Agile Methodology Policy

US Department of Housing and Urban Development (HUD)

Office of the Chief Information Officer (OCIO)

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Table of Contents

1.0   Introduction

Investments in federal information technology (IT) too often result in failed projects that incur cost overruns and schedule slippage. In 2010, the Office of Management and Budget (OMB) issued a 25-point plan to reform Information Technology (IT)[1] that called on federal agencies to employ "shorter delivery time frames, an approach consistent with Agile" when developing or acquiring IT. OMB data suggested Agile practices could help federal agencies and other organizations design and acquire software more effectively.

Additionally, OMB issued guidance in June 2015, requiring Federal Agency Chief Information Officers to define policies and processes for incremental development. The Chief Information Officer's certification of incremental development is critical to ensure that the Chief Information Officer exercise the proper authority and oversight of US Department of Housing and Urban Development (HUD) major IT investments, and that the department is making the best effort possible to create information technology (IT) systems that add value while reducing the risks associated with low-value and wasteful investments.

Recognizing the severity of issues related to government-wide management of IT, Congress enacted Federal IT acquisition reform legislation (commonly referred to as the Federal Information Technology Acquisition Reform Act, or FITARA)[2], which states that the OMB is to require in its annual IT capital planning guidance that agencies' Chief Information Officer (CIO) certify that IT investments are adequately implementing incremental development, which OMB defines as the planned and actual delivery of new or modified technical functionality to users that occurs at least every 6 months for development of software or services.[3]

To effectively carry out FITARA and OMB's incremental development guidance, HUD acknowledges the need to establish a policy to (1) incorporate incremental development where applicable in its IT software development process utilizing an Agile methodology, and (2) for HUD's Chief Information Officer (CIO) certification of the use of adequate incremental development.

There are three identified components that HUD needs to include in its Agile policies, in order to effectively carry out FITARA and OMB's incremental development guidance.

- Require all major IT investments projects deliver functionality in cycles that are not longer than six (6) months. In practice, cycles within Agile methodology are called sprints and are typically between 1 to 4 weeks in duration.
- Define project delivery functionality at the end of a cycle (sprint).
- Define a process to ensure major IT investments deliver functionality during every pre-defined short development cycle. This should include identifying investments that are not being acquired incrementally through agency TechStat processes and undertaking corrective actions.

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[1] 25 Point Implementation Plan to Reform Federal Information Technology Management, December 9, 2010.

[2] *Federal Information Technology Acquisition Reform* provisions of the *Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015*, Pub. L. No. 113-291, div. A, title VIII, subtitle D, 128 Stat. 3292, 3438-3450 (Dec. 19, 2014).

[3] Office of Management and Budget, *Management and Oversight of Federal Information Technology*, Memorandum M-15-14 (Washington, D.C.: June 10, 2015). *GAO Report, Information Technology Reform: Agencies Need to Improve Certification of Incremental Development (GAO-18-148)*

Agile development practices have become an integral part of IT project management and with the integration of the incremental development process, this alignment will ensure software development is up to date, and when necessary, incorporate new requirements as they are identified. With emerging technology, adapting Agile principles at HUD will provide a comprehensive roadmap when there is a necessity to break large requirements into smaller tasks, delivering functionality in cycles that are of shorter increments to meet the needs of its IT investment products.

Developing small incremental releases delivers functional useful software solutions that ensure performance throughout the product lifecycle. Additionally, users' involvement throughout the IT project gives measurable and continuous success when team members and stakeholders collaborate, allowing business areas and offices to achieve rapid results.

2.0   Purpose

The Office of the Chief Information Officer (OCIO) Agile Methodology Policy requires the adoption of the appropriate Agile Software Development Methodology for systems and application development, incorporating incremental development into the process. Incremental development is a faster, more efficient way to develop and deliver working software that meets customer's needs and as indicated by OMB legislation and guidelines for more rapid execution of IT projects. By incorporating an incremental development methodology, HUD OCIO can manage IT projects more efficiently, and provide a timelier response to changes in operations, technology, and budget.

Agile development methodologies enable software development projects to plan, manage and execute the delivery of functioning software at the completion of each short development cycle. This allows IT project managers to be more responsive to business needs, incorporate emerging technologies, resolve issues with greater success, and shorten the time to market to deliver the desired solution. Agile core values, principles and practices will assist HUD business areas achieve their IT goals, while maintaining focus on the Department's strategic goals, objectives and vision. This approach will address concerns within the IT project life cycle and implementation.

Because of the short development cycles, agile development enables the enforcement of coding standards, reduces the likelihood of software vulnerabilities, and strengthens testing protocols at every phase of the project.

3.0   Rescission

This is the initial version of the Agile Methodology Policy.

4.0   Applicability

The policy applies to all HUD employees and contractors who use and work with HUD's IT portfolio, investments and projects. However, this policy does not apply to Ginnie Mae's secondary mortgage activities. Ginnie Mae is a self-sustaining profitable and wholly-owned government corporation located within HUD.

5.0   Effective Implementation Date

This policy is effective immediately upon date of OCIO approval and departmental clearance.

6.0   Policy

The OCIO has developed an Agile project management process using an incremental development project cycle. Any development that requires managing IT investments that integrate IT strategy development, enterprise architecture, capital planning management, project management and investment performance measurement will use, when appropriate, the preferred agile principles and techniques to reach their strategic goals and objectives.

An Agile software development methodology requires an Agile IT governance mindset. The Disciplined Agile (DA) Framework describes aspects necessary for successful IT governance:

1. Lead by example

2. Be a servant leader

3. Motivation over management

4. Enablement over audit

5. Communicate clearly, honestly, and in a timely manner

6. Streamline collaboration

7. Trust but verify

8. Focus on mitigating risk, not just reviewing documents

9. Learn continuously

10. Consider both the long and short term

11. Be a great host

The following is a list of measures necessary to ensure processes are set in place that meet the needs of IT software development projects. Individual IT projects will be assessed using best practices in Agile, incorporating the incremental development process to identify the best approach for projects.

1. Employees and stakeholders will be trained using Agile methodologies, to ensure effective transition when using Agile in IT projects.

2. Stakeholders' risk tolerance will be assessed to ensure capability of job performance, the ability to fully disclose project risks, and how those risks must be handled to mitigate or minimize damages, should they occur.

3. Risk mitigation strategy will be documented as evidence, to show that Agile IT projects are being assessed for risk incrementally and throughout the project lifecycle.

4. The development process will be documented during daily meetings, sprint cycles, and throughout the project cycle.

5. Appropriate project documentation must be maintained for each Agile IT project.

The policy pertains to any software development project that executes the project using Agile development methodology.

7.0   Roles and Responsibilities

7.1 Chief Information Officer (CIO)

The CIO has delegated certification of use of adequate incremental development authority to the Chair, Technical Review Sub-Committee (TRC); however, the CIO is ultimately responsible for certification at HUD. The CIO or delegate –

- Establishes the Agile policies and processes for HUD software development.
- Ensures that the Agile project management process priorities are aligned with HUD's operational and strategic goals and objectives.
- Approves and provides guidance via the distribution of HUD's Agile Methodology Policy, artifacts and practices.

7.2 Deputy CIO, Office of Customer Relationship and Performance Management (OCRPM)

The Deputy CIO, OCRPM or delegate --

- Monitors, updates and maintains Agile policy and artifacts to ensure standard operating procedures are current.
- Collaborates with TRC Chairperson in defining, coordinating and managing the HUD OCIO Agile implementation practices.
- Coordinates with governance, technical teams and stakeholders on implementing Agile/incremental software development to ensure the integrity of the processes are fully documented.
- Collaborates with personnel to procure the tools needed to enable successful project solutions.
- Ensures the access to the needed documentation throughout the project lifecycle.
- Collaborates with personnel to ensure necessary resources are provided to align HUD and OCIO strategic objectives with project goals.

7.3 Chairperson, Technical Review Sub-Committee (TRC)

The HUD CIO's certification of the use of adequate incremental development is delegated to the Chairperson, TRC. The TRC initiates facilitation of OCIO resources through the review and approval of the Project Initiation Form (PIF) and other requested project information provided by the project managers during the Initiation Phase of the project life cycle. Through this review, the TRC approves or disapproves the use of IT resources, and recommends to the CIO whether projects, including projects that are a part of major IT investments, are a candidate for the use of incremental development.

The TRC reviews project performance from a technical perspective through periodic reviews of working software. For Federal IT Dashboard reporting purposes, the TRC informs the OCIO Capital Planning team of projects approved to use incremental development. The Chairperson, TRC –

- Collaborates with OCRPM in defining, coordinating and managing HUD OCIO Agile implementation practices.

- ▪ Ensures that the necessary project artifacts are produced in alignment with project and segment goals and the Agile policy is followed.
- ▪ Provides analysis to the Chief Information Officer (CIO) and Customer Care Committee (CCC) which makes recommendations to the Executive Operations Council (EOC) for final decision on project initiation or continuation.[4]

7.4 Product Owner

The Product Owner (PO) is a member of the overall Agile team responsible for the end product. The PO breaks the project down into a series of work periods, or sprints, defines stories and prioritizes the team backlog to streamline the execution of program priorities while maintaining the conceptual and technical integrity of the features or components for the team.

The Product Owner serves as the liaison between the Agile project team and the Program Area / business and ensures coordination and integration.

8.0   Definitions

Agile is a project management methodology that is based on incremental development, where requirements and solutions evolve through collaboration between self-organizing cross-functional teams to develop cycles called sprints that focus on continuous improvements in the development of a product or service.

The Agile practices and principles that will be utilized at HUD incorporate iterative development processes throughout the IT software development project lifecycle, to include development, deployment, and operations and maintenance (O&M) projects.

Agile software development is the adoption of one of the software development methodologies based on iterative development, where requirements and solutions evolve through collaboration between self-organizing cross-functional teams.

Agile Project Methodology is a value-driven approach that allows Product Owners and Project Managers to deliver high-priority, high-quality work with the greatest business value first, and having the real-time information to tightly manage cost, time and scope.

The methodologies used in Agile (Scrum, XP, Kanban, and others) all follow the Agile Manifesto that is based on continuous improvement, flexibility, input of the team, and the delivery of results with high quality.

Customer Care Committee supports the EOC by developing policies and providing oversight for all HUD's information technology (IT) investments. The CCC's overall purpose is to enable and enhance delivery of HUD's mission through the use of technology by improving HUD's enterprise architecture and infrastructure services. As an oversight body, the CCC makes recommendations and implements actions to ensure that the direction and policies of the EOC are operationalized.

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[4] The Technical Review Sub-committee information are posted on the HUD.GOV website at URL:
https://portal.hud.gov/hudportal/HUD?src=/program_offices/cio/ppm/PPMV20Governance.

Development Team consists of people who create the product. It is comprised of government and contractor team of developers, including software and security engineers, data specialists, testers, quality assurance, and anyone else with a hands-on role in product development configuration managers.

Executive Operations Council is responsible for defining and implementing HUD's strategic direction, and approving the Department's IT investment portfolio, including overseeing, and reviewing complicated, costly, and highly visible projects. The council membership consists of HUD senior political and career leadership.

Incremental Development is a combination of software development methods based on iterative time-based functionality, where requirements and solutions evolve through collaboration between self-organizing, cross-functional teams. It promotes adaptive planning, evolutionary development and delivery, a time-boxed iterative approach, and encourages rapid and flexible response to change. It is a conceptual framework that promotes foreseen interactions throughout the development cycle.

Information Technology means any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission, or reception of data or information by an executive agency. The term "information technology" includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources. The term "information technology" does not include any equipment that is acquired by a Federal contractor incidental to a Federal contract. The term "information technology" does not include national security systems as defined in the Clinger-Cohen Act of 1996 (40 U.S.C. 1452).

(Information Technology) Project Manager plans and acquire resources along with coordinating the efforts of team members and third-party contractors to deliver projects in accordance with the plan. Manages task, schedules and resource assignments, and get artifacts completed by subject matter expert, serving as the first line of responsibility for development efforts.

Major (IT) Investment means a system or an acquisition requiring special management attention because it: has significant importance to the mission or function of the agency, a component of the agency or another organization; is for financial management and obligates more than $500,000 annually; has significant program or policy implications; has high executive visibility; has high development, operating or maintenance cost; is funded through other than direct appropriations; or is defined as major by the agency's capital planning and investment control process.

Product Owner is the decider in critical development decisions and is the person responsible for bridging the gap between the customer, business stakeholders, and the development team. The product owner is the authoritative representative who manages the product backlog and requirements prioritization, communicates operational concepts to the development team, and provides continual feedback to development team on their developments, demonstrations, storyboards, and mockups.

Values of the Agile Manifesto[5] The Agile Manifesto is comprised of four foundational values and 12 supporting principles which lead the Agile approach to software development. Each Agile methodology applies the four values in different ways, but all of them rely on them to guide the development and delivery of high-quality, working software. The values in the Agile Manifesto are:

1. Individuals and Interactions Over Processes and Tools
2. Working Software Over Comprehensive Documentation
3. Customer Collaboration Over Contract Negotiation
4. Responding to Change Over Following a Plan

9.0   Glossary and Acronyms

CCC	Customer Care Committee
CIO	Chief Information Officer
DA	Disciplined Agile
EOC	Executive Operations Council
FITARA	Federal Information Technology Acquisition Reform Act
GAO	Government Accountability Office
HUD	Department of Housing and Urban Development
IT	Information Technology
OCIO	Office of the Chief Information Officer
OCRPM	Office of Customer Relationship and Performance Management
O&M	Operations and Maintenance
OMB	Office of Management and Budget
PM	(Information Technology) Project Manager
PO	Product Owner
TRC	Technical Review Sub-Committee

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[5] *Agile Project Management for Government*, Brian Wernham, Maitland & Strong, 2012.