Project Planning and Management (PPM) V2.0

Project Type Guide

Modification/Enhancements

Version 1.1
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Project Type Guide

Summary: Modifications/Enhancements

It is the nature of Information Technology (IT) to require changes and modifications as agency policies and business processes change. The Modifications/ Enhancements Project Type Guide should be used when the scope of a project is a change or modification to an existing IT asset (such as a system, component, service, or hardware) to improve functionality or performance. Throughout this guide, the term enhancement refers to a noteworthy improvement to an IT asset, which often results in a new version of the IT asset. An enhancement to an IT asset usually means to add new functionality and the requirements for that new functionality are often the result of process improvement initiatives. A modification to an IT asset usually means changing or revising some of the existing functionality.

Typically, multiple modifications or enhancements are bundled into a planned software release identified by a version number. Typical release cycles may be on a quarterly or bi-annual basis. Other more "maintenance-type" releases may be delivered as needed to resolve system issues.

Software and hardware are consistently replaced and/or upgraded in organizations. In some instances, a particular system can become so critical to an organization that moving from that technology to its newer, better alternative is prohibitively costly and risky. At HUD, the project team, as part of its approach, should evaluate why HUD has not migrated from the current system to a newer technology if it exists. For example, IT departments may be forced to use legacy systems because data is "locked" in the system and is not easy to extract. Also, employees may have become used to working with the current system and are resistant to learning a new one. This analysis should be completed as part of a cost-benefit analysis if the decision is to push forward with modifications and/ or enhancements to a current system.

Project teams must ensure the modifications and enhancements are aligned with HUD's Enterprise Architecture (EA) during all development efforts, with an eye toward future technology, innovation, and integration trends. Any planned changes in HUD's EA design should be relayed to the project team as soon as possible.

Why Tailor the Project Planning and Management Life Cycle for this Project Type

The Project Planning and Management (PPM) Life Cycle was developed as HUD's standard for IT program and project governance. Part of the value of this process includes the ability to tailor it when needed to accommodate the various ways of deploying technology solutions. For each project type certain artifacts may become more important or less important, which is where tailoring opportunities exist. System modifications are typically a much smaller and less complex effort in comparison to the implementation of the original solution. As a result, the Office of the Chief Information Officer (OCIO) has developed specific tailoring recommendations based on project cost, mission criticality, risk, and technical complexity. The matrix below depicts the classification of modification and enhancement projects:

	Project Cost <$250K	Project Cost $250K-$750K	Project Cost >$750K
Type High (Complexity/ Risk/ Mission Criticality)	Tailored PPM Guidelines	Standard PPM Guidelines	Standard PPM Guidelines
Type Medium (Complexity/ Risk/ Mission Criticality)	Significantly Reduced PPM Guidelines	Tailored PPM Guidelines	Standard PPM Guidelines
Type Low (Complexity/ Risk/ Mission Criticality)	Significantly Reduced PPM Guidelines	Significantly Reduced PPM Guidelines	Tailored PPM Guidelines

- Standard PPM Guidelines: the suggested artifacts typically completed for a modification and/or enhancement project with high cost, complexity, risk, and mission criticality. The required artifacts will align more closely with the Commercial-off-the-Shelf (COTS)/Government-off-the-Shelf (GOTS) or Software-as-a-Service (SaaS) project types.
- Tailored PPM Guidelines: the suggested artifacts completed when a modification and/or enhancement project falls within a lower cost range and/or is of low complexity and risk. OCIO offers the projects, in this case, additional places to eliminate or consolidate information into other artifacts. For example, in this case, the Requirements Traceability Matrix would suffice as opposed to a fully-developed Requirements Definition document.
- Reduced PPM Guidelines: the suggested artifacts completed when a modification and/or enhancement project is both low cost and complexity or a combination of medium and low for those attributes. In this case, project teams are afforded the greatest flexibility in consolidating some of the content into other standard project artifacts. For example, a Project Management Plan would not be required for these projects; any relevant content can be incorporated into the Project Charter.

It is important to note that project and system artifacts may or may not exist for a system modification or enhancement to an existing IT asset. If system artifacts exist, they should be used as the basis for the PPM artifact. The project team should convert (if in an outdated format) any relevant documentation over to the PPM V2.0 format as part of the project activities.

PPM Guidance and Modification/Enhancement Projects

IT project governance (like PPM) exists not only to ensure the required information is documented and provided to justify financial investment in a project, but to guarantee that proactive risk management exists throughout the project. For modifications and enhancements to existing technology solutions, the assumption is no different. These projects are typically smaller in scale than a COTS implementation or custom development effort, so the challenge is finding the right balance of IT governance such that the project is not impeded. As you will see in the artifacts required for modification and enhancement projects, a great deal of importance is placed on the requirements definition and testing activities to ensure a smooth release to production. Listed below are important things to keep in mind for modification and enhancement projects.

Modification and/or Enhancement Projects – Things to Keep in Mind

- IT asset modifications and enhancements should not be confused with ongoing maintenance and support (including corrective maintenance to restore current capability levels). Ongoing maintenance and support involve resolving day-to-day issues that come up with the application that may or may not necessitate a minor change in source code.
- Level 2 Support typically involves restoring service and fixing production problems with an application. This may include minor modification to scripts or to configuration parameters. For example, a level 2 item could be to modify and/or run a batch job to change the value of one data field to another within a database. Level 3 Support usually focuses on corrective modification. The code changes to the application are released either as emergency or planned releases. These types of activities are part of normal and ongoing application support vs. larger, more involved modification and/or enhancement projects.
- Changes made to an existing system can be very costly. The project team should perform an alternatives analysis looking at the total life cycle cost of making modifications to the current system vs. the acquisition of a COTS, GOTS, or SaaS solution. A COTS/GOTS or SaaS solution could meet the majority of program needs and require only configuration activities.
- Changes made to an information system, especially changes to mission-critical applications, can adversely affect an information system's previously established security posture. A security impact analysis should be conducted to determine whether the change will modify that security posture.
- Testing is extremely important in modification and/or enhancement projects especially if the changes are being incorporated into a mission-critical application. If the solution is released with issues, it can affect all end users. A thorough, detailed Requirements Traceability Matrix (RTM) and Test Plan will help reduce the risk of go-live issues.
- If a process improvement initiative results in a list (potentially) of current system modifications and/or enhancements, a project team should examine the costs and benefits of making the changes to the current system and the costs and benefits of selecting a different IT solution.
- Attempts should be made to update existing system artifacts such as system security plans, design documents, etc. vs. creating entirely new versions.
- The project team should consult with the EA group within OCIO to determine if the current technology is part of HUD's future EA to ensure further investment in the technology is a viable approach.
- System modifications and/or enhancements may require end-user training development and delivery so training costs should be considered as part of the total project cost.
- Current technology help desk and end user support services which field end user requests should be a good source of information for programs on what modifications or enhancements should be considered for future versions of an application.
- The project team needs to refer to the total life cycle cost estimate in existence for the system that is being modified; project costs and any change in operations and maintenance costs going forward need to be reflected within the existing estimate.
- Refer to HUD's checklist at http://hudatwork.hud.gov/po/i/it/sd/devlife/bld/testcenter/ for the steps involved for releasing the modifications and/or enhancements made into production.

The following table depicts the tailored PPM approach for modification and/or enhancement technology projects. This should be used as a starting point and should be modified as needed per the particulars of the project.

Artifact	Standard	Tailored	Reduced	Rationale/ Comments
Initiation Phase – Project Validation Review				
Project Initiation Form (PIF)	✓	✓	✓	The Project Initiation Form (PIF) is required for all projects. This document references original funding approval and alerts OCIO that the business is ready to begin the approved project.
Project Charter	✓	✓	✓	The Project Charter is required for all projects and includes Integrated Project Team (IPT) content.
WBS/Project Schedule – High Level	✓	✓	✓	The Project Schedule is required for all projects; this initial submission can be high-level but more detail is required during the Planning Phase due to project reporting and milestone reporting requirements.
Procurement Management Plan	✓	Use Project Management Plan in Planning Phase to Incorporate Relevant Content		The Procurement Management Plan addresses the project's strategy for managing acquisitions. The content serves as the roadmap for effectively planning and managing acquisitions and should document the types of contracts to be used, address contract risks, determine dates for deliverables, and coordinate with other processes, such as scheduling and performance reporting. Additionally, early identification of metrics to be used in managing and evaluating contractors helps to ensure that business needs are addressed through contract support. The Procurement Management Plan documents the project team's planned approach prior to engagement with HUD's Office of the Chief Procurement Officer (OCPO). OCPO will assist the project with developing an Acquisition Plan for the actual acquisition itself (if needed). The investment-level Acquisition Strategy, part of the annual OMB 300 business case process, should be in alignment with the Procurement Management Plan and acquisition-specific Acquisition Plan(s). Note that projects consisting of more than one contract will complete multiple Acquisition Plans over the duration of the project as part of HUD's acquisition process. A Procurement Management Plan is required for projects that consist of more than one contract. If only one contract is being used for a project, the project team can complete the Procurement Management component of the Project Management Plan in lieu of a standalone Procurement Management Plan. An Acquisition Plan will also be created as part of HUD's acquisition process.
Planning Phase – Project Baseline Review				
Project Tailoring	✓	✓	✓	This document is required for all projects and documents which PPM artifacts the project will be

Artifact	Standard	Tailored	Reduced	Rationale/ Comments
Agreement (PTA)				completing; this modifications/ enhancements version will be used as the starting point for any additional tailoring opportunities.
Project Management Plan (PMP)			Use Project Charter to Incorporate Relevant Content	The PMP serves as the primary source of information for planning, executing, monitoring, controlling, and closing a project. It provides detailed plans, processes, and procedures for executing, managing, and controlling project life cycle activities. It provides necessary information to improve the level of communication and understanding between all project team members and stakeholders, and may consist of other subsidiary management documents. With some project types, the content of the subsidiary management document (e.g., Communications Management Plan, Risk Management Plan) may be incorporated into the PMP in lieu of a separate subsidiary management document. Based on the scope, size, and complexity of the modifications/ enhancements, a project may have the opportunity to incorporate content into this artifact.
Requirements Definition/ Concept of Operations Document		Use RTM as Requirements Definition	Use RTM as Requirements Definition	This document is required for all projects and defines the detailed project/solution requirements. Relevant content from the Concept of Operations (CONOPS) PPM template can be included as an initial section of the Requirements Definition document for larger modifications/ enhancements projects. A CONOPS depicts high-level requirements that provide a mechanism for users to describe their expectations of the solution.
Requirements Management Plan		Use Project Management Plan to Incorporate Relevant Content		The Requirements Management Plan is used to document the information necessary for effectively managing project requirements from definition to delivery.
Requirements Traceability Matrix (RTM)				According to leading practices, the development of an RTM is intended to link business needs outlined in high-level requirements to more detailed requirements. Traceability refers to the ability to follow a requirement from origin to implementation and is critical to understanding the interconnections and dependencies among the individual requirements and the impact when a requirement is changed. Further, using attributes (e.g. unique identifier, priority level, status, completion date) in the matrix helps define the requirement to ensure traceability. Establishing and maintaining traceability is important for understanding the relationship between and

Artifact	Standard	Tailored	Reduced	Rationale/ Comments
				among requirements – from business requirements initially established to the test cases executed to validate the resulting product.
Risk Management Log	✔	Use Project Charter Risk Section	Use Project Charter Risk Section	The content within this document is required for all projects; content within this document will feed the annual OMB 300 submission as it asks for project-level risks. The Project Charter can be used to capture risks in some cases within this project type.
Independent Verification and Validation Plan (IV&V Plan)	✔	Use Project Management Plan to Incorporate Relevant Content		An IV&V Plan describes the approach for having an independent third party check that the solution/service meets specifications and that it fulfills its intended purpose. Verification ensures that the solution was built according to the requirements and design specifications, while validation ensures that the delivered solution actually meets the customer's needs and that the specifications were correct in the first place. Validation ensures that 'you built the right thing'. Verification ensures that 'you built it right'. Validation confirms that the product, as provided, will fulfill its intended use. IV&V activities are critical components of a sound quality management process. Currently at HUD, IV&V guidance is being revised. When the new guidance is finalized, this content will be updated to reflect new requirements.
Solution Architecture Document	Refer to Existing and Update if Needed; If None Exists, Create	Refer to Existing and Update if Needed; If None Exists, Create	Refer to Existing and Update if Needed; If None Exists, Create	HUD applications must be in alignment with HUD's Enterprise Architecture. The Solution Architecture document will depict the initial and future relationship between the current solution and HUD's architecture. The document ensures that the solution architecture is in compliance with HUD enterprise architecture principles, best practices, and conceptual target application architectures. The target state includes business, enabling, and support services that are either re-used from the current portfolio, leveraged from existing enterprise services, or established as new services via projects to develop them. If a Solution Architecture document exists, it should be updated using the new PPM template.
FIPS 199 **Note: This requirement may vary depending on the categorization and type of information in the system. Security IPT members will help determine if this artifact is*	Refer to Existing and Update if Needed	Refer to Existing and Update if Needed	Refer to Existing and Update if Needed	FIPS Publication 199 defines three levels of *potential impact* on organizations or individuals should there be a breach of security (i.e., a loss of confidentiality, integrity, or availability). The application of these definitions must take place within the context of each organization and the overall national interest.

Artifact	Standard	Tailored	Reduced	Rationale/ Comments
needed based on the particulars of the modifications and/or enhancements.				
Initial Privacy Assessment **Note: This requirement may vary depending on the type of information in the system. Privacy IPT members will help determine if this artifact is needed based on the particulars of the modifications and/or enhancements.*	Refer to Existing and Update if Needed	Refer to Existing and Update if Needed	Refer to Existing and Update if Needed	An Initial Privacy Assessment (IPA) is a required document designed to assess whether a Privacy Impact Assessment (PIA), a Privacy Act system of records notice (SORN), and/or other related privacy documents are required. The responses to the IPA will provide a foundation for both a PIA and a SORN should either or both be required, and will also help to identify any policy concerns.
System of Records Notice **Note: This requirement may vary depending on the type of information in the system. Privacy IPT members will help determine if this artifact is needed based on the particulars of the modifications and/or enhancements.*	Refer to Existing, If Applicable, and Update if Needed	Refer to Existing, If Applicable, and Update if Needed	Refer to Existing, If Applicable, and Update if Needed	This document may or may not be needed based on the answers to the IPA. A System of Records is a group of any records under the control of any agency from which information is retrieved by the name of the individual or by some identifying number, symbol, or other identifier assigned to the individual. The Privacy Act requires each agency to publish notice of its systems of records in the Federal Register. This notice is critical to the production of the system, and is generally referred to as a system of records notice (SORN).
Privacy Impact Assessment **Note: This requirement may vary depending on the type of information in the system. Privacy IPT members will help determine if this artifact is needed based on the particulars of the modifications and/or enhancements.*	Refer to Existing and Update if Needed	Refer to Existing and Update if Needed	Refer to Existing and Update if Needed	This document may or may not be needed based on the answers to the IPA. Any new system that will contain personal information on members of the public requires a PIA, per OMB requirements (this covers both major and non-major systems).
Execution & Control Phase - Operational Readiness Review and As Needed Reviews				
Technical Design	Refer to Existing and	Refer to Existing and	Refer to Existing and	The TDD describes the system requirements, operating environment, system architecture, subsystem

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Document (TDD)	Update if Needed; If None Exists, Create	Update if Needed; If None Exists, Create	Update if Needed; If None Exists, Create	architecture, files design, database design, input formats, output layouts, human-machine interfaces, detailed design, processing logic, and external interfaces for the IT system. It presents and tracks the information required to develop an effective architecture and system design, giving the development team guidance on the architecture of the system to be developed. All systems must demonstrate traceability to the Federal Enterprise Architecture (FEA). This document should exist and updates to it must reflect the modifications and/ or enhancements that will be added.
Interface Control Document (ICD)	Only if Changes Affect Existing Interfaces	Only if Changes Affect Existing Interfaces	Only if Changes Affect Existing Interfaces	The ICD presents the information required to define the interface(s) with other systems located within the HUD infrastructure (if applicable), as well as any rules for communicating with those interfacing systems. The ICD communicates all possible inputs to and outputs from the application in order to give the design and development team guidance to ensure the application fits well into its operating environment.
Change Management Log	✔ (If Needed)	✔ (If Needed)	✔ (If Needed)	The Change Management Log contains information regarding any potential change to the scope, schedule, resources, etc. for the project. The document is maintained over the course of the project.
Implementation Plan	✔	✔		The Implementation Plan is an outline of the activities necessary to ensure that the solution is available for use by its end users as originally planned. The Implementation Plan addresses all necessary software, hardware, data, documentation, training, and required process/organizational changes.
Test Plan & Test Reports	✔	Use Project Management Plan to Incorporate Relevant Test Plan Content (and Submit Test Reports)	Use Project Charter to Incorporate Relevant Test Plan Content (and Submit Test Reports)	Test planning is the practice of preparing for the testing phase of product development/ configuration to ensure that the solution satisfies the customer's requirements as agreed upon in the requirements and design specification documents. Test Reports summarize the results of the different types of testing performed for an automated system (e.g. unit testing, system testing, user acceptance testing, ad hoc testing, regression testing, performance and/or stress testing, and end-to-end testing). Based on the varying complexities of IT system modifications and/ or enhancements, the degree of detail will be different if the changes are minimal vs. large modifications. For smaller scale changes, the project team can use the PMP or Project Charter to document test planning assumptions.

Artifact	Standard	Tailored	Reduced	Rationale/ Comments
				If project teams are using automated tools to track and document testing activities, it is acceptable to substitute tool-specific test result reports if they meet the information requirements of the PPM template.
Data Conversion Plan	(If Needed)	(If Needed)	(If Needed)	The Data Conversion Plan describes the strategy, preparation, and specifications for converting data from a source system to the existing system within which modifications and/ or enhancements are being made. This document will not be needed if there is no migration or conversion of data to the IT system undergoing modifications and/ or enhancements.
User Manual	Refer to Existing and Update if Needed	Refer to Existing and Update if Needed	Refer to Existing and Update if Needed	The User Manual is written using non-technical language and should include the key features and/or functions of the solution. The manual should explain how a business user operates the solution and should include sufficient detail and plain language such that all levels of business users can easily understand how to use the solution. The project team should determine if any changes are needed to the existing user manual; if none are needed, the artifact does not have to be submitted to the TRC for review.
Operations and Maintenance (O&M) Manual	Refer to Existing and Update if Needed; If None Exists, Create	Refer to Existing and Update if Needed; If None Exists, Create	Refer to Existing and Update if Needed; If None Exists, Create	The O&M Manual contains information and strategies designed to guide stakeholders in the normal use and maintenance of the IT system. The manual facilitates actions and responses to events that may arise during normal solution operations and maintenance and contains detailed information on the control requirements, scheduling information, and operating procedures necessary to successfully initiate and run the solution. It also provides maintenance personnel with the information necessary to maintain the solution effectively. The manual provides the definition of the software support environment, the roles and responsibilities of maintenance personnel, and the regular activities essential to the support and maintenance of program modules, job streams, and database structures.
Security Assessment and Authorization to Operate (ATO) Request **Note: This requirement may vary depending on the type of information in the system. Security IPT*	Determine What is Required Based on IT Security IPT Member Guidance	Determine What is Required Based on IT Security IPT Member Guidance	Determine What is Required Based on IT Security IPT Member Guidance	Information systems software, hardware, and equipment developed by or sold to Federal agencies must undergo a security assessment and receive an Authorization to Operate (ATO) before the system is operational. This is a mandatory requirement. The process was recently revised and now culminates in the signing of the Authorization to Operate (ATO) request by HUD's Chief Information Security Officer (CISO). The artifacts required for the ATO package may vary based on the details of the modifications

Artifact	Standard	Tailored	Reduced	Rationale/ Comments
members will help determine what artifacts are needed based on the particulars of the application.				and/or enhancements. Generally, the package will include information such as: 1) System Security Plan: Provides an overview of the security requirements of the system and describes the controls in place or planned for meeting those requirements. OMB requires all Federal agencies to incorporate a security plan that is consistent with NIST guidance on security planning. 2) Security Risk Assessment: Provides the inputs for the development of the Security Plan. 3) Security Test and Evaluation Plan/Report: Security Test and Evaluation (ST&E) (often times referred to as Certification Test & Evaluation) is a requirement within all Certification and Accreditation (C&A) processes. ST&E is the Independent Verification and Validation (IV&V) of a security control on a system to determine if it was properly implemented and if it is working correctly. While providing this service, organizations must leverage a variety of standards such as NIST 800-115 to properly perform the testing. 4) Business Impact Analysis (BIA): The BIA is a key step in the contingency planning process. The BIA enables the project team to fully characterize the system requirements, processes, and interdependencies and use this information to determine contingency requirements and priorities. The purpose of the BIA is to correlate specific system components with the critical services that they provide, and based on that information, to characterize the consequences of a disruption to the system components. Key steps are listing critical IT resources, identifying disruption impacts and allowable outage times, and developing recovery priorities. 5) Contingency Plan: Contingency planning establishes thorough plans, procedures, and technical measures that can enable a system to be recovered quickly and effectively following a service disruption or disaster. For modifications and/or enhancements to existing applications, contingency planning also covers continuity of the availability of the vendor who led the code development activities and to other questions: • What happens if the vendor goes out of business and no longer supports the product? How does HUD conduct knowledge transfer? • What happens if the solution owner wants to switch to another solution?

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				6) E-Authentication Risk Assessment: OMB requires agencies to review new and existing electronic transactions to ensure the authentication processes provide the appropriate level of assurance. Criteria for an e-authentication application include: 1) is web-based 2) requires authentication 3) extends beyond the borders of the enterprise (e.g. multi-agency, government-wide, or public facing). 7) Memorandum of Understanding (MOU): The MOU defines the responsibilities of the participating organizations involved with a system interconnection. The organizations that own and operate the connected systems should establish an MOU that defines the responsibilities of both parties in establishing, operating, and securing the interconnection. An interconnection could, for example, be a link from the system to Pay.gov. 8) Interconnection Security Agreement (ISA): The ISA is a security document that specifies the technical and security requirements for establishing, operating, and maintaining a system interconnection with an external information system, i.e., residing outside the HUD infrastructure. A system interconnection is defined as the direct connection of two or more IT systems for the purpose of sharing data and other information resources. ISAs are used for planning, establishing, maintaining, and terminating interconnections between IT systems that are owned and operated by different organizations, including organizations within a single Federal agency. 9) Authorization to Operate (ATO) Request: All IT systems are required to obtain a signed ATO prior to full start up. The ATO represents the formal management approval to authorize operation of an information system and to explicitly accept the risk to organizational operations and assets based on the implementation of an agreed-upon set of security controls.
Close Out Phase – Project Close Out Review				
Project Completion Report	✔	✔	✔	This document finalizes project activities and includes lessons learned content for the benefit of subsequent projects related to the specific IT asset. It also asks for information on project administrative and contract closure activities. The report should be very specific on the final project cost so that the life cycle cost estimate for the IT asset can be updated accordingly.