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Software Architecture, Security, and Testing - CSCI 360

1 September 2022

A Comparison of Agile and Waterfall Methodologies

Agile method will be the most optimal method of project management in this course. In software programming there are multiple ways for a team to work together in order to complete a project. Two of the most powerful and popular ways to plan development in software programming are Agile method and Waterfall method. There are many options to consider when choosing a method, such as flexibility, legislative requirements, ethical considerations, as well as ease of estimation of time and other resources. Some teams might prefer one method of project management to another based on what kind of project their team is working on. The first way that a team must weigh which method will work for them is in how efficient the particular method will be compared to how stringent the requirements are for the project.

Before a team starts to work on a project, they have to decide whether the requirements, especially the legal requirements, outweigh the need for the more flexible and efficient method. When a team works on software for a government or for a medical organization there are many rigorous constraints. These constraints usually mean that the team will have to use a similarly more rigid methodology. Waterfall method starts with the phase of defining requirements and thus is more suited to the projects that have many legal constraints. It is less flexible than the agile method but with governmental and medical projects the method needs to be less flexible to comply to legal requirements. Now in the vast majority of projects, they will be able to use agile methodology, such as working for a small or large business. In our assignments of making a voicemail system and a ticketing system, the agile methods flexibility and efficiency will by far outperform the waterfalls’ methods ability to comply with legal requirements. Specifically, because the legal requirements for these projects will have much less requirements than that of a governmental or medical organizations project.

The agile method is much more flexible than the waterfall method. Firstly, the agile method can backtrack in a sense to change their requirements in order to either take on more than the initial plan for the project or to manage expectations and prioritize what is truly important about the project. Compared to the waterfall method where there is no returning to the requirements phase, when that phase is complete there is no changing the expectations. In our individual voicemail project, there might be many times where the person working on it will need to change the requirements to include more features, change the features, or cut back on features. All while still keeping the most important part of the project, voicemail capability, intact. In that sense the agile method is much more suited for the projects that will be completed this semester than waterfall method. Although the flexibility of agile makes it more difficult to ascertain when the project will be completed.

The nature of the agile methods flexibility (how requirements could be changed, added, or removed) makes the projects timeline less clear. On the other hand, when in a time crunch that flexibility might be a double-edged sword in which the flexibility can help make a deadline. The waterfall method is very structured and as long as every stage of the process finishes on time than the whole of a project will be delivered on time. In this sense because we, as a team as well as individuals, only have a semester to deliver our projects perhaps the waterfall method outperforms agile in this capacity.

Most importantly is comparing and contrasting agile and waterfall on their effects on our ethical responsibilities. These could be anything from adhering to our legal responsibilities from earlier to thinking about how our projects will affect people who aren’t protected by our legal constraints. In the voicemail project there is no legal requirement to have a text to speech option or a screen for holding video voicemails for hard of hearing and deaf people. If this was a real project, it would be our ethical responsibility to think about how our project would affect people like that. Agiles flexibility means we can go back to its requirements phase in order to add accessibility requirements when the team notices or realizes how our project would affect hard of hearing and deaf people. Meanwhile in waterfall there is no such flexibility. Agile will be the best option for when team members see an ethical issue. As Don Gotterbarn and Keith Miller say, “once you spot an ethical problem, resolving it is straightforward. At other times, it might require extensive deliberation and negotiation to work through.” in their article “Unmasking Your Software’s Ethical Risks.” whether the solution is straight forward but especially if it is not, agile method is the best for the job thanks to its great flexibility.

In conclusion, for the projects due this semester, agile will be the method of choice. Not only does agile have the flexibility that will make the teams work easier it will also allow us to help our ethical responsibilities. Therefore, while waterfall method has its place in projects with many legal responsibilities, agile is better overall especially when ethical risks are identified mid-project.

Works Cited

Gotterbarn, D., and K.W. Miller. “Unmasking Your Software's Ethical Risks.” IEEE Software, vol. 27, no. 1, 2010, pp. 12–13., <https://doi.org/10.1109/ms.2010.23>.

Larman, Craig. “Object-Oriented Analysis and Design.” *Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development*, Prentice Hall Professional Technical Reference, Upper Saddle River, NJ, 2005.