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DEPARTMENT OF CSE

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Agile methodology

Agile development methodology is the most preferred and efficient one compared to the other methodologies. This is because agile methodology can easily anticipate any changes in the developmental procedures and provide rapid results during the product development cycle.

In the case of conventional software product development methodologies, any software product development will be governed by a set of rules and will generally take several months or even a few years to be completed.

This is especially true when it comes to the traditional waterfall development model, where you don't get to see or test the progress in the software development until the entire product is built.

The traditional development models will usually take a lot of time and effort for various developmental procedures, like requirement analysis, design planning, prototype & product development, testing, and final customer acceptance testing.

But the agile development model works on iterations, which allows rapid testing and implementation of results. Ultimately, it promotes faster project completion and makes the developmental process highly efficient.

Where did Agile Come From?

In 2001, a small group of people, tired of the traditional approach to managing software development projects, designed the agile manifesto. It is a more improved method for managing the progress of software projects.

The agile manifesto has four important values:

- Focus should be more on individuals and interactions instead of processes and tools
- Working software is more important that comprehensive documentation
- Customer collaboration is more vital than contract negotiation
- The process should respond to change rather than follow a plan

There are 12 principles of agile software development:

- Deliver customer satisfaction by delivering valuable software continuously
- Always accept change of requirements matter how early or late in the project
- Deliver software that works within a shorter timescale
- Both developers and business professionals must work closely together daily throughout the duration of the project
- Information is best transferred between parties in face-to-face conversations
- Motivate people to build a project by creating an environment of appreciation, trust, and empowerment
- Working software is the key measure of progress
- The agile process promotes sustainable development

- Continuous attention to excellence and quality in technical development and design boosts the agility
- 10 Simplicity is a vital part of effective agile management
- Self-organized teams produce the best architecture, requirements, and design
- Teams should reflect through inspection and adaption to be more effective

How an agile development methodology works?

Each software product in agile methodology is broken down into several different small processes or iterations. This gives you the liberty to work on different aspects of the software development at the same time.

Each iteration will generally have fixed time duration and depending on the user reviews and the test results, you can improve the product after every iteration.

The entire software product will be split up based on the priority found during the requirement analysis. Rather than launching the product as a whole, its split into a number of releases and in every particular timeline each update is released depending on the user reviews.

Benefits of following an agile development methodology:

- Rapid software development and delivery.
- Transparent development process.
- Continuous customer/user involvement & feedback.

- Reduced software product development timeline.
- Easily anticipate and include changes in any developmental stage.

Types of Agile Development Frameworks

Agile development also has many frameworks in it. All these frameworks follow the same agile philosophy, features, and procedures. But they greatly differ from one another from an implementation point of view. Each framework has its own formula of practices, course of action, terminologies, and more.

A few of the widely recognized frameworks in agile software development methodology includes-

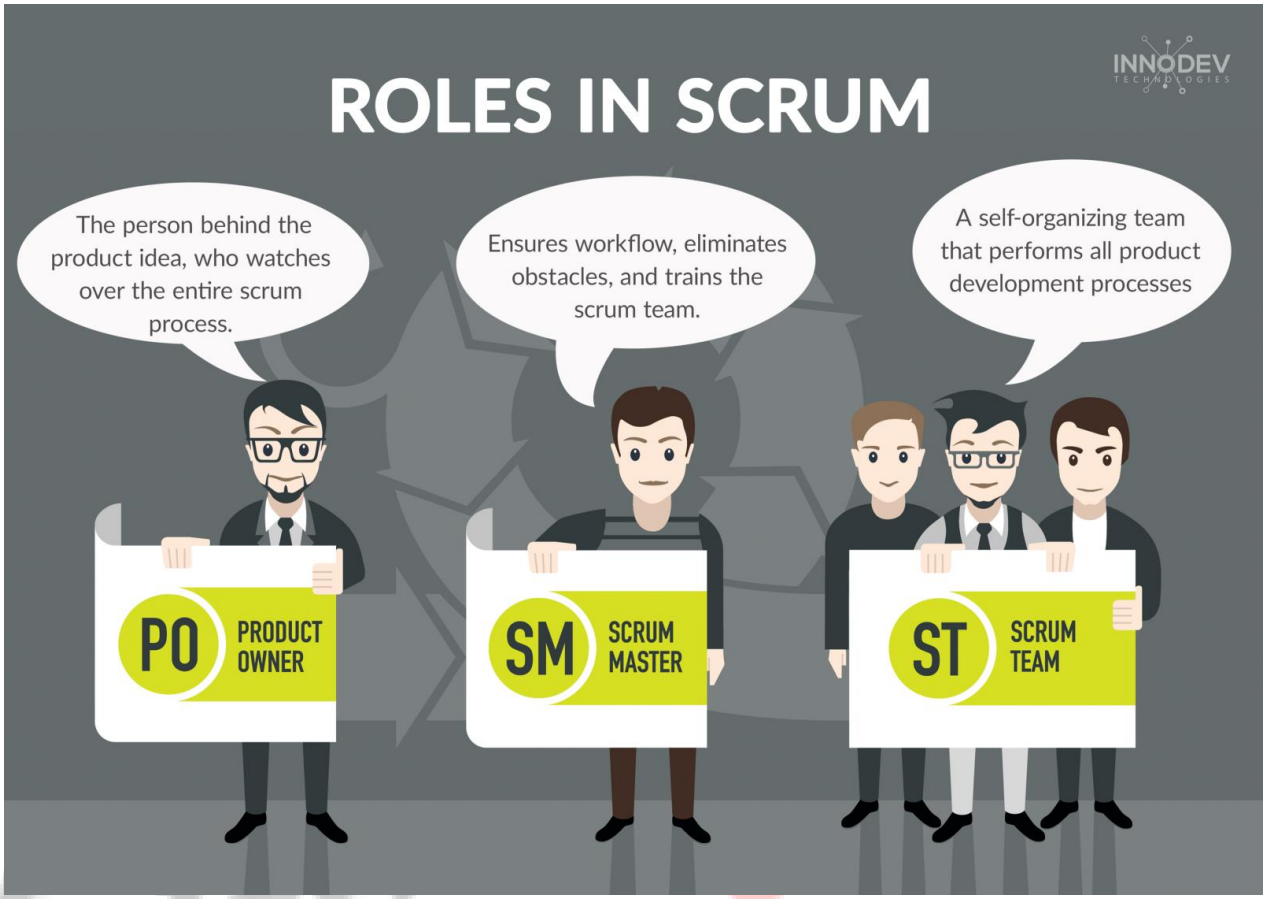
The Scrum and Kanban Frameworks are the most preferred ones because they are the most light-weight frameworks that allow the development team to constantly evolve their development process and focus on delivering the product quickly.

1. Scrum Framework

This framework allows the developers to deal with complex problems in the development process, while continuing to productively deliver high-quality outcomes. It will always help in easy understanding and functioning of complex product development processes.

Scrum is:

Simple framework. Easy-to-understand. Tricky to master



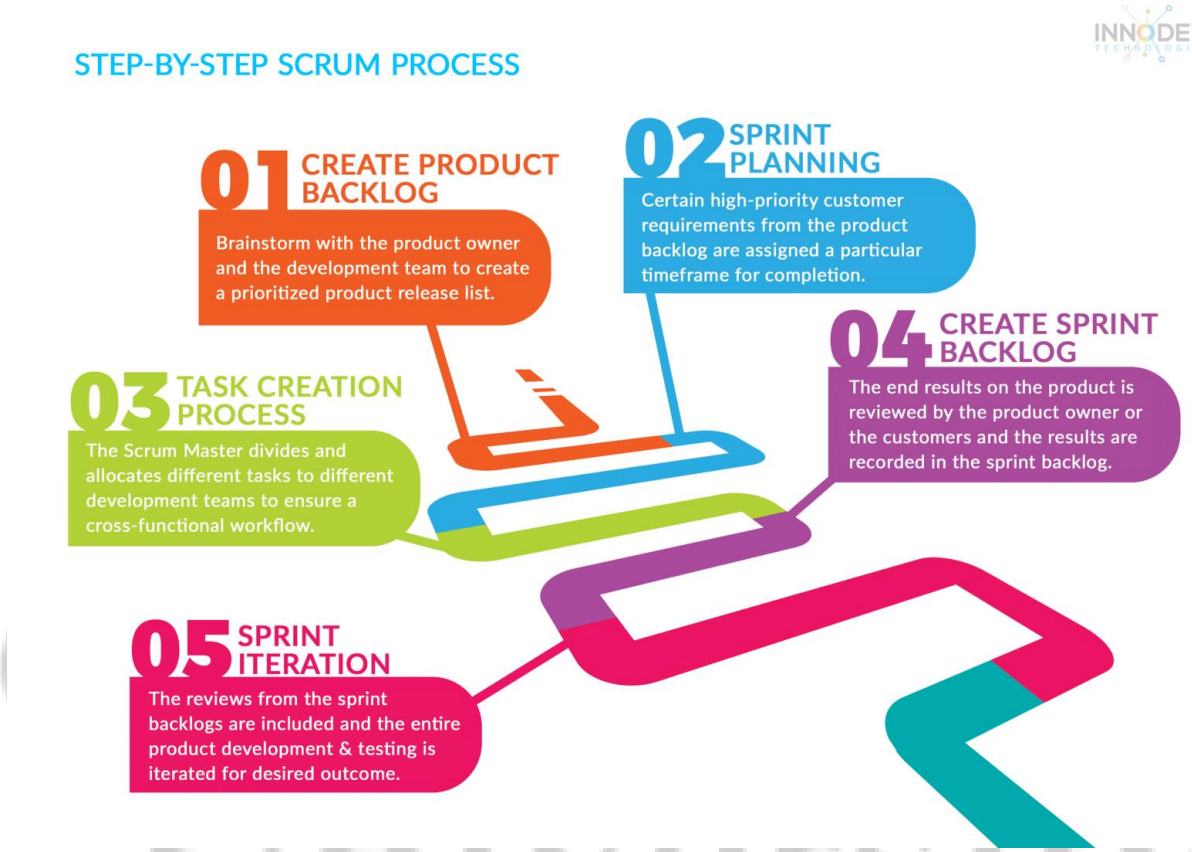
In scrum framework, the user/product owner gets the opportunity to work closely with the product development team and take part in the many functional or process decision makings, like prioritizing the releases, setting timeframes for iterations, and more.

Scrum is based on the empirical process control theory; and it makes use of iterations and continuous feedback evaluations to rapidly build an efficient software product. It follows an incremental product development approach that helps in optimizing the software product and easily accepts changes in the development process.

The 5 values of Scrum framework-

- Commitment to the software product.
- Openness to accept changes.
- Courage to try new development processes.

- Focus on a unified outcome.
- Respect the outcome of each sprint.



2. Kanban Framework

Kanban framework allows the development team to visualize their entire workflow rather than just viewing the outcome of every process. The development process is generally broken down into multiple problems and is managed using a task board. Here the simultaneous workflow is limited, but continuous process improvement is done.
Kanban is:
Lightweight.Trouble-free process. Highly cost-effective

Kanban is generally called as a pull system, where the "**pull**" means a task is pulled into the development process only when there's a space for it in the workflow. In Kanban framework a work-in-progress (WIP) limit is initially set.

A number of development processes will be carried out within the WIP limit and new task will be pulled only when the total processes are less than the WIP limit. It allows transparency in the process followed by each product development team and optimizes the entire workflow.

The 5 values of Kanban Framework –

- Visualize current development process.
- Limited Work-in-progress
- Measured and limited processes.
- Explicit developmental workflow.
- Continuous improvement