# Agile Development Using EPLC

Many types of agile methodologies exist, some of which include: Agile, Dynamic System Development, Extreme Programming, SCRUM, Feature Driven Development, Incremental, Spiral, etc. Each methodology varies in its approach however, regardless of name, commonalities exist across all iterative methods, and include aspects such as:

- Development is done incrementally over multiple iterations
- Iterations include some component of planning, requirements analysis, design, development, testing, documentation, and implementation
- Emphasis is placed on person-to-person communication rather than written documents
- Software that works is the primary measure of progress and success
- Iterations build upon lessons learned from prior iterations - continuous improvement methodology
- Teams are self-organized and granted authority to dynamically adapt to changing circumstances and are compiled in such a manner that allows for the delivery of completed, working code at the end of each iteration. Teams are small and often include analysts, programmers, testers, writers, etc.

An agile methodology is best used when the organization, product, and/or project must contend with changing requirements throughout the life of the project. This iterative approach allows project teams to very quickly respond to changes, and other factors, influencing project outcomes. The dynamic nature of these approaches continuously improves and/or adds functionality, identifies and addresses risks, and incrementally delivers business value over the life of the project.

Agile methods promote the delivery of the final product through refinement of requirements, design of usable components, and incremental delivery that typically cycles through multiple short iterations.

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The Department of Health and Human Services Enterprise Performance Life Cycle (EPLC) begins with the Initiation Phase and the formal identification of a business need. Once a business need is determined to be worthy of pursuing, and has been approved, the proposed project formally advances into the EPLC Concept Phase where a business case is developed. Based on review of the business case the project is approved, chartered, and funding is authorized. Planning for the project then begins with the creation of a preliminary Project Management Plan (PMP).

As the preliminary PMP is finalized, during the EPLC Planning Phase, the most appropriate approach to product development must also be identified, documented, and planned. Through the use of a Project Process Agreement (PPA) document the EPLC can be tailored to accommodate a variety of projects and approaches, including those utilizing an agile development approach.

Regardless of development approach used, to this point in the EPLC Framework, significant phases of the project are very similar across methodologies. As an example, if utilizing an agile development approach, planning performed to this point is rarely revisited in any major context unless material project changes impact budget, schedule, scope, or acquisition. Thresholds for what constitutes a material change are defined by appropriate Governance and in some instances may be unique to a specific project.

Upon Governance approval of the PPA and finalized PMP the project formally advances into the EPLC Requirements Analysis Phase. *How requirements, design, development and their associated governance reviews are performed identifies the primary difference between an agile and non-iterative development approach.*

When utilizing an agile development approach it's implied, inclusive of the finalized PMP, that yet to be defined sub-components will be used across the project, and the project team, to organize and deliver upon project objectives. These sub-components are often too granular for a governance

review and may include items such as team schedules, policies, and processes for individual functional teams; resource pool management techniques, database schemas, inter-team dynamics, common programming languages, and development platforms. Work in the Requirements Analysis Phase begins with the identification of *initial* requirements that includes this and other related information. Requirements are then decomposed to a product feature and/or function level and triaged for delivery based on priority. As each new iteration nears, features and functions identified for delivery in that iteration are decomposed to a level of detail that can be estimated, scheduled, designed, built, and tested within the confines of one iterative cycle. The responsibility for review of this is delegated to an identified business owner.

During the EPLC Design Phase a Preliminary Design Review is performed. This is a formal inspection of high-level design by the Center's Governance critical partners who provide a recommendation to the Center's Governance regarding the adequacy of both functional and non-functional design. The most appropriate approach for performing this review is defined by each Center's Governance and in some instances may be unique to the specific project. Some approaches may include:

- Governance's Preliminary Design Reviews conduct a full iteration reviewed at the beginning of each new iterative cycle with the management oversight of that cycle delegated to the Project Manager.
- Governance's Preliminary Design Reviews conduct a full product release cycle review that outlines the multiple iterations contained within the product release. Iterations are then reviewed at the beginning of each new release cycle with the management and oversight of all iterations contained within that approved release cycle delegated to the Project Manager.
- Governance's Preliminary Design Reviews conduct a full project review at specific increments of defined durations with the management and oversight of all iterations contained within that duration delegated to the Project Manager.
- Governance's Preliminary Design Reviews conduct

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a full project review at specific thresholds of project completion (% complete) with the management and oversight of all iterations contained within that threshold delegated to the Project Manager.
- Governance's Preliminary Design Reviews conduct a full project review at specific thresholds of project variance (+/-10% from baseline or budget) with the management and oversight of all iterations contained within that threshold delegated to the Project Manager.

As the EPLC Development Phase begins, iteration teams are assembled and work begins on delivering against initial requirements, as planned within the confines of the overarching approaches documented within the PMP. During the first development iteration that contains a formal product implementation an Operational Readiness Review must be performed by the Center's Governance. At this time how future Operational Readiness Reviews will be performed is also defined and may mirror an approach similar to those bulleted above.

It's important to note that no one development method is appropriate for all projects. The most appropriate approach for delivery will be heavily influenced by the unique characteristics of the performing organization, and the project, and may not be exactly what was used to successfully deliver past projects. The HHS EPLC Framework recognizes, and allows, for this flexibility through the use of a Project Process Agreement document that allows for the tailoring of the EPLC Framework to meet any unique project needs and/or approaches.

For more information on the CDC Unified Process or the Department of Health and Human Services Enterprise Performance Life Cycle (EPLC) or any of its artifacts and tools, please visit the CDC UP website at http://www.cdc.gov/cdcup/. ▌

## Contact the CDC Unified Process Team

The *CDC Unified Process Project Management Newsletter* is authored by Daniel Vitek MBA, PMP and published by the National Center for Public Health Informatics.

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