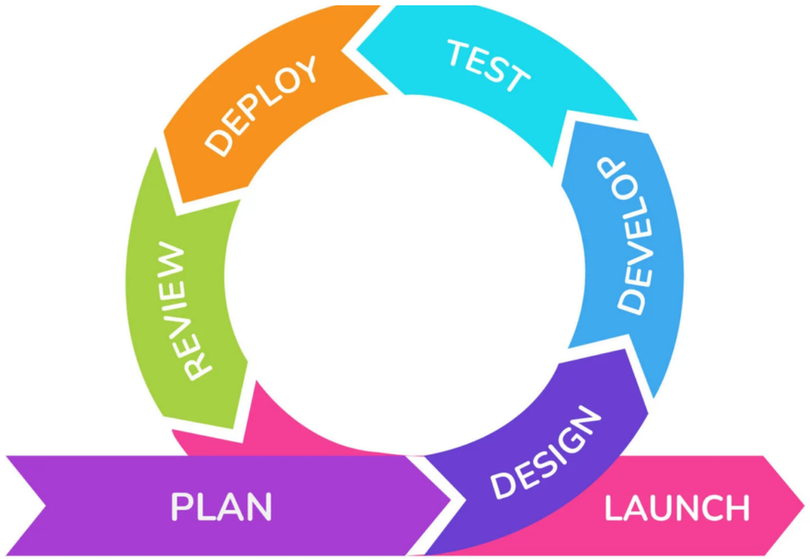
Agile Methodology



Agile methodology is a project management and product development approach that prioritizes flexibility, collaboration, and customer satisfaction. It originated as a response to the shortcomings of traditional project management methodologies, which often struggled to adapt to changing requirements and deliver products that truly met customer needs. Agile emphasizes iterative development, continuous feedback, and the ability to respond quickly to changes.

Scrum:

- Product Owner: Represents the customer and sets the product backlog priorities.
- Scrum Master: Facilitates the Scrum process and helps the team overcome obstacles.
- Development Team: Cross-functional, self-organizing group responsible for delivering the product.

Artifacts:

- Product Backlog: A prioritized list of features and enhancements.
- Sprint Backlog: A subset of the product backlog selected for a specific sprint.
- Increment: The product's new features or improvements developed during a sprint.

Events:

- Sprint Planning: Decides what can be accomplished during the sprint.
- Daily Stand-up: Daily progress updates among team members.
- Sprint Review: Demonstration and inspection of the increment.
- Sprint Retrospective: Reflection on the team's performance and improvement opportunities.

Kanban

- Visual Boards: Work items move across a visual board (columns representing different stages of the process) from "To Do" to "Done."
- Work in Progress (WIP) Limits: Controls the number of tasks in each stage, preventing overloading and improving flow.
- Continuous Delivery: Promotes a steady and continuous flow of work, delivering small, incremental improvements.

Extreme Programming (XP):

- Customer Involvement: Regular interaction between developers and customers.
- Pair Programming: Two developers work together at one workstation.
- Test-Driven Development (TDD): Writing tests before the code is developed.
- Continuous Integration: Frequent integration of code changes to the main branch.

Agile Practices:

- **Iterative and Incremental Development:**

  Development is broken into small iterations, each producing a potentially shippable product increment.
- **User Stories:**

  Descriptions of desired functionality from an end-user perspective.
- **Prioritization:**

  Constantly reassessing and reprioritizing the backlog based on customer feedback and changing requirements.
- **Cross-functional Teams:**

1. Teams with diverse skills that can collectively handle various aspects of development.
2. Continuous Integration and Continuous Delivery (CI/CD):
3. Regularly integrating code changes and ensuring automated testing for faster and more reliable releases.

- **Retrospectives:**
  Regularly reflecting on the team's performance to identify areas for improvement.

Benefits of Agile Methodology

- **Flexibility:**
  Easily adapts to changing requirements.
- **Customer Satisfaction:**
  Regular feedback from customers ensures that the product aligns with their needs.
- **Faster Time-to-Market:**
  Delivering smaller increments allows for quicker releases.
- **Improved Collaboration:**
  Emphasis on communication and teamwork fosters a collaborative environment.
- **Higher Quality:**
  Continuous testing and integration lead to a more robust and reliable product.