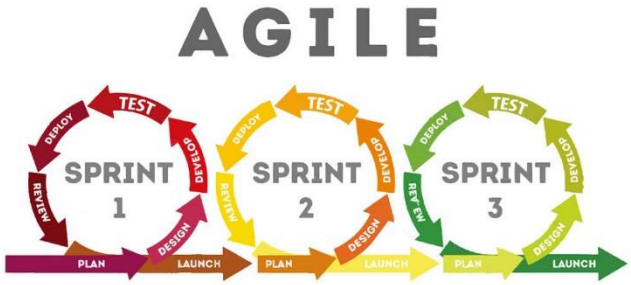
Agile

Agile software development refers to a group of software development methodologies based on iterative development, where requirements and solutions evolve through collaboration between self-organizing cross-functional teams.

Agile methods or Agile processes generally promote a disciplined project management process that encourages frequent inspection and adaptation, a leadership philosophy that encourages teamwork, self-organization and accountability, a set of engineering best practices intended to allow for rapid delivery of high-quality software, and a business approach that aligns development with customer needs and company goals.



Agile Advantages

1.Timely delivery

Agile teams use the Scrum approach. Sprints (of usually 1-4 weeks) allow for scheduled software development.
Agile iterative approach means short periods that deliver the right thing at the right time, where each team builds software incrementally.
Design and testing are done simultaneously with the aim of decreased Time-To-Delivery.

Teams deliver prioritised requirements first while streamlining overall delivery workflows to quicken the entire product development cycle.

2. Predictable costs

Agile methodologies are designed to save costs.
Cost estimating strategies are based on story points, a system that allows developers to predict the budget accurately.
Only that needed is developed, including sprints, MVPs(minimum viable product), and unit testing, so resources and time are not wasted.
Project managers and middlemen are not required to be part of the team, thus saving additional expenses.
Future sprints are based on previous learnings, leading to better planning; therefore, more cost-savings.

3. Transparency

Everything is clearly defined at the outset, so all teams are readily aligned. From inception to deployment, developers and project owners can monitor everything and give regular feedback to the application before and after each sprint to ensure all objectives are met.

All stakeholders are updated through daily reports and tools to keep everyone on the same page. The transparent workflows allow for a controlled and monitored product development cycle. Project constraints and bottlenecks are addressed at early stages to allow for smoother deliveries.

4. Productivity

A team's performance can be measured by various tools and metrics like Lead Time, Cycle Time, Actual vs. Committed Stories, Planned-to-Done Ratios, Failed Deployment, Velocity, Sprint Burndown, etc.

5. Improved quality

Quality is always assured by using Agile methodologies. Because testing is done at every sprint, the code is debugged, errors are corrected, and efficiency is always maintained.
Because of multiple iterations, the team knows what works in every possible scenario.
This gives them the time to perfect the product by the time it's ready to be launched. QA is part of the Scrum team.

6. Customer satisfaction/engagement

The first principle of Agile is customer satisfaction. Its manifesto says, “Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.”
Each sprint should deliver value.

Agile prioritises people over processes, including internal stakeholders and customers who will use the final product/service. Customer feedback is embedded in the process to improve quality continuously.

7. Risk reduction

Risk management is done in practice throughout the product development cycle.
Action plans are created once the risks are identified by the Scrum team.
But the action plans are implemented and monitored continuously due to the default mode of iterations and corrections as well as overall project level.

8. Team collaboration

Through Agile tools and practices, siloes are unlocked so that teams can work together without red tape and unnecessary obstructions.
Daily communication problem-solving is part of Agile teams which are used to develop cross-functional skills and open channels for ideas.
Agile teams are led by Scrum Master and Product Owner. Objectives are clearly defined for each individual and collaborative efforts are solidified by Stand-ups, Product Owner Check-ins, Visual Boards and multiple real-time tools.

9. Adapting to changes quickly

Changes essential to business value are incorporated quickly and collectively, even at later stages of development.
Agile teams understand that it’s a given that requirements will continuously evolve throughout the product development cycle.
Flexibility is a great feature of agile methodologies since it is part of every sprint. As soon as deviations are noticed, a quick response is initiated, and adjustments are made.

10. Business ROI

Business value is always prioritised, along with the first principle of customer satisfaction.
Development teams always have the product backlog to deliver the most functional, intermediate product in-time.
Each iteration requires user feedback, so each sprint delivers value to the final result.
Product Owner is responsible for maximizing the ROI by prioritising and re-prioritising the Product Backlog. Agile methodologies deliver faster and better ROI than traditional methods.

Scrum

1) Implementation of agile

2) Process is broken into small pieces

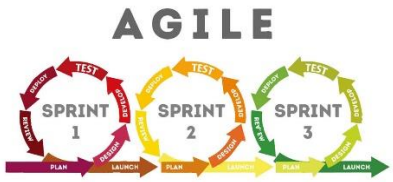
Sprint 1 : Plan -> Build -> Test->Review

Sprint2 : Plan-> Build -> Test-> Review

Sprint3 : Plan ->Build -> Test -> Review

Sprints are incremental releases, project teams keep on working on new sprints till product is released

Sprint usually takes 1 to 3 weeks



Roles

Product Owner : Person responsible for defining features which will be added in the product
the Product Owner provides clarity to the team about a product's vision and goal. All work is derived and prioritized based on the Product Goal in order to deliver value to all stakeholders including those within their organization and all users both inside and out.

1) **Scrum Master :**

helps the Scrum Team:

By coaching the team members in self-management and cross-functionality
Focus on creating high-value Increments that meet the Definition of Done
Influence the removal of impediments to the Scrum Team's progress
Ensure that all Scrum events take place and are positive, productive, and kept within the timebox.

helps the Product Owner:

Find techniques for effective Product Goal definition and Product Backlog management
Provide ways for the Scrum Team to understand the need for clear and concise Product Backlog items
Establish empirical product planning for a complex environment
Facilitate stakeholder collaboration as requested or needed

2) **Team members :** Developers, Testers,QAs etc

Artifacts

Documents used in scrum

Product backlog

1) user stories(features) which will end up in product

2) single source of requirements for any changes to be made to the product.

3) Product backlog is dynamic, evolves as the product evolves

user stories are phrased in below format

Format is in this way **As a** user **i need** this feature so that...

Sprint backlog

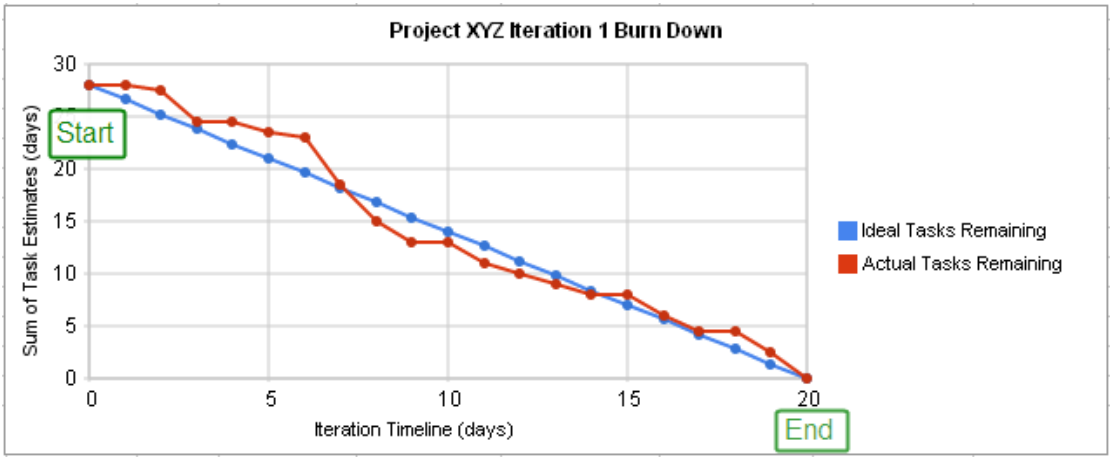
1) High priority user stories come in sprint backlog

2) Estimated for size

3) Work starts on them for next sprint

Burndown charts

A burndown chart or burn down chart is a graphical representation of work left to do versus time.
The outstanding work (or backlog) is often on the vertical axis, with time along the horizontal.
A burn down chart is a run chart of remaining work



Ceremonies

1) Sprint Planning

Sprint Planning initiates the Sprint by laying out the work to be performed for the Sprint. This resulting plan is created by the collaborative work of the entire Scrum Team.

The Product Owner ensures that attendees are prepared to discuss the most important Product Backlog items and how they map to the Product Goal. The Scrum Team may also invite other people to attend Sprint Planning to provide advice.

High Level Design is considered foreg. For software Deveopment
Middle Tier (16 hrs)
User Interface (4 hrs)
Testing (2 hrs)

2) Daily Scrum

A 15-minute event for the Developers of the Scrum Team. To reduce complexity, it is held at the same time and place every working day of the Sprint. If the Product Owner or Scrum Master are actively working on items in the Sprint Backlog, they participate as Developers.

A) brief meeting where it is discussed what is completed since previous meeting

B) What team members are working on

3) Sprint Review

The purpose of the Sprint Review is to inspect the outcome of the Sprint and determine future adaptations. The Scrum Team presents the results of their work to key stakeholders and progress toward the Product Goal is discussed.

Product owner , Scum master, Team will sit together.

Team will demonstrate what has been done in the sprint review

4) Spring Retrospective

The 4Ls stands for Liked, Learned, Lacked and Longed For. It is a simple and popular technique for scrum masters and their team to highlight the positives (liked and learned), as well as the negative (lacked and longed for) from both a factual and emotional perspective

Loved	Learned	Lacked	Longed For
Amresh helped me in fixing issue Sampath		Deployment issues, deployment server was slow Rahul	

5) Product Backlog Refinement

Product Backlog refinement is the act of breaking down and further defining Product Backlog items into smaller more precise items

Definition of Ready

The criteria your user stories must meet before development can start, to ensure they deliver value quickly.

- clear
- concise
- realistic

Definition of Done

Code is peer-reviewed

Code is deployed to test environment

Passed functional Testing

Passed non functional Testing

Test Code Coverage on new code should be greater than 75%

Code is documented

Deployed

Signed Off by stakeholders

Kanban

Kanban is a workflow management method that helps organizations manage and improve work systems. Learn how to visualize work and improve efficiency with Kanbann

It helps you visualize work, maximize efficiency, and improve continuously. Work is represented on Kanban boards, allowing you to optimize work delivery across multiple teams and handle even the most complex projects in a single environment