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Waterfall Method

The Waterfall method uses a stepped sequence to develop software. The sequential steps are linear in that each step follows a logical progression that does not return to a previous phase of the cycle and where each previous step, when it is complete, is the input to the next step. In a sense, the steps cascade into each phase of the cycle and this approach is where the waterfall name comes from. Between each of these steps there is a “gate” or period of time where the finished step is reviewed and approved before moving to the next phase.

The waterfall method:

* Requirements -documentation
* Design -software architecture
* Implementation -software
* Verification -unit testing and integration tests
* Maintenance -keep it up and running

The actual practice of the waterfall method starts with a combination of conception and analysis but the basics of the first step is an analysis to define and determine the “requirements”, things like customer needs, project limitations, functionality, scope, delivery timetables, milestones and strategies. The second step is “design” and covers topics like logic and the software architecture, if it’s a new project and not their needs to be a comprehensive understand of how the architecture will meet the needs of the project. The third set is implementation where the actual coding takes place. The fourth step is “verification” or testing where feedback from errors and mistakes are corrected in a development environment to confirm the functionality and integration of the product. The fifth step is the “release and installation” phase where it goes live for public or customer use or is installed in a production environment. The sixths and last step in maintenance where updates are preformed to accommodate changes other factor outside of the original scope of the project. These can be thing like operating system or hardware changes or issues that did not arise in the test phase. Though the waterfall process is likely to begin again for these issues it may still be considered maintenance.

Agile Method

The main principle involved in the Agile Method start with a semi self-managed team-based approach with an overall iterative style that emphasizes rapid development and regular cycles of review within a given span of time called “sprints”. These “sprints” have predetermined sets or lists of goals for working software deliverables that are known at the beginning of the sprint based on the priority of the stakeholders and the project owner. As issues arise or requirements change the deliverables can be reprioritized and then further review by the stakeholders and the project owner to evaluate for future planning and priority. With working software being the main measure of progress, teams require consistent technical attention and frequently re-evaluate their progress and processes to adjust their performance to become more effective.

Stakeholders and the project owner define what the project’s scope is and it’s intended results followed by a somewhat flexible roadmap with strategies, goals and time frames. The project owner then creates a release plan with the goal being working software. The project owner working with the team plan the multiple “sprints” of the release plan based on the priority of certain aspects or features of the software and what will be possible with in each sprint times constraint. Each day of a sprint the team will review the completed work, the work for that day, progress and impediments to determining where to put the focus.

Agile Vs. Waterfall

Each method has definitive advantages and disadvantages. Most frequently the biggest benefit for using the older waterfall method come into play in top-down management where the requirement, scope of the project, technical aspects and duration are well known, very stable and unlikely to change for extended periods of times and where development cost need to stay within budget. For the most part the Agile method is the opposite. Stakeholders, project owners and teams frequent collaborate to determine requirements, planning and prioritization with faster delivery, greater flexibility when things change. Additionally, the customer has the advantages of being more competitive in their market. The disadvantage being that this agility or flexibility can cost more as the scope and requirement evolve over time.

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