

Unit 5

- Agile Principles
- Agile Methodologies
- Relationship between Agile & Scrum
- Lean
- DevOps
- IT Service Management

Agile Values & Principles

- The Four Values of The Agile Manifesto
- The Agile Manifesto is comprised of four foundational values and 12 supporting principles which lead the Agile approach to software development.
- Each Agile methodology applies the four values in different ways, but all of them rely on them to guide the development and delivery of high-quality, working software.

Agile Values and Principles

- **1. Individuals and Interactions Over Processes and Tools**

The first value in the Agile Manifesto is “Individuals and interactions over processes and tools.” Valuing people more highly than processes or tools is easy to understand because it is the people who respond to business needs and drive the development process. If the process or the tools drive development, the team is less responsive to change and less likely to meet customer needs. Communication is an example of the difference between valuing individuals versus process. In the case of individuals, communication is fluid and happens when a need arises. In the case of process, communication is scheduled and requires specific content.

Agile Values and Principles

- **2. Working Software Over Comprehensive Documentation**
Historically, enormous amounts of time were spent on documenting the product for development and ultimate delivery. Technical specifications, technical requirements, technical prospectus, interface design documents, test plans, documentation plans, and approvals required for each.
- The list was extensive and was a cause for the long delays in development. Agile does not eliminate documentation, but it streamlines it in a form that gives the developer what is needed to do the work without getting bogged down in minutiae.
- Agile documents requirements as user stories, which are sufficient for a software developer to begin the task of building a new function.
The Agile Manifesto values documentation, but it values working software more.

Agile Values and Principles

- **3. Customer Collaboration Over Contract Negotiation**
Negotiation is the period when the customer and the product manager work out the details of a delivery, with points along the way where the details may be renegotiated. Collaboration is a different creature entirely.
- With development models such as Waterfall, customers negotiate the requirements for the product, often in great detail, prior to any work starting. This meant the customer was involved in the process of development before development began and after it was completed, but not during the process.
- The Agile Manifesto describes a customer who is engaged and collaborates throughout the development process, making. This makes it far easier for development to meet their needs of the customer. Agile methods may include the customer at intervals for periodic demos, but a project could just as easily have an end-user as a daily part of the team and attending all meetings, ensuring the product meets the business needs of the customer.

Agile Values and Principles

- **4. Responding to Change Over Following a Plan**
Traditional software development regarded change as an expense, so it was to be avoided.
- The intention was to develop detailed, elaborate plans, with a defined set of features and with everything, generally, having as high a priority as everything else, and with a large number of many dependencies on delivering in a certain order so that the team can work on the next piece of the puzzle.
- With Agile, the shortness of an iteration means priorities can be shifted from iteration to iteration and new features can be added into the next iteration. Agile's view is that changes always improve a project; changes provide additional value.

Agile Values and Principles

- The Twelve Agile Manifesto Principles
- The Twelve Principles are the guiding principles for the methodologies that are included under the title “The Agile Movement.”
- They describe a culture in which change is welcome, and the customer is the focus of the work. They also demonstrate the movement’s intent as described by Alistair C, one of the signatories to the Agile Manifesto, which is to bring development into alignment with business needs.
- The twelve principles of agile development include:

Agile Values and Principles

- **Customer satisfaction through early and continuous software delivery** – Customers are happier when they receive working software at regular intervals, rather than waiting extended periods of time between releases.
- **Accommodate changing requirements throughout the development process** – The ability to avoid delays when a requirement or feature request changes.
- **Frequent delivery of working software** – Scrum accommodates this principle since the team operates in software sprints or iterations that ensure regular delivery of working software.
- **Collaboration between the business stakeholders and developers throughout the project** – Better decisions are made when the business and technical team are aligned.
- **Support, trust, and motivate the people involved** – Motivated teams are more likely to deliver their best work than unhappy teams.
- **Enable face-to-face interactions** – Communication is more successful when development teams are co-located.

Agile Values and Principles

- **Working software is the primary measure of progress** – Delivering functional software to the customer is the ultimate factor that measures progress.
- **Agile processes to support a consistent development pace** – Teams establish a repeatable and maintainable speed at which they can deliver working software, and they repeat it with each release.
- **Attention to technical detail and design enhances agility** – The right skills and good design ensures the team can maintain the pace, constantly improve the product, and sustain change.
- **Simplicity** – Develop just enough to get the job done for right now.
- **Self-organizing teams encourage great architectures, requirements, and designs** – Skilled and motivated team members who have decision-making power, take ownership, communicate regularly with other team members, and share ideas that deliver quality products.
- **Regular reflections on how to become more effective** – Self-improvement, process improvement, advancing skills, and techniques help team members work more efficiently.

Agile Methodologies

Toyota working model :

- Error prevention to eliminate mistake
- Stop production where action is required
- Identify and learn
- JIT
- Voice areas of improvement
- Understand the working environment
- Business information to be shared openly
- Kanban
- Actions and process must be transparent

Agile Methodologies

- Kanban for software teams:
- Agile software development teams today are able to leverage these same JIT principles by matching the amount of work in progress (WIP) to the team's capacity. This gives teams more flexible planning options, faster output, clearer focus, and transparency throughout the development cycle.
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Agile Methodologies

- According to Kanban practices, big changes at the beginning of any process are discouraged. When you do begin to make changes, be sure to do so gradually to ensure your team is comfortable with the new process.
- Kanban principles also encourage team members to understand and respect everyone's role within the organization. This means knowing everyone's job title and understanding what that role entails. Kanban encourages collaboration when it comes to identifying any changes that are needed.
- Kanban also encourages equal contributions from all team members when it comes to offering ideas. Even entry-level employees can provide useful input that can help to improve overall efficiency.

Agile Methodologies

- Kanban boards
- The work of all kanban teams revolves around a kanban board, a tool used to visualize work and optimize the flow of the work among the team.
- virtual boards are a crucial feature in any agile software development tool for their traceability, easier collaboration, and accessibility from multiple locations.

Agile Methodologies

- A basic kanban board has a three-step workflow: To Do, In Progress, and Done.
- The kanban methodology relies upon full transparency of work and real-time communication of capacity

Agile Methodologies



Agile Methodologies

- Lean : Lean is both a philosophy and a discipline which, at its core, increases access to information to ensure responsible decision making in the service of creating customer value.
- originally sprouted in Japan at Toyota Production System
- Lean methodology originated in the Japanese automobile industry in the late 1940s and 1950s, specifically at Toyota Motor Corporation.
- It was developed to respond to the inefficiencies and waste of traditional mass production methods. The goal of Lean was to eliminate waste and improve quality and efficiency.

Agile Methodologies

- 5 core principles:
- Value: Understand what customers value in a product or service
- Value Stream: What goes into maximizing value and eliminating waste throughout the entire process from design to production
- Flow: All product processes flow and synchronizes seamlessly with each other
- Pull: Flow is made possible by “pull,” or the idea that nothing is made before it is needed, thereby creating shorter delivery cycles
- Perfection: Relentlessly pursue perfection by constantly engaging the problem-solving process

Agile Methodologies

- Another key to lean is its definition of waste, of which there are eight types:
- Motion: Unnecessary movement of people or processes (equipment and manufacturing machinery, for example). Repetitive movements that do not add value translates to wasted time and resources.
- Over-processing: Doing unnecessary processes or steps than what is required to create a valuable product.
- Extra-processing: Products require more work or quality than necessary to deliver value to the customer.

Agile Methodologies

- Defects: Manufacturing processes create defective products — which becomes wasted materials.
- Transport: Like motion, but over greater distances to include the transport of tools, inventory, people, or products further than necessary.
- Human Potential: Underused skills and talent due to poor employee management and team structure lead to a lack of morale and productivity.
- Waiting: Idle equipment and waiting on materials or equipment can slow down processes and efficiency.
- Inventory: Excessive products and inventory take up space, reveal overproduction, and create backwork.

Agile Methodologies

- Pillars of Lean Methodology
- Elimination of waste: The aim is to eliminate anything that does not add value to the customer.
- Continuous improvement: Lean methodology stresses the importance of continuous improvement and encourages individuals to look for ways to improve processes constantly.
- Respect for people: Lean recognizes people's importance and ability to contribute to continuous improvement.
- Focus on the customer: Lean methodology places the customer at the center of everything and focuses on delivering value to the customer.
- Continuous flow: Lean aims to create a smooth and uninterrupted flow of work, from the customer's order to the delivery of the final product.
- Pull-based production: Lean methodology is based on "pull-based" production, where work is only started when there is customer demand.