

Agile Methodology and Scrum

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Before Agile: Traditional Methods

- ▶ Software development was managed like construction projects
- ▶ Heavy upfront planning and documentation
- ▶ The Waterfall Model: Requirements → Design → Implementation → Testing → Deployment
- ▶ Changes were expensive and difficult once development started

Problems with Traditional Methods

- ▶ Inflexible to changing requirements
- ▶ Late discovery of critical issues (during testing phase)
- ▶ Miscommunication between business and developers
- ▶ Slow delivery cycles (projects often took years)
- ▶ Low customer satisfaction

Why Agile Was Created

- ▶ In 2001, 17 software leaders met in Utah
- ▶ They published the **Agile Manifesto**
- ▶ Goal: Respond better to change, deliver faster, and work more closely with customers
- ▶ Shift focus from heavy processes to **working software and collaboration**

What is Agile?

- ▶ Agile is an iterative approach to project management and software development.
- ▶ Focuses on:
 - ▶ Customer collaboration
 - ▶ Flexibility to change
 - ▶ Working software over documentation
 - ▶ Individuals and interactions over processes
- ▶ Agile Manifesto published in 2001

12 Principles of Agile

- ▶ Satisfy the customer through early and continuous delivery
- ▶ Welcome changing requirements
- ▶ Deliver working software frequently
- ▶ Business and developers must work together daily
- ▶ Build projects around motivated individuals
- ▶ Face-to-face communication is best
- ▶ Working software is the primary measure of progress
- ▶ Maintain a sustainable pace
- ▶ Continuous attention to technical excellence
- ▶ Simplicity—the art of maximizing work not done—is essential
- ▶ Self-organizing teams
- ▶ Reflect regularly to become more effective

What is Scrum?

- ▶ Scrum is a popular Agile framework
- ▶ Emphasizes teamwork, accountability, and iterative progress
- ▶ Based on fixed-length iterations called **Sprints**
- ▶ Involves regular planning, stand-ups, reviews, and retrospectives

Scrum Roles

- ▶ **Product Owner:** Manages the backlog, defines user stories
- ▶ **Scrum Master:** Facilitates Scrum, removes impediments
- ▶ **Development Team:** Builds and delivers the product

Scrum Events (Ceremonies)

- ▶ **Sprint:** 1-4 week development cycle
- ▶ **Sprint Planning:** Define goals and backlog items
- ▶ **Daily Stand-up:** 15-min check-in on progress
- ▶ **Sprint Review:** Demonstrate the product increment
- ▶ **Sprint Retrospective:** Team reflection and improvement

Scrum Artifacts

- ▶ **Product Backlog:** Ordered list of features and fixes
- ▶ **Sprint Backlog:** Subset of backlog selected for the sprint
- ▶ **Increment:** Working software delivered each sprint
- ▶ **Burndown Chart:** Visual progress tracker

Agile vs Waterfall

- ▶ **Waterfall:** Linear, sequential, upfront planning
- ▶ **Agile:** Iterative, flexible, adaptive to change
- ▶ Agile delivers value faster and responds to customer feedback

Benefits of Agile

- ▶ Faster time to market
- ▶ Improved collaboration
- ▶ Higher quality products
- ▶ Better customer satisfaction
- ▶ Continuous improvement

Conclusion

- ▶ Agile and Scrum promote adaptability, collaboration, and efficiency
- ▶ Scrum structures Agile into actionable practices
- ▶ Widely used across industries

"Agile is not a destination, it's a mindset."