

# Agile Methodology

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## What is Agile

Agile is a Project Management and software development approach that aims to be more effective.

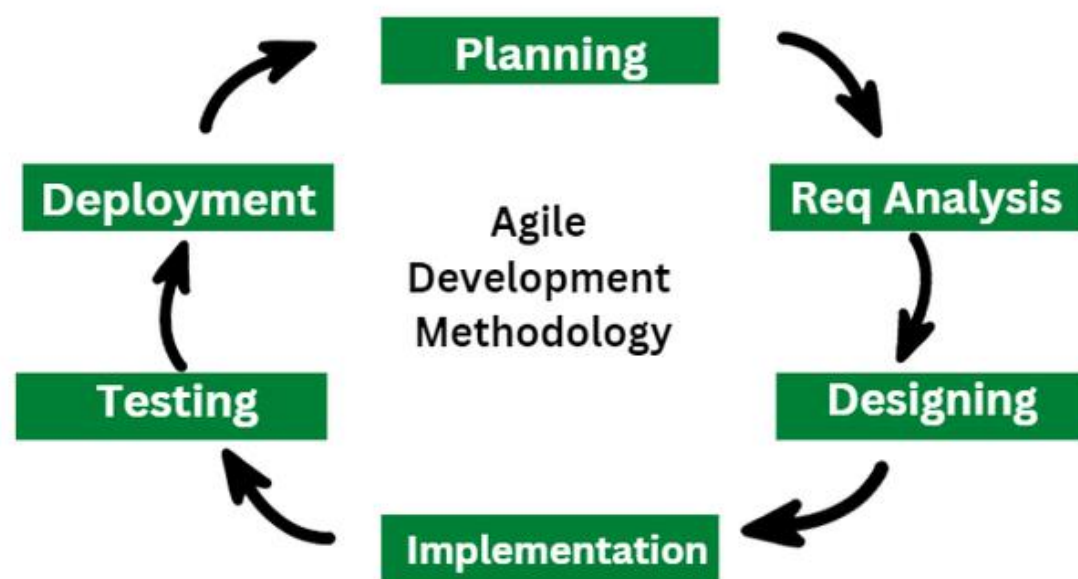
1. It focuses on delivering smaller pieces of work regularly instead of one big launch.
2. This allows teams to adapt to changes quickly and provide customer value faster.

## What is the Agile Methodology

Agile Methodology is a way to manage projects by breaking them into smaller parts. It focuses on working together and making constant improvements. Teams plan, work on the project, and then review how things are going in a repeating cycle.

- They prioritize flexibility, collaboration, and customer satisfaction.
- Major companies like Facebook, Google, and Amazon use Agile because of its adaptability and customer-focused approach.

## Life Cycle of Agile Methodology



## **1. Requirement Gathering**

- In this stage, the project team identifies and documents the needs and expectations of various stakeholders, including clients, users, and subject matter experts.
- It involves defining the Project Scope, objectives, and requirements.
- Establishing a budget and schedule.
- Creating a project plan and allocating resources.

## **2. Design**

- Developing a high-level system architecture.
- Creating detailed specifications, which include data structures, algorithms, and interfaces.
- Planning for the software's user interface.

## **3. Development (Coding)**

- Writing the actual code for the software.
- Conducting unit testing to verify the functionality of individual components.

## **4. Testing**

This phase involves several types of testing:

- Integration Testing: Ensuring that different components work together.
- System Testing: Testing the entire system as a whole.
- User Acceptance Testing: Confirming that the software meets user requirements.
- Performance Testing: Assessing the system's speed, scalability, and stability.

## **5. Deployment**

- Deploying the software to a production environment.
- Put the software into the real world where people can use it.
- Make sure it works smoothly in the real world.
- Providing training and support for end-users.

## **6. Review (Maintenance)**

- Addressing and resolving any issues that may arise after deployment.
- Releasing updates and patches to enhance the software and address problems.

## Benefits of Agile development methodology

- **Flexibility and Adaptability:** Agile can quickly adapt to changes, allowing teams to respond to new customer needs and market conditions.
- **Improved Collaboration:** Agile encourages constant communication between developers and stakeholders, ensuring the product meets user expectations.
- **Faster Delivery:** Agile ensures quicker releases, keeping customers engaged and their feedback incorporated early.

## Types of Agile Methodologies

### 1. Scrum

- **Focus:** Iterative development in sprints (2–4 weeks)
- **Key Roles:** Product Owner, Scrum Master, Development Team
- **Artifacts:** Product Backlog, Sprint Backlog, Burndown Chart

### 2. Kanban

- **Focus:** Continuous delivery, visual workflow using a Kanban board
- **Key Principles:** Visualize work, limit WIP (Work in Progress), manage flow

### 3. Extreme Programming (XP)

- **Focus:** High-quality software with frequent releases
- **Practices:** Pair programming, TDD (Test-Driven Development), Continuous Integration

### 4. Lean Software Development

- **Focus:** Eliminate waste, maximize value
- **Inspired by:** Toyota Production System

## Popular Agile Tools

Tool Name	Purpose	Common Use Case
Jira	Issue & project tracking	Scrum & Kanban boards, backlog grooming
Trello	Visual task management	Kanban-style workflow boards
Asana	Project & task tracking	Sprint planning, task assignment
Azure DevOps	DevOps and Agile lifecycle	CI/CD, boards, repos, test plans
GitLab	CI/CD and DevOps	Issue boards, Agile planning