Module 2 Report: Evaluation of the Waterfall Model

Alexander Ricciardi

Colorado State University Global

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Professor: Dr. Joseph Issa

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This report evaluates the Waterfall Model by identifying three limitations of the model. Identifying the limitations of the Waterfall Model will help to create a new model, the Ricciardi Adaptive Iteration Model, which will address Waterfall limitations by integrating adaptability and continuous feedback loops. The Waterfall Model, also known as the Traditional Model, is the oldest methodology for software engineering, and it has a systematic and sequential approach to project management, resulting in a linear development project flow, which is very limiting for modern software development projects. Below are three limitations of the model.

1. Lack of adaptivity.
   The most limiting aspect of the Waterfall model is its very static requirements gathering and implementation approach. The model assumes that stakeholders can formulate and know the requirements at the beginning of a project, and once these requirements are identified and defined, they will not change. This static approach does not reflect reality, as requirements can change and new ones can emerge during the project development process or due to stakeholder static, often leading to software that does not meet the stakeholders' needs.

2. Lack of flexibility.
   Another limitation of the model is its rigid sequential approach to project development. For example, after the planning phase, that is, after the requirements are gathered, the stakeholders (customers, users) will not be involved until the deployment phase, that is, until the software is fully finished and delivered. This creates a "tunnel vision" effect, only focusing on the sequential process approach of the model. This rigid approach does not permit feedback between phases, making it very difficult to add new features, fix errors, or make changes once a phase is completed. Moreover, the developers will not know until the software is finished if it fully meets the needs of the stakeholders. In other words, while the software may be technically sound and fully functional, it can still result in unhappy stakeholders if it fails to meet their actual needs.

3. Testing and Defect Detection Issues.
   The waterfall model has a very limited testing approach to software development, as testing only happens in the construction phase, as it is the only phase where the implementation/construction (coding) happens. This approach makes it almost impossible to fix design/architecture errors made during the modeling phase. This often results in the delivery of poor-quality software, and when changes must be made, they are costly and time-consuming, often requiring remodeling of the entire project architecture.

The Ricciardi Adaptive Iteration Model will address the limitation Waterwall model by replacing its rigid sequential approach to software development with a flexible, adaptive, cyclical, and incremental approach that prioritizes continuous stakeholder feedback and adaptation to changes.