrid Agile Scrum.

Stage Gate Reviews	
Waterfall SDLC	
<i>Initiation Stage Gate Review</i>	The Initiation Stage Gate Review considers whether the Business Case(s) and other deliverables such as the Acquisition Strategy/Plan, initial Alternatives Analysis, Cost Benefit Analysis and initial Acquisition Approval Request (AAR) approval from the USDA OCIO justifies proceeding to the Requirements Gathering & Analysis Phase. Project Reviews under this phase includes the Architecture/Technical Review.
<i>Requirements Gathering &</i>	The Requirements Gathering & Analysis Stage Gate Review

<p><i>Analysis Stage Gate Review</i></p>	<p>considers whether the project should proceed to the Design Phase. The objective is to determine if the project requirements have been defined sufficiently to be translated into the system/application. Project Reviews under this phase includes the Integrated Baseline Review, Architecture/Technical Review, and Requirements Review.</p>
<p><i>Design Stage Gate Review</i></p>	<p>The Design Stage Gate Review considers whether the project should proceed to the Development Phase. The objective is to determine if the project has finalized project planning and defined initial baselines and requirements to permit outside validation. Project Reviews under this phase includes the Architecture Review and Design Review.</p>
<p><i>Development Stage Gate Review</i></p>	<p>The Development Stage Gate Review evaluates whether the project should proceed to the Test Phase. The objective is to determine if the code and/or other deliverables needed to build the system/application have been completed within cost, schedule, and scope guidelines. Project Reviews under this phase includes the Validation Readiness Review and Independent Verification & Validation Assessment.</p>
<p><i>Integration & Testing Stage Gate Review</i></p>	<p>The Integration & Testing Stage Gate Review evaluates whether the project should proceed to the Implementation Phase. The objective is to determine if the test processes have been executed according to plan and whether the tests verify that the implementation of the system/application will be successful. Project Reviews under this phase includes the Implementation Readiness Review and Security Assessment & Authorization.</p>
<p><i>Implementation Stage Gate Review</i></p>	<p>The Implementation Stage Gate Review evaluates whether the project should proceed to the O&M Phase. The objective is to determine if the project has completed all required activities and finalized implementation. Project Reviews under this phase includes the Operational Readiness Review, Post Implementation Review, and Security Assessment & Authorization.</p> <p>A Stage Gate Review for a Go/No-Go decision is conducted for initial release for new projects and all major releases.</p>
<p><i>Operations & Maintenance Stage Gate Review</i></p>	<p>The O&M Stage Gate Review evaluates whether the project should be released into the full-scale production environment for sustained use and operations/maintenance support. The objective is to verify that the system/application is managed and supported in a robust production environment and to determine whether the system/application is still cost-effective to operate or if it should be</p>

	retired. Project Reviews under this phase includes the Operational Analysis.
<i>Disposition Stage Gate Review</i>	A Disposition Review is conducted to ensure that a system/application or any IT situation has been completely and appropriately disposed, thereby ending the lifecycle of the IT project. This phase-end review shall be conducted again within six months after retirement of the system. The Disposition Review Report also documents the lessons learned from the shutdown and archiving of the terminated system. The objective is to have an orderly shutdown of the system/application operation.
Hybrid Agile Scrum SDLC	
<i>Sprint Zero Stage Gate Review</i>	<p>With the Hybrid Agile Scrum approach, a Sprint Zero Stage Gate Review is conducted after Sprint Zero to ensure that the project has successfully completed the Initiation, Requirements Gathering & Analysis, and Design phases.</p> <p>The Pre-Development Stage Gate Review consists of completing Sprint Zero and creating a sufficient Product Backlog that is reviewed and prioritized by the Product/Business Owner. The Product Backlog is dynamic and will be reviewed iteratively by the Product/Business Owner during the course of the project. The objectives are to determine if the project requirements have been defined sufficiently to be translated into the system/application, and to determine if the project has finalized project planning and defined initial baselines and requirements to permit outside validation.</p>
<i>Integration & Testing Stage Gate Review</i>	The Implementation & Testing Stage Gate Review for the Hybrid Agile Scrum approach occurs when all development and system testing has been completed and evaluates whether the project should proceed to the Testing Phase, specifically UAT and Independent Verification & Validation (IV&V) testing (if applicable). The objective is to determine if the code and/or other deliverables needed to develop the system/application have been completed within cost, schedule, and scope guidelines. No separate Project Reviews are required.
<i>Implementation Stage Gate Review</i>	The Implementation Stage Gate Review for the Hybrid Agile Scrum approach occurs when all system testing has been completed, evaluated, and approved, including UAT and IV&V testing (if applicable), and the system is ready for a Go or No-Go decision to be implemented. The objective is to determine if the project has completed all required activities and finalized

	<p>implementation. A Stage Gate Review for a Go/No-Go decision is conducted for initial release for new projects and all major releases.</p> <p>The only Project Reviews required for the Implementation Stage Gate Review for the Hybrid Agile Scrum approach is the Security Assessment & Authorization.</p>
<i>Operations & Maintenance Stage Gate Review</i>	<p>The O&M Stage Gate Review for the Hybrid Agile Scrum approach follows the same steps and requires the same deliverables as the O&M Stage Gate Review for the Waterfall approach. Refer to the Waterfall O&M State Gate Review section for more information.</p>
<i>Disposition Stage Gate Review</i>	<p>The Disposition Stage Gate Review for the Hybrid Agile Scrum approach follows the same steps and requires the same deliverables as the Disposition Stage Gate Review for the Waterfall approach. Refer to the Waterfall Disposition State Gate Review section for more information.</p>

In addition to the Stage Gate Reviews, Management and Project Reviews are also conducted. Management Reviews are conducted to provide project status updates to the Management team as needed or requested. Various project reviews are conducted by the PM throughout the lifecycle of a project prior to the Stage Gate and Management Reviews. Below are brief descriptions of each project review.

Project Reviews	
<i>Architecture/Technical Review</i>	<p>The purpose of the Architecture/Technical Review is to evaluate the technical feasibility of the proposed allocation of functional requirements to the system components (hardware, software, and processes). The review also confirms that the system is being completed in accordance with previous plans and includes modifications prompted by earlier reviews. Once this review is completed successfully, the preliminary design work can begin.</p>
<i>Integrated Baseline Review</i>	<p>The Integrated Baseline Review (IBR) is a formal inspection of the entire project and performance measurement baseline initially developed for the IT project. The IBR is conducted to obtain management approval that the established scope, cost and schedule that have been established for the project are adequately documented and that the project management strategy is appropriate for moving the project forward in the life cycle. Upon successful completion of this review, the Project Management Plan is officially baselined.</p> <p>The IBR includes review of the budget, risk, and user requirements for the investment. Emphasis should be on the total cost of</p>

	ownership and not just development or acquisition costs.
<i>Requirements Review</i>	The Requirements Review is to ascertain if the functional requirements are complete and attainable, and are based on and traceable to prior documentation of high-level business requirements or needs.
<i>Design Review</i>	The Design Review is a formal inspection of the architectural design of an automated system and its software and external interfaces. ensure design satisfies the functional and non-functional requirements and is in conformance with the enterprise architecture. Overall project status, proposed technical solutions, evolving software products, associated documentation, and capacity estimates are reviewed to determine completeness and consistency with design standards, and to raise and resolve any technical and/or project-related issues. The purpose of the Design Review is to confirm that the design meets all functional requirements, the design of each system component is complete, and the design is ready for development. The review also confirms that the system design was completed in accordance with previous plans and includes modifications prompted by earlier reviews.
<i>Validation/Test Readiness Review</i>	A formal Validation Readiness Review (VRR), commonly known as a Test Readiness Review, shall be conducted prior to each formal test for each system release (excluding emergency releases). The purpose of a VRR is to reach a technical understanding of previous test results, and review the validity and degree of completeness of the results of previous system testing and any updates to system documentation. The VRR also determines whether the system test procedures are complete and assures that the contractor is prepared for formal system testing. VRRs will occur prior to system and user acceptance testing. System test procedures are evaluated for compliance with system test plans and descriptions, and for adequacy in accomplishing test requirements.
<i>Independent Verification & Validation Review</i>	<p>The Independent Verification & Validation Review (IV&V) is a highly recommended review and should be conducted to provide assurance that the system meets the needs of the Product/Business Owner and other identified stakeholders as well as to verify that the system complies with all appropriate regulations, requirements, specifications and any imposed conditions.</p> <p>An IV&V is often conducted by an independent third party and does not occur at FNS.</p>

<p><i>Implementation Readiness Review</i></p>	<p>The Implementation Readiness Review (IRR) is performed at the end of the system and user acceptance testing when the system is ready to be released to production. The purpose of the IRR is to determine that the system is ready to be released fully to the production environment for user operation and subsequent operation and maintenance activities. The review confirms that the system performs its required functions in the production environment, problems encountered during the UAT are adequately addressed, user training can be successfully conducted and the data-conversion process has been validated.</p>
<p><i>Operational Readiness Review</i></p>	<p>The Operational Readiness Review (ORR) is a formal inspection conducted to determine if the final IT solution or automated system/application that has been developed or acquired, tested, and implemented is ready for release into the production environment for sustained operations and maintenance support. The IT governance organization cannot delegate this review.</p>
<p><i>Post Implementation Review</i></p>	<p>A Post-Implementation Review (PIR) shall be conducted to ensure that the system functions as planned and expected; to verify that the system cost is within the estimated amount; and to verify that the intended benefits are derived as projected. Normally, this shall be a one-time review that occurs after a major implementation. It may also occur after a major enhancement to the system. The results of an unacceptable review are submitted to the System Owner for review and follow-up actions.</p> <p>Note: PIRs may also be conducted prior to full implementation (for example, after a pilot or in support of the go/no-go decision to full-scale development or implementation).</p>
<p><i>Security Assessment & Authorization</i></p>	<p>The Security Assessment & Authorization process ensures that security and privacy controls are documented and evaluated to determine the extent to which the controls are implemented correctly, operating as intended, and producing the desired outcome. It provides system stakeholders a view of security risks associated with the system and the agency's business mission.</p> <p>All USDA IT systems require an authorization prior to the system becoming operational. Afterwards, each system will go through Continuous Monitoring every year where 1/3 of their controls will be tested.</p>
<p><i>Operational Analysis</i></p>	<p>The Operational Analysis (OA) is conducted on an annual basis to determine: an investment's continued effectiveness in supporting mission and stakeholder requirements, evaluate the cost of</p>

	<p>continued maintenance support, manage risk, assess technology opportunities, and consider potential retirement or replacement. The results of this analysis are recommendations to the asset's continued use, modification, or termination/replacement.</p>
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APPENDIX E – STAKEHOLDERS DEFINED

Stakeholders will vary depending on project size and needs. The Project Lead plays a key role in determining stakeholders. An overview of stakeholders that may be involved in the SDLC is listed below.

Stakeholder	Definition
Business Analyst	Identifies business needs and determines solutions to business problems. Solutions often include a software-systems development component, but may also consist of process improvement, organizational change or strategic planning and policy development
Contractor	Independent entity that agrees to furnish a certain number or quantity of goods, material, equipment, personnel, and/or services that meet or exceed stated requirements or specifications, at a mutually agreed upon price and within a specified timeframe to another independent entity (FNS)
Developers	Concerned with facets of the software development process, including the research, design, programming, and testing of computer software
End Users	Ultimately uses or is intended to ultimately use a product
ICCB: Integrated Configuration Control Board	A group of project stakeholders responsible for evaluating and approving or disapproving proposed changes to a system; prioritizing the incorporation of approved changes; and scheduling the changes for forthcoming releases
IPT: Integrated Project Team	A multidisciplinary group of people who are collectively responsible for delivering a defined product or process
ISO: Information Security Office	Responsible for the development and delivery of a comprehensive information and privacy program at FNS
ITG: IT Governance Support Group	Responsible for the processes that ensure the effective and efficient use of IT in enabling FNS to achieve its goals
Network Managers	Oversee the design, installation and running of IT, data and telephony systems within FNS
O&MB: Operations and Maintenance Branch	Provides support for a system once it is deployed in its operational environment, monitors for satisfactory performance, and modifies as necessary to correct problems or to respond to changing requirements
OIT PM: Office of Information Technology Project	Responsible for leading a project from its inception to execution. This includes planning, execution and

Stakeholder	Definition
Manager	managing the people, resources and scope of the project
Project Sponsor	In charge of driving the project towards directions that will bring the project to successful realization of expected benefits. Finances project initiatives and approved ideas, takes care of engagement processes, facilitates the development of initial scope and the project charter, and participates in processes of communications management
TRB: Technical Review Board	An internal technical OIT group that reviews IT project development at critical stages for conformance with FNS standards and guidance
SDLC Executive Committee	The entity responsible for developing and updating the SDLC framework and guidance at FNS. Responsible for reviewing the project upon the completion of each phase throughout the lifecycle and approving it to move on to the next phase

APPENDIX F – SDLC EXECUTIVE COMMITTEE CHARTER

Introduction

This document establishes the purpose, organizational structure, roles, responsibilities, activities, and meeting expectations of the SDLC Executive Committee at the US Department of Agriculture (USDA) Food and Nutrition Service (FNS), Office of Information Technology (OIT).

Purpose of the Executive Committee

The Executive Committee is the entity responsible for SDLC stewardship at FNS. The Executive Committee is critical to an effective SDLC in that it has the authority to: (1) oversee and make adjustments to the SDLC and CONOPS process / methodology; (2) oversee and adjust the SDLC supporting guidelines, procedures, and standards; and (3) advocate the SDLC at FNS. An effective SDLC helps ensure the development of quality systems that meet user needs in an efficient manner.

Organizational Structure of the Executive Committee

The SDLC Executive Committee consists of OIT’s Division Directors, Branch Chiefs, and the SDLC Program Manager. The composition of the Executive Committee is subject to change to meet evolving organizational needs. The group functions in a collaborative, team-oriented manner aimed to collectively overcome issues and make improvements to the SDLC and CONOPS. The table below outlines the composition of the Executive Committee.

Organizational Role	Executive Committee Role	Responsibility
PMD Division Director	Executive Committee Director	Authority on final decisions
TD Director, ISO Chief, IRB, & Branch Chiefs	Executive Committee Members	Advocate for member’s specific division/branch/support area consisting of TD, ISO, ADB, PMB, O&MB, ITG, TB, CSB, NOEB, and IRB
IT Governance Manager	Executive Committee Member	Advocate and provide expertise on SDLC methodology

Activities of the Executive Committee

In support of achieving its objectives, the Executive Committee undertakes the following activities:

Objective	Activities
Oversee and adjust the SDLC process / methodology	<ul style="list-style-type: none"> Analyze SDLC performance measures Determine SDLC issues Identify issue prioritization and mitigation strategies Initiate performance improvement strategies Define project management roles / responsibilities, as needed

	<ul style="list-style-type: none"> • Review emerging trends and best practices • Refine SDLC goals, objectives and values, as necessary • Update the SDLC, as needed • Communicate updates to external stakeholders, as necessary
Oversee and adjust guidelines, procedures, and standards	<ul style="list-style-type: none"> • Assess needs related to guidance, procedures, and standards • Authorize and modify SDLC guidelines, procedures, and standards (such as Control Gate materials), as needed
Advocate the SDLC at FNS	<ul style="list-style-type: none"> • Develop, implement, and monitor a SDLC communications, learning, and knowledge-sharing plan • Participate in and approve Stage Gate Reviews for SDLC projects

Executive Committee Meeting Expectations

Regular touch-points are critical for Executive Committee success. The Executive Committee will meet quarterly unless otherwise determined by the Executive Committee Director. The Executive Committee will also meet should urgent needs arise, as determined by the Executive Committee Director.

ADDENDUM A – NON-SDLC PROJECTS

The non-SDLC process establishes a framework for projects that do not involve software development. While these projects have previously been handled on an ad-hoc basis, they will now be handled within a framework requiring review, analysis, documentation and approvals, but on a simpler scale than a standard SDLC process. While non-SDLC projects are considered by many as simple projects not requiring a process, these projects do still need management of scope, quality, time, cost, and risk. By establishing and following a set process, this will allow for a review of possible impact on systems, applications, and users; and alignment with overall goals and strategic plan. The non-SDLC process provides a structure and set of governance, and the guidance required to ensure predictability and consistency across all projects.

Benefits of the non-SDLC process include:

- Improved consistency, repeatability, flexibility, and transparency
- Strengthened controls and accountability
- Enhanced user, manager, and stakeholder involvement
- Improved integration and alignment to organizational objectives
- Reduced redundancies and improved cost-effectiveness
- Reduced project scope creep through enhanced up front needs analysis
- Increased compliance with current and planned enterprise architecture

As with SDLC projects, the Intake process must be initiated by completing an Intake Process Application Questionnaire and submitting it to the Program Management Branch (PMB). Once a request has been approved as a project, the specific steps, reviews, approvals, and deliverables will be determined and documented in the Project Process Agreement (PPA).

Recognizing the variety of non-SDLC projects, this process allows for tailoring of the process to include customizing, waiving or combining activities, deliverables or project reviews based on the specific project requirements or business needs. Tailoring is completed during the Initiation phase of the project and is documented in the PPA. Although the PPA allows for tailoring of project requirements based on project scope and size, all non-SDLC projects have general requirements of:

- Project Process Agreement
- Acquisition Approval Request (AAR) if project budget is over \$25,000; if under \$25,000, Chief Information Officer (CIO) approval is needed
- Business Case
- High level requirements
- Streamlined Project Plan that includes a schedule and Communications Plan
- Project Reporting Application (PRA) entry
- Management Reviews (frequency will vary based on project scope and size and will be determined through the PPA)
- Performance Work Statement (PWS) or Statement of Work (SOW) if vendor support is used
- Cost-Benefit Analysis
- Project Closing documentation (e.g., after action report, close-out checklist, lessons learned).

Additional documentation and requirements may be needed depending upon the project scope and size, which will be determined through the PPA, but the list above are general, basic requirements for all non-SDLC projects.

A graphic diagram of the non-SDLC process is depicted below in Figure 23.

Figure 23. Non-SDLC Project Process

