Agile or Waterfall or Hybrid – when to use each

Predictive and Agile methodologies are popular approaches used for developing products or completing engineering projects. Each with its own set of advantages and disadvantages.

Predictive methodology, also known as the **Waterfall** model, is a linear and sequential approach where each project phase must be completed before moving on to the next. This method focuses on planning and design before starting the actual development process – such as building a house or an aircraft. The development of an aircraft is a complex process that requires a significant amount of planning and design before the actual construction can begin. The development team would need extensive research and design a detailed blueprint for the aircraft, outlining every component and system that will be included. This process can take several years to complete, but it ensures that all requirements for the aircraft are met and there is a clear plan and direction for the project.

I joined **Qantas** in 2010 as the lead project manager mid-way through the lead-up to the reconfiguration of the **Boeing 747** fleet. The project required a significant amount of planning and design, just like the development of an aircraft. The aircraft's hardware had to be reconfigured to meet Qantas' specific requirements, and the development team had to conduct extensive research and design a detailed blueprint for the reconfiguration. This process ensured that when the aircraft was pulled from service, it would be on the ground for as short a time as possible and with as low a risk as possible.

Agile methodology, on the other hand, is an iterative and flexible approach where development is done in small, incremental stages. This method emphasizes frequent collaboration and communication between the development team and the customer. An example of Agile methodology would be **developing a software product**, where the development team releases new features and updates in regular sprints. This approach allows for a more responsive development process, where the development team can quickly adapt to new requirements and quickly change market conditions.

I have led the development of multiple Android apps since 2019 as a developer, scrum master, product owner, and program manager. We used an Agile approach to develop these apps, focusing on frequent collaboration and communication between the development team and the customers. We worked in small, incremental stages, releasing new features and updates in regular sprints. This approach allowed us to respond to new requirements and quickly change market conditions quickly.

The **hybrid** methodology is a combination of both Predictive and Agile methodologies. This approach can be helpful when a project requires a clear plan and budget but must also be responsive to change and adapt to new requirements. An example of a project that would benefit from a hybrid approach would be the development of a new **cellphone**. The development of a new cellphone requires a significant amount of planning and design, just like the development of an aircraft. The hardware of the cellphone would follow a predictive approach. The development team would need extensive research and design a detailed blueprint for the cellphone, outlining every component and system that will be included. This process ensures that all requirements for the cellphone hardware are met and that there is a clear plan and direction for the hardware development. On the other hand, the software development of the cellphone would follow an Agile approach, where the development team releases new features and updates in regular sprints. This approach allows for a more responsive development process, where the development team can quickly adapt to new requirements and quickly change market conditions.

I led multiple projects and products at **Nokia** until 2001 when we followed a hybrid approach. The development of a new cellphone required a significant amount of planning and design, similar to the development of an aircraft. The cellphone hardware had to be developed using a predictive approach. The development team had to conduct extensive research and design a detailed blueprint for the cellphone, outlining every component and system that would be included. The process was called the **Nokia Concurrent Engineering (CE) Process**. The software was developed alongside the hardware, with features being developed via a release plan (or release train) in increments, building testing, and reviewing in short iterations of working code.

(*) The numbers in the Case Study are illustrative only and not intended to be accurate.

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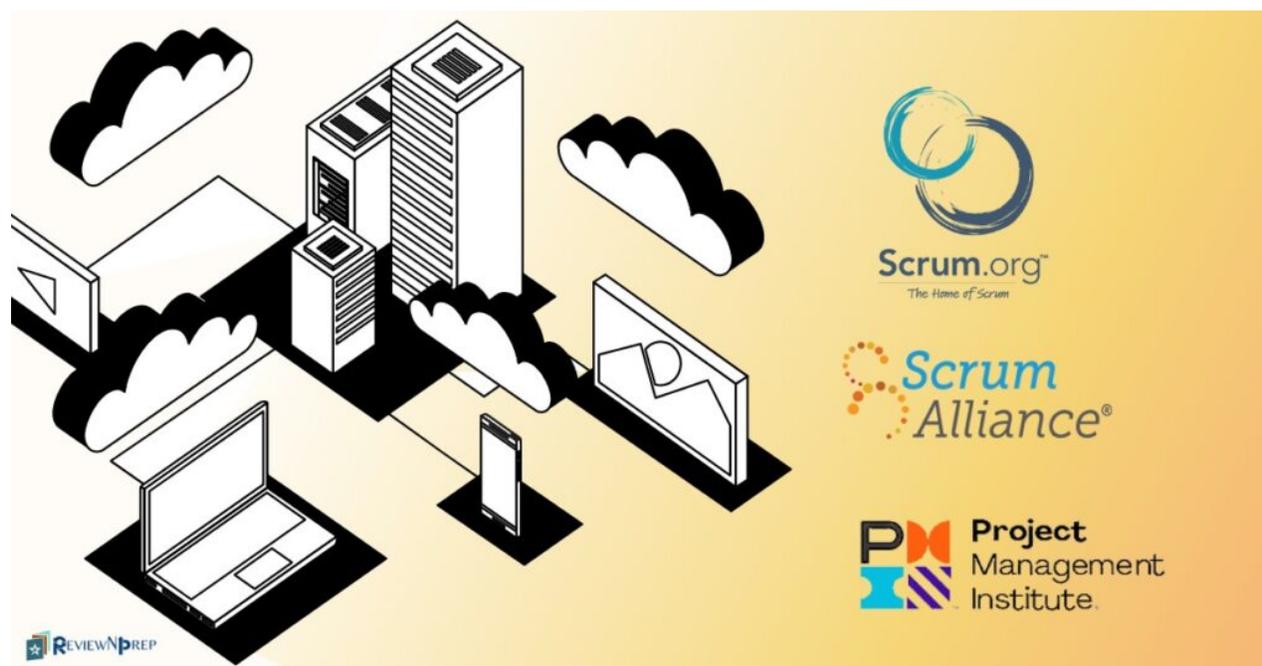
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Pete is a thought leader in applying Agile Program Management methodology as a CEO. He has received recognition for overseeing complicated projects in various sectors. He holds an Engineering Degree, MBA, an Airline Pilot's Licence, and multiple Program Management Certifications, including FAIPM, PSMI I, II, and PMP.

At Skillion, where Pete is the CEO, we pride ourselves on our ability to implement and educate Program Management woven into our customer projects. If you need more than a technical solution managed end to end, don't hesitate to contact us today to learn more.

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