Individual: Comparing Project Management Models

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Traditional Project Methods (TPM), also known as the Waterfall method, focus on moving the project in a linear fashion, in order to evenly organize deliverables and ensure that tasks are completed before moving on to the next phase of the SDC. In Traditional Project Methods, projects follow the six phases of any standard Software Development Life Cycle (SDLC). These six phases are: Planning, where the project is outlined and requirements are gathered; Analysis, where the projects requirements are broken into smaller and easier to manage pieces called units, and where goals called deliverables are set for the project; Design, where the units of each piece of the project are figured out in terms of computer logic and have pseudo-code written for them; Implementation, where the project is coded and developed; Testing and Integration, where each unit is tested (Unit Testing) as well as the connections between units are tested (Systems Testing), and finally users test the program to see how it feels (User Acceptance Testing); and finally Maintenance, where the product is launched, maintained, and updated to resolve issues with emerging technologies or updates to the system.

Agile Methods focus on quick completion times by organizing their development into a series of ‘sprints’ that can be interchanged or adjusted based on need, with each sprint focusing on the completion of a specific section or unit of the project. There are a variety of different Agile methods that are popular in the software development field, but my favorite two are Kanban and Scrum.

Kanban focuses on the allocation of resources during the development cycle and tries to determine where the production slows down or ‘bottlenecks’ and then attempts to reallocate resources to the slower section of the team to make sure that the entire process runs smoothly. If you think of the development cycle as a pipeline, where each phase of the development is another section of the pipe, the bottleneck is the slowest producing piece of the pipeline in this model. If the Analysis and Development teams are producing 10 units a week, and the Testing team is only producing 5 units a week, the Testing team is the bottleneck. This means that management should be reallocating resources from the over-developing teams to make sure that each part of the pipeline produces 8 units a week so work doesn’t pile up on one section or another.

Scrum is kind of like the traditional Agile method, where the development of different units or sections of the project are broken down and developed into quick coding sessions, usually lasting a few weeks, called sprints. These sprints are designed to deliver a specific section of the project at the end of each sprint to show the customer to gain feedback and keep them updated constantly on the projects development. Having the client involved in these sprints is even better, because the team can make quick decisions in the moment about what the client wants and can skip needlessly wasting time on waiting for a response or developing a unit in the wrong way.

During the analysis phase, the Waterfall method relies on detailed project requirements to break down the project into units that can be addressed one by one. The Agile method relies less on detailed requirements, and instead remains flexible to changes in requirements by designing and developing at the same time. While this method may seem less secure, its important to remember that the Agile method is meant to allow flexibility in situations where requirements change, thus speeding up the process of development. During the development phase, the Waterfall method focuses on completing one Unit at a time, one after another. The Agile Method focuses on developing specific sections of the product, and organizes the developments of these sections as ‘sprints’, which allot a specific amount of time to the delivery of a specific section of the project. This makes the Waterfall method more suited for projects where multiple complex components needed to be developed that need to work together, or in parallel with one another, because their design is determined early on and it ensures that those pieces work together. Waterfall methods also do not suffer from the piecemeal effect, where multiple components of the program are developed but do not necessarily fit well together because their design hadn’t already been planned out.

Agile methods also employ the strategy of designing and performing Unit tests while the product is still being developed, instead of having those tests performed after development has already ended, which is how the Waterfall method handles testing. This allows for increased flexibility when issues within Units are found, so that they can be fixed in real time, instead of months later after initial development has been completed.

If we were building a new data center for an international business, I would choose the waterfall method because it lays out the requirements and the design of the project well before development begins. This is necessary with a project like a data center because there are many things that need to be considered when making this data center. A project like this might include things like building plans, large networking structure diagrams, development of different databases, large amounts of hardware resourcing, and development of software for the underlying structures for the data center itself. This would never work using an Agile method, because you can’t just design the building without knowing what needs to go in it, and you can’t develop the back of house software without knowing what hardware it is going to be running on. The waterfall method works best here because it is straightforward and organized, and it solves all the issues that you might encounter during development before even a single brick is laid.

Ultimately, both of these methods have their advantages and disadvantages, with Waterfall being predictable but slow and unresponsive, and Agile being unpredictable but fast and responsive. For businesses who want a product developed reliably within a specific time frame, and who are willing to wait to ensure that every detail is planned out, the Waterfall method is their best choice. For those who need a project developed quickly, and who want consistent feedback and flexibility during the product’s development, the Agile method is their best choice. Either way, both methods are well-documented and are used as industry standards throughout the world for project management.