

QUICKTIP

HOW TO SELECT AN AGILE OR WATERFALL APPROACH FOR A PROJECT

Your organization's procedures may specify whether a predictive (aka waterfall) or an agile approach should be used for specific types of projects. If not, the project leader, project team, and sponsor should decide during your project's Define phase and document the decision in the project's charter. The project's Plan and Execute phases will be different depending on this decision.

To make this decision, consult stakeholders and use the professional judgment of the team. These guidelines may help.

USE A WATERFALL APPROACH IF

The deliverables and work that will be done in the Execution phase of the project are fairly well understood by the end of the Define phase.

This means that the project team will be able to create a detailed plan during the Plan phase and then follow it during the Execution phase with only a moderate amount of change. Thus the project will benefit from the efficiency and predictability of waterfall's emphasis on advance planning.

CONSIDER USING AN AGILE APPROACH IF

A new project meets most of the following criteria:

1. Project characteristics
 - a. Rapid change is likely, such as in technology or requirements.
 - b. The project's planning horizon is short and its future beyond the short horizon is unclear.
 - c. High degree of flexibility is needed during project.
 - d. Project can naturally be divided into increments or modules.
 - e. Project is large enough to justify use of agile tools (if it is really small, just plan it all at once).
2. Customer characteristics
 - a. Customers or users are not sure what features they want or are unable to clearly express them.
 - b. They are comfortable with an agile approach, recognizing that it can increase flexibility but has less predictable schedule, budget, and product features.
 - c. The customer (or a representative) agrees to have a high degree of involvement during the Plan and Execution phases. The customer must be willing and able to make clear, concise, and rapid decisions on priorities, features, and tasks during all iterations.
3. Project team characteristics
 - a. The team understands agile methodology and preferably has training or experience in it.

- b. The team has the self-discipline and experience to use agile techniques successfully. Agile techniques are not an excuse for ad-hoc development and require good team discipline to use successfully.
- c. A dedicated development team and resources are available.

ITERATION PROCESS

This is an example of a standard iteration protocol for agile development.

BEFORE ITERATIONS START

1. Think through architectural considerations that will transcend iterations.
2. Create a high-level iteration plan, including evaluating the business requirements that the project will fulfill. Set iteration length and anticipate the quantity of iterations that are likely to be needed. Define a tentative high-level goal for each iteration.
3. Create the initial product backlog and user stories.

FOR EACH ITERATION, DO THE FOLLOWING IN ORDER.

1. At or before the beginning of the iteration, the product owner ensures that the product backlog is up to date and prioritized, and that user stories are current.
2. At the beginning of the iteration, the agile team does iteration planning.
 - a. The team meets with the product owner and other interested stakeholders to determine what functionality from the product backlog (the “executable product increment”) will be added to the product during this iteration. This subset of functionality and priorities from the product backlog becomes fixed for the duration of the iteration.
 - b. The agile team decides how it will build the selected functionality into the product increment that they will create in this iteration. The team creates the iteration backlog, which is a prioritized list of the development (e.g. coding, testing, and documentation) tasks that it will complete in this iteration. Assigns each task on the iteration backlog to a team member. The iteration backlog includes the estimated size (work required) for each task. (Note that the product backlog and the iteration backlog are different.)

DURING THE ITERATION:

3. The agile team works on its assigned items from the iteration backlog.
4. The agile team meets daily in a short standup meeting to explain what has been accomplished since the previous meeting, what will be completed by the next meeting, and what impediments are slowing progress.
5. Team members continually update the iteration backlog, refining its list of tasks and the estimated hours of work remaining to complete each one.
6. The iteration burndown chart, showing estimated total hours of work remaining in the iteration, is updated and posted every day.

AT THE END OF THE ITERATION:

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7. Any final quality assurance, unit acceptance testing, and deployment activities for this iteration are completed.
 8. The agile team hosts an iteration review, typically a half-day informational meeting, where it presents the product increment that it has built to the product owner, the customer, users, and management for their feedback and approval. The iteration review is focused on the product, not on the development process.
 9. The agile team may also present a demo of the product open to any interested people.
 10. The executable product increment is now complete and may be released.
 11. The agile team holds iteration retrospective to learn from the completed iteration and improve the next one. The iteration retrospective is focused on improving the development process to make future iterations go better.

Repeat iterations until product backlog is complete and / or the product owner determines no further development is needed.

ATFER FINAL ITERATION

12. Complete any quality assurance, deployment, transition, and lessons learned activities that are needed to close the project.