Agile Methodology

Agile methodology is a project management and software development approach that emphasizes flexibility, collaboration, rapid delivery, and continuous improvement. Originally developed for software projects, Agile has now been adopted across various industries due to its adaptive nature. It stands in contrast to traditional models like the Waterfall method, which follow a rigid, sequential process. Agile promotes delivering small, functional parts of a product in short cycles, allowing teams to quickly adapt to change and provide ongoing value to customers.

Agile Principles

Agile is based on the **Agile Manifesto**, which outlines **four core values** and **12 guiding principles**.

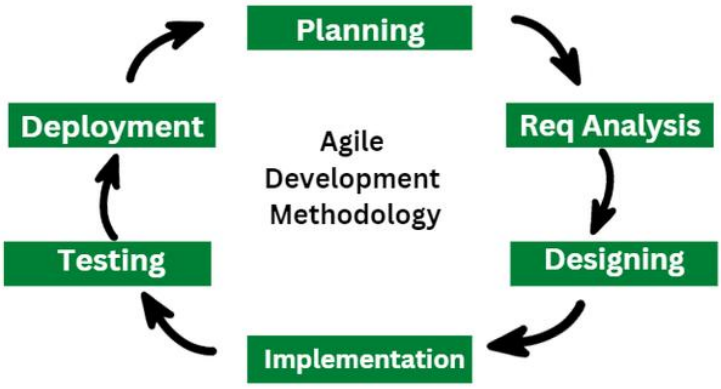
Core Values:

1. **Individuals and interactions** over processes and tools
2. **Working software** over comprehensive documentation
3. **Customer collaboration** over contract negotiation
4. **Responding to change** over following a plan

Agile Life Cycle

The **Agile Life Cycle** consists of several key phases. Unlike traditional methods, these phases are often repeated in cycles (called iterations or sprints).

1. **Concept/Initiation**: Define goals, business value, and project scope
2. **Planning**: Create the product backlog, prioritize features, and estimate effort
3. **Design**: High-level architecture is decided; more detailed design happens during sprints
4. **Iteration/Sprint Execution**: Development is carried out in time-boxed iterations
5. **Testing**: Testing is continuous and happens during each iteration
6. **Release**: Functional increments are delivered to the customer
7. **Review and Feedback**: Teams review the sprint, collect feedback, and improve
8. **Maintenance**: Post-release support, updates, and bug fixes



Types of Agile Methodologies

Agile includes several different frameworks and methodologies. Here are some of the most popular ones:

1. Scrum

- Uses short time-boxed iterations called **sprints** (usually 2–4 weeks)
- Roles: **Product Owner**, **Scrum Master**, and **Development Team**
- Uses artifacts like the **Product Backlog** and **Sprint Backlog**
- Includes daily **stand-up meetings** and regular **Sprint Reviews**

2. Kanban

- Focuses on **visualizing work** and **limiting work in progress**
- Uses a **Kanban board** with columns like "To Do," "In Progress," and "Done"
- Emphasizes continuous flow and efficiency

3. Extreme Programming (XP)

- Focuses on technical excellence and frequent releases
- Key practices include **pair programming**, **test-driven development (TDD)**, and **continuous integration**

4. Lean

- Originated from manufacturing
- Focuses on eliminating waste, optimizing the whole, and delivering fast

5. Crystal

- A family of Agile methods tailored by team size and criticality
- Prioritizes people, interaction, and skills over processes and tools