Coding Bootcamp

Agile

Kanban Method

Learning Objectives

By the end of this lesson, you will be able to:

- Develop a detailed plan for implementing Kanban practices in a specific team or project
- Apply Kanban practices to manage and optimize the workflow of a project
- Analyze Kanban metrics such as lead time, cycle time, and throughput to evaluate the efficiency of the workflow
- Evaluate the features and usability of SwiftKanban as a tool for implementing Kanban practices

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Introduction to Kanban

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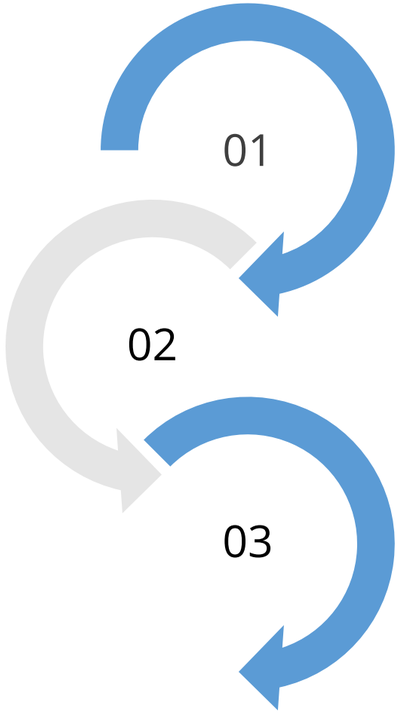
What Is Kanban?

Kanban is an Agile methodology that manages the creation of products with an emphasis on continuous delivery without overburdening the developers.

It is a visual workflow management method used to optimize and manage tasks and processes.

Why Use Kanban?

It encourages continuous improvement, making processes streamlined and predictable across various industries.



Kanban optimizes workflow by enhancing flow, efficiency, and predictability.

Kanban’s adaptable framework supports effective resource allocation and timely delivery, suitable for any professional context.

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Kanban Practices

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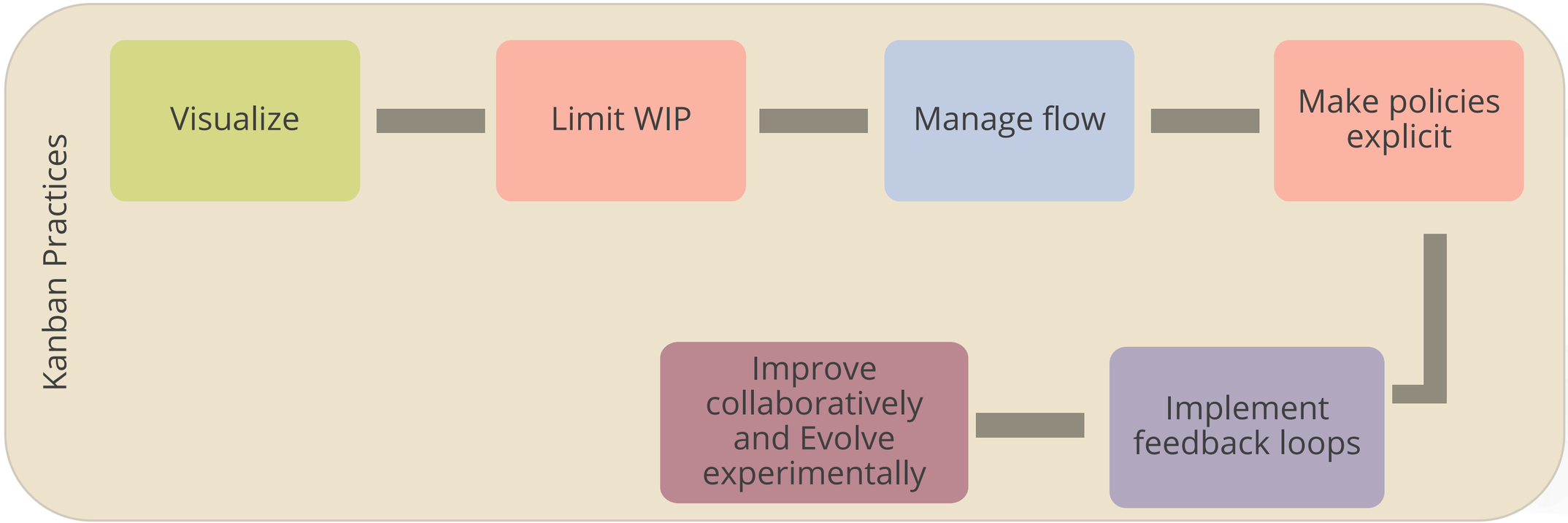
Kanban Practices

The Kanban method recommends a series of principles and practices that must be followed to manage and improve workflow. The core practices of Kanban are listed below:



Kanban Practices: Visualize

- Visualize
- Limit WIP
- Manage flow
- Make policies explicit
- Implement feedback loops
- Improve collaboratively and Evolve experimentally

It involves creating a visual representation of all tasks within the process. This is usually accomplished using a Kanban board, where each column represents a different stage of the workflow.

Example

A software developer uses a Kanban board with columns like **backlog**, **design**, **development**, **testing**, and **done** to visually track each task's progress through stages.

Kanban Practices: Limit WIP

- Visualize
- **Limit WIP**
- Manage flow
- Make policies explicit
- Implement feedback loops
- Improve collaboratively and Evolve experimentally

It involves setting maximum limits on the number of tasks in any given stage of the workflow at one time. This helps prevent bottlenecks, reduces context switching, and ensures a steady flow of work.

Example

To prevent bottlenecks, the team limits the **development** column to three tasks, ensuring developers focus on completing current features before starting new ones.

Kanban Practices: Manage Flow

- Visualize
- Limit WIP
- **Manage flow**
- Make policies explicit
- Implement feedback loops
- Improve collaboratively and Evolve experimentally

It focuses on the movement of tasks through the workflow. It involves identifying where bottlenecks occur and making adjustments to improve the smoothness and speed of the workflow.

Example

Noticing tasks pile up in the **review** stage, the team reallocates resources and schedules additional review sessions to maintain a steady flow towards **testing**.

Kanban Practices: Make Policies Explicit

- Visualize
- Limit WIP
- Manage flow
- **Make policies explicit**
- Implement feedback loops
- Improve collaboratively and Evolve experimentally

It involves clearly defining and communicating the rules and guidelines that govern the workflow. This ensures that everyone understands how to work within the system.

Example

The team documents clear criteria for moving tasks from **development** to **review**, and from **review** to **testing**, ensuring everyone understands the transition requirements.

Kanban Practices: Implement Feedback Loops

- Visualize
- Limit WIP
- Manage flow
- Make policies explicit
- Implement feedback loops
- Improve collaboratively and Evolve experimentally

These are scheduled sessions where teams reflect on their workflow, discuss improvements, and make necessary adjustments. Common formats include daily stand-ups, periodic reviews, and retrospective meetings.

Example

Daily stand-up meetings help the team quickly address any issues in the **review** and **testing** stages, allowing for rapid adjustments and continual progress.

Kanban Practices: Improve Collaboratively and Evolve Experimentally

- Visualize
- Limit WIP
- Manage flow
- Make policies explicit
- Implement feedback loops
- Improve collaboratively and Evolve experimentally

These Kanban practices engage teams in joint problem-solving to enhance workflows and encourage testing changes on a small scale to ensure effectiveness before full implementation.

Example

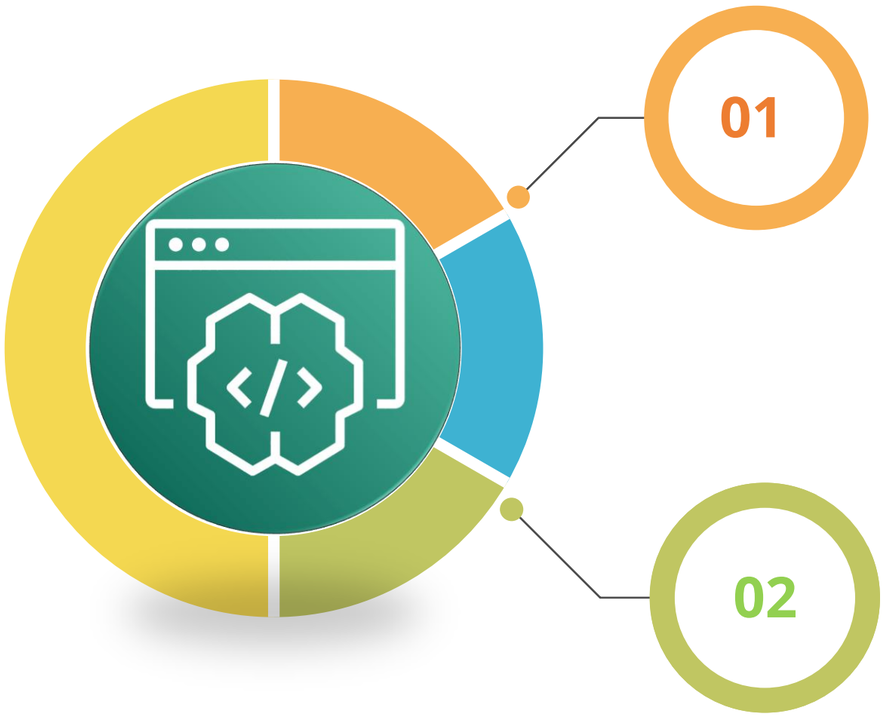
After a retrospective, the team collaboratively decides to experiment with pair programming in the **development** stage to potentially reduce time in **review** and **testing**.

Use Case: Limiting WIP at Spotify

Use Case: Challenge

Spotify, a leading music streaming service, experienced frequent project delays and quality issues due to overloading team members with too many concurrent tasks. This led to significant inefficiencies and a high defect rate in deliverables.

Use Case: Strategy



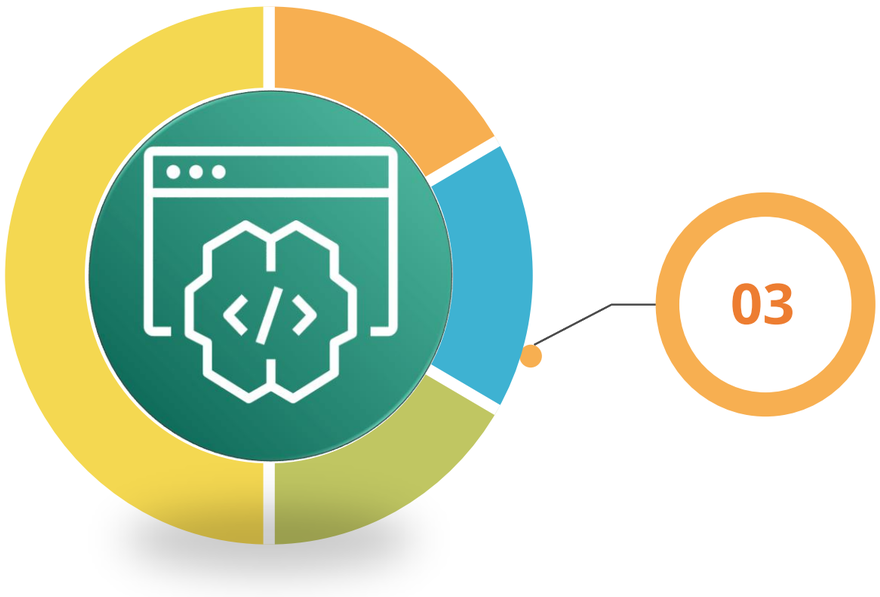
Assessment Phase:

1. Conducted a workflow analysis to identify bottlenecks and inefficiencies
2. Discovered that multiple tasks were being worked on simultaneously, causing frequent context switching

Setting WIP Limits:

1. Introduced WIP limits on the Kanban board:
   - Maximum of 3 tasks per developer at any time.
   - Maximum of 2 tasks in the testing phase simultaneously.
2. Ensured team buy-in through workshops and discussions

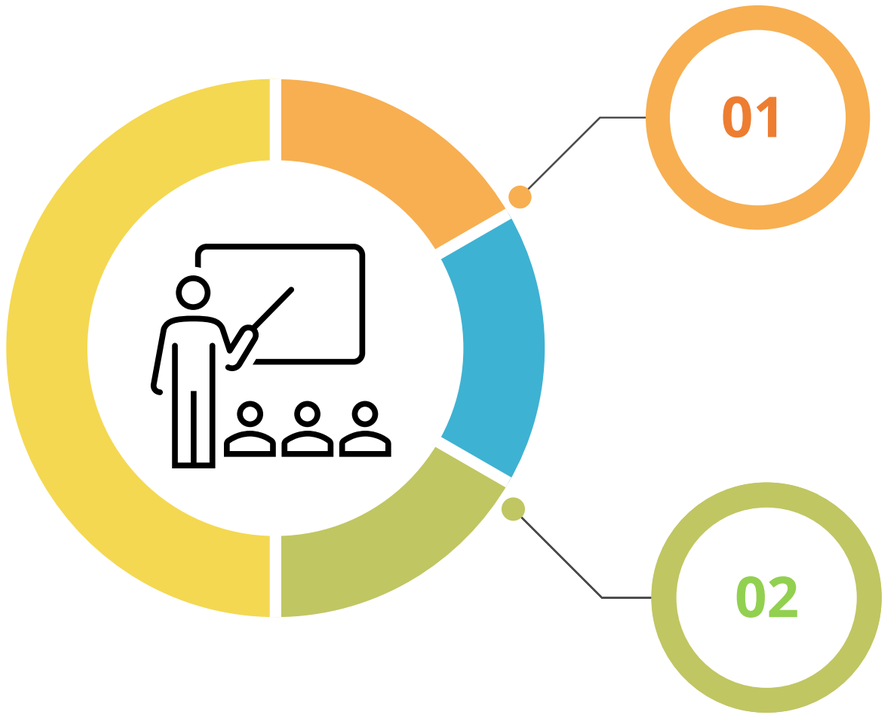
Use Case: Strategy



Monitoring and Adjustment:

1. Regularly reviewed WIP limits during sprint retrospectives.
2. Adjusted limits based on feedback and performance data.

Use Case: Result



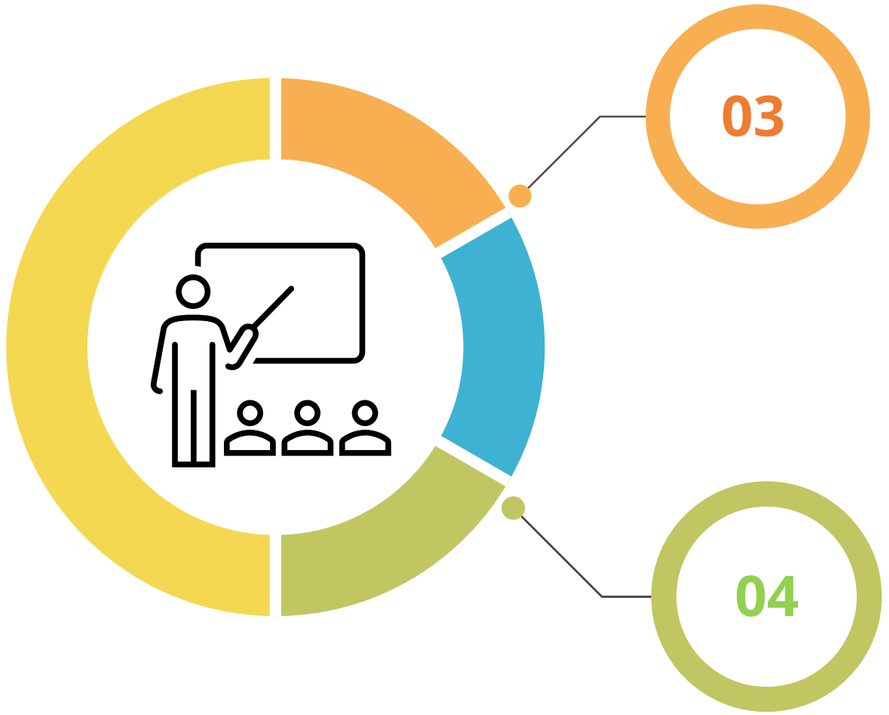
Productivity Gains:

1. Before: Average completion of 6 tasks per week
2. After: Increased to 9 tasks per week due to reduced context switching and improved focus

Quality Improvement:

1. Before: 20% defect rate in delivered software
2. After: Reduced to 10% defect rate as developers could focus better on fewer tasks

Use Case: Result



Lead Time Reduction:

1. Before: Average lead time of 15 days per task.
2. After: Reduced to 10 days, increasing throughput and meeting deadlines more consistently.

Team Morale:

1. Improved team satisfaction and reduced burnout as workloads became more manageable and focused.

Limiting WIP at Spotify significantly improved productivity, quality, and team morale by reducing context switching and enhancing focus. Regularly monitoring and adjusting WIP limits proved essential for maintaining optimal workflow efficiency.

Kanban Board

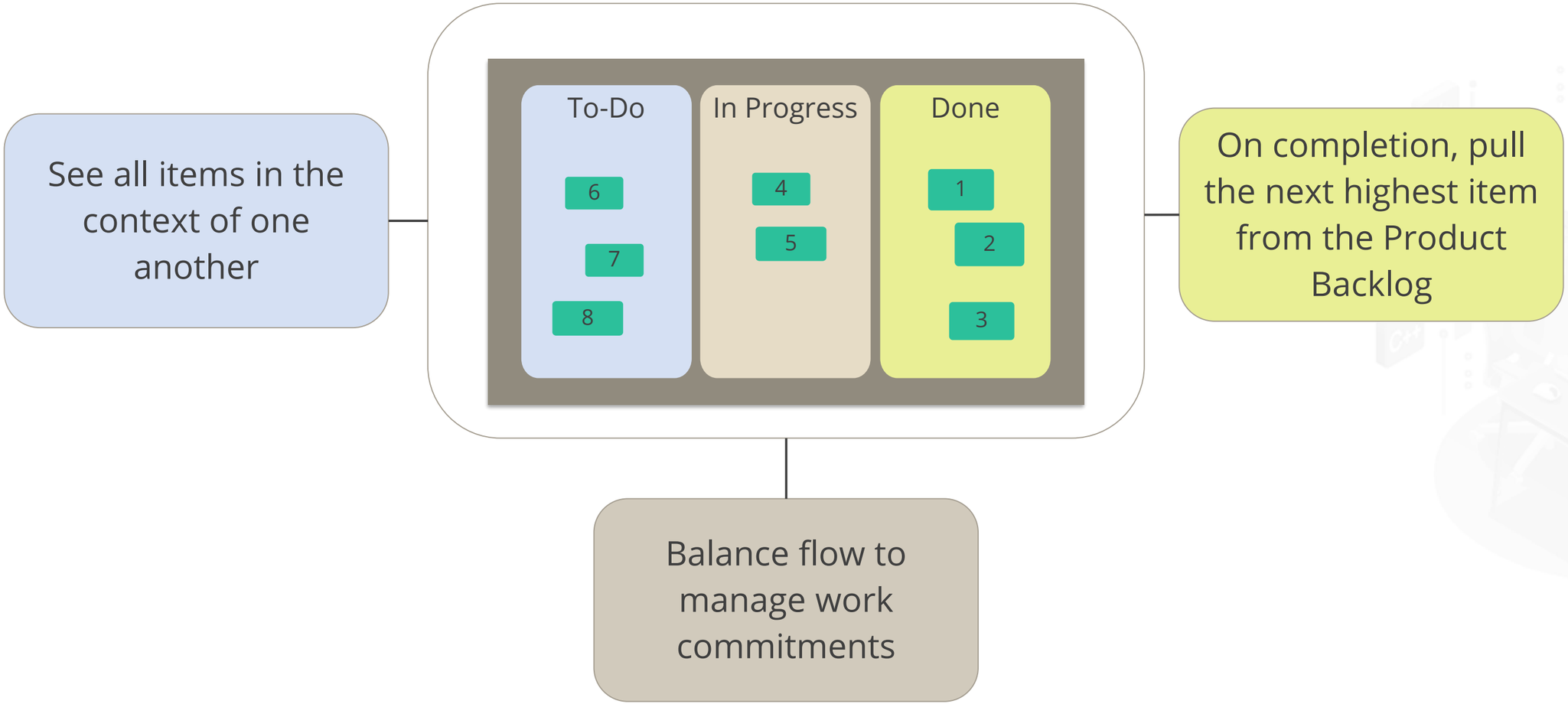
Kanban Board

A Kanban board enables the main Kanban practices.

- Understand the customer's value
- Focus on key processes
- Limit WIP
- Maximize flow

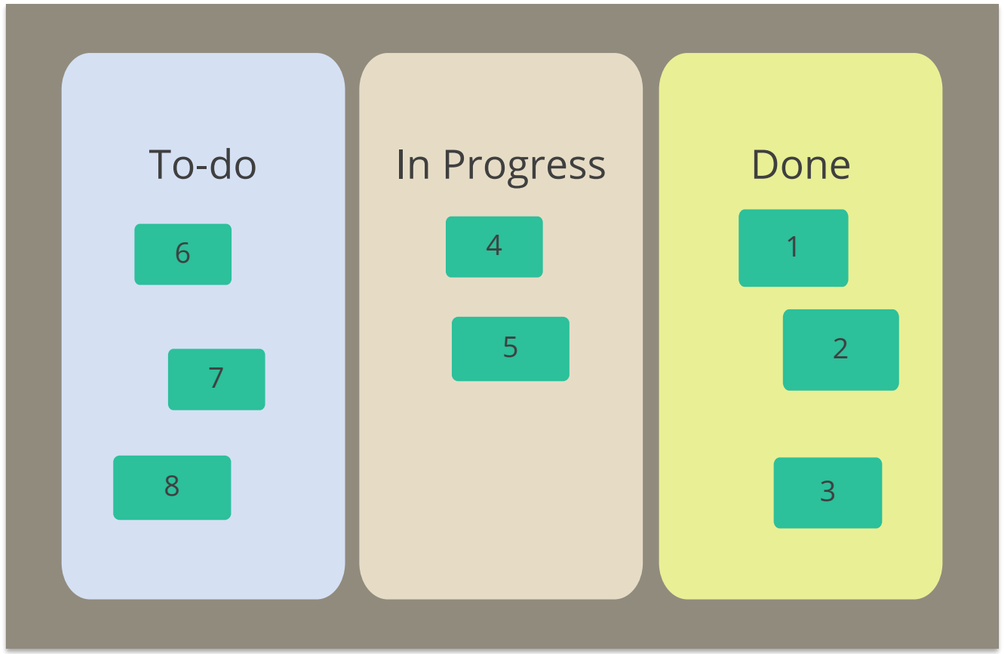
Kanban Board

The Kanban board helps make work visible so it can be shown to others and keeps everyone on the same page.



Sample Kanban Board

Kanban boards can be simple or detailed.



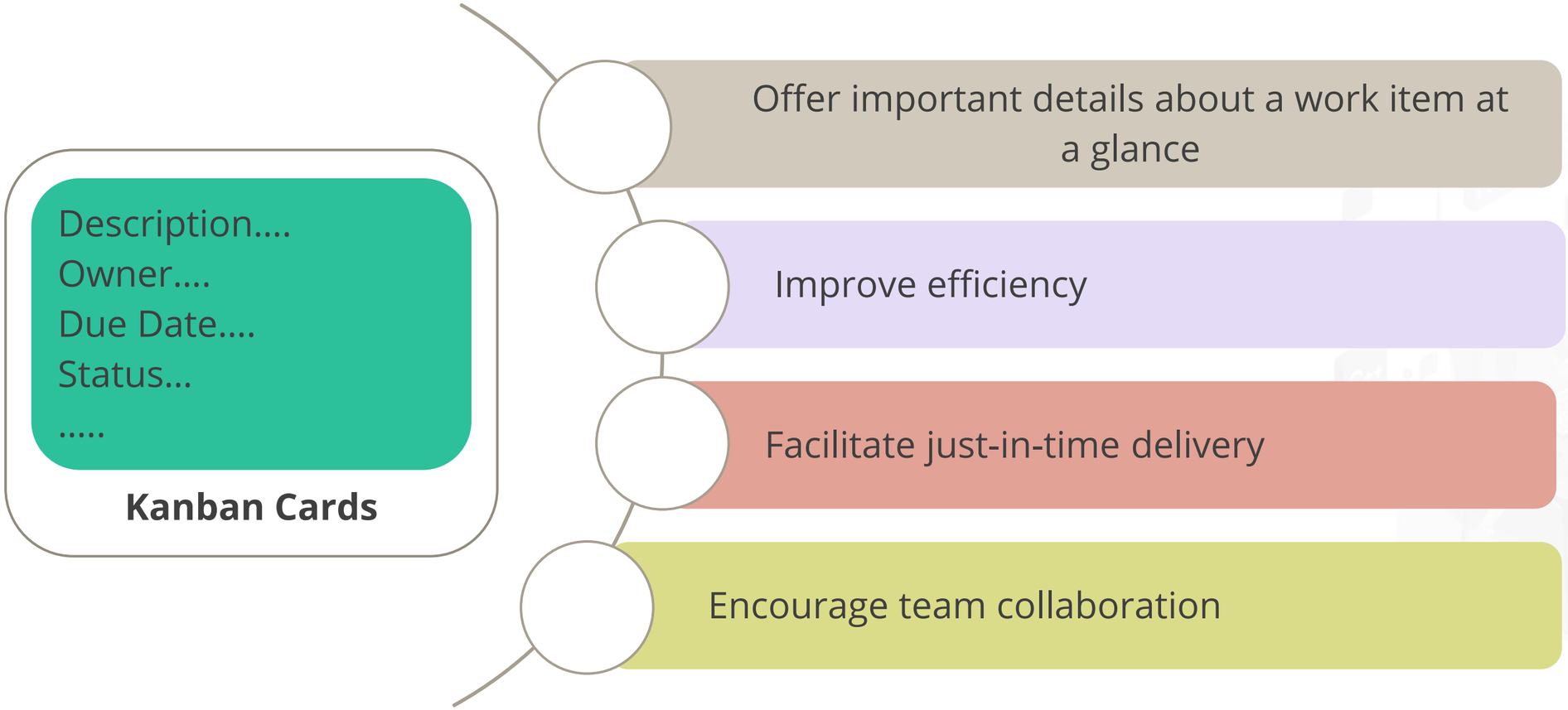
Depending on the project environment, Kanban boards can be physical or digital.

Every work item is represented as a separate card.

In Japanese, Kanban literally translates to *Visual Signal*.

Kanban Cards

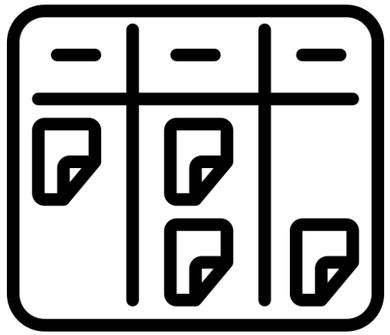
Kanban cards are visual artifacts that represent a work item.



Benefits of Using Kanban

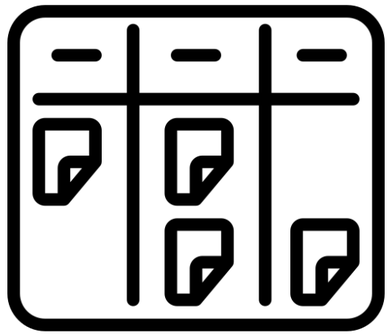
Benefits of Using Kanban

Some of the key benefits of using the Kanban methodology are:



- Flexibility while planning
- Shortened cycle time
- Fewer bottlenecks
- Visual metrics
- Continuous delivery

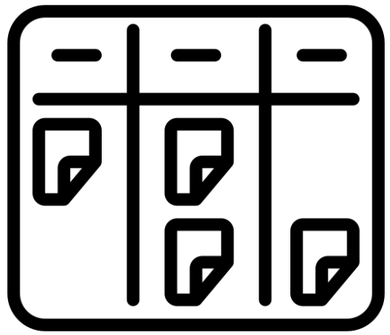
Benefits of Using Kanban



- Flexibility while planning
- Shortened cycle time
- Fewer bottlenecks
- Visual metrics
- Continuous delivery

- This allows for staying focused on active work items.
- The product owner can reprioritize without disturbing the developers.
- Unlike Scrum, there is no need for fixed-length iterations.

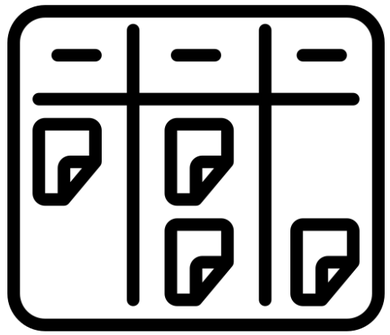
Benefits of Using Kanban



- Flexibility while planning
- Shortened cycle time
- Fewer bottlenecks
- Visual metrics
- Continuous delivery

- Shared skill sets reduce cycle time.
- Cycle time is a key metric for Kanban, as it helps forecast future deliveries.

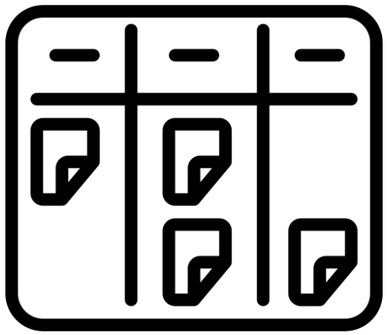
Benefits of Using Kanban



- Flexibility while planning
- Shortened cycle time
- Fewer bottlenecks
- Visual metrics
- Continuous delivery

- WIP items are limited to make sure that under-reviewed things get attention.

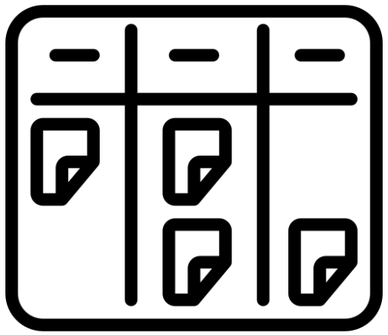
Benefits of Using Kanban



- Flexibility while planning
- Shortened cycle time
- Fewer bottlenecks
- Visual metrics
- Continuous delivery

- Team efficiency is continually improved through control charts and cumulative flow diagrams.

Benefits of Using Kanban



- Flexibility while planning
- Shortened cycle time
- Fewer bottlenecks
- Visual metrics
- Continuous delivery

- Workflow is optimized by focusing on just-in-time and one-at-a-time delivery.

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Kanban vs. Scrum

Kanban vs. Scrum

While Kanban and Scrum share common concepts, they take very different approaches.

	Release	Cadence	Key metrics	Roles	Changes
Kanban	Continuous delivery or at the discretion of the team	Continuous flow	Cycle time	No existing roles	Changes possible at any time
Scrum	Increment release at the end of every sprint, if approved by the product owner	Fixed-length sprints at regular intervals	Velocity	• Product owner • Developers • Scrum Master	Does not recommend forecast changes during sprint

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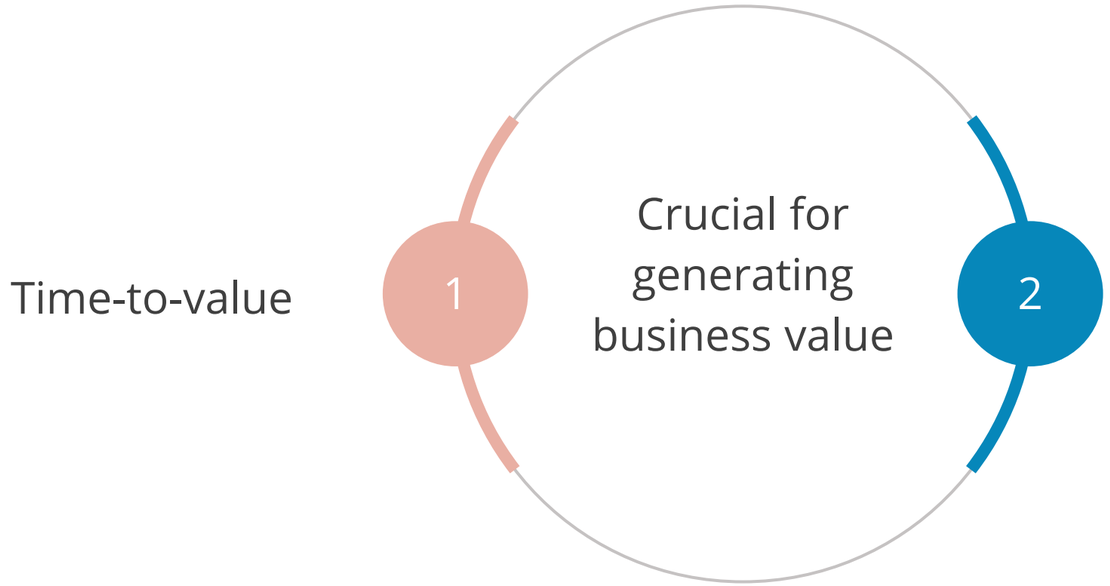
Kanban Metrics

Kanban Metrics

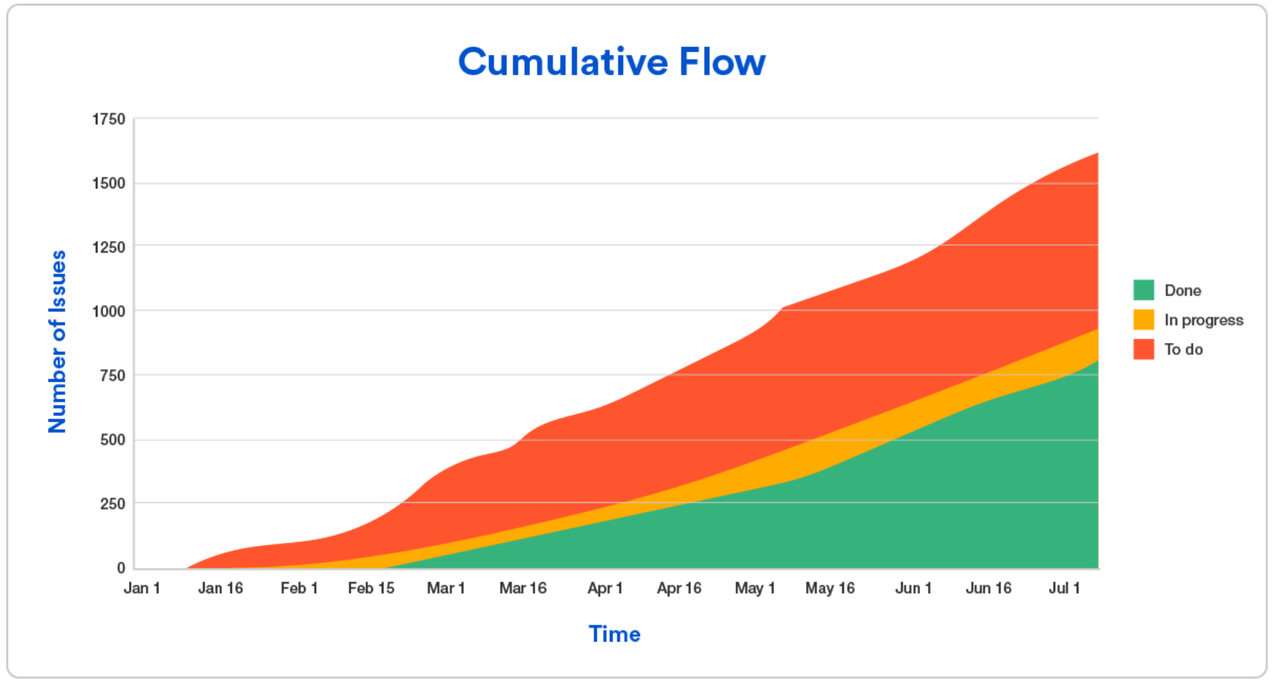
Kanban metrics help measure important aspects of workflow efficiency, focusing on two key areas:



These metrics are crucial for evaluating the workflow's efficiency and effectiveness, helping teams identify improvement areas, and ensuring they deliver value promptly.

Kanban Metrics

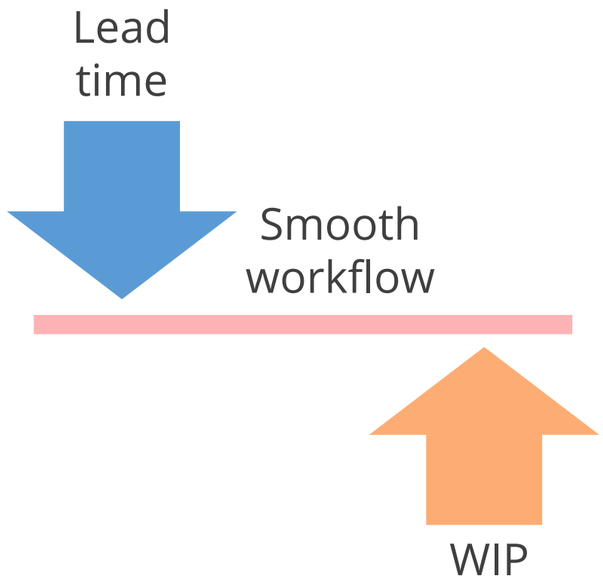
A cumulative flow diagram (CFD) refers to the time-based plot of the cards.

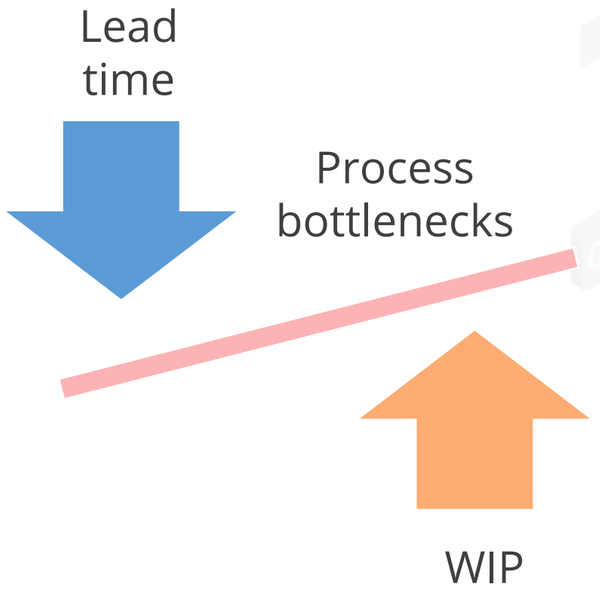


It is used to provide key insights and information about a team's capabilities.

Kanban Metrics

CFD provides the required information on the team's performance and valuable insights.





SwiftKanban

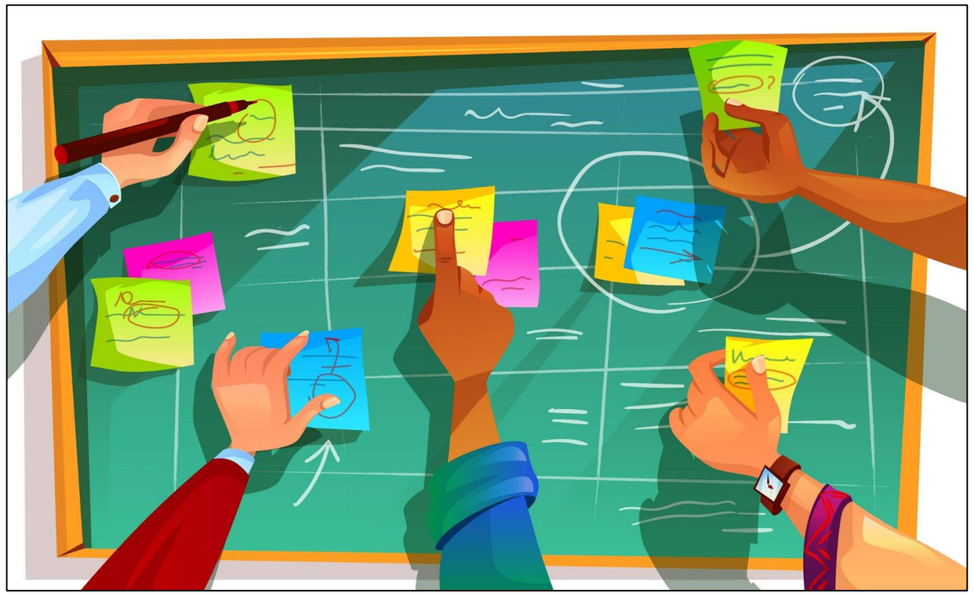
SwiftKanban

SwiftKanban is a comprehensive software tool designed to implement the Kanban methodology for managing workflows and projects.

It is designed to help teams implement the Kanban method effectively, providing the tools to visualize, manage, and optimize workflows.

SwiftKanban

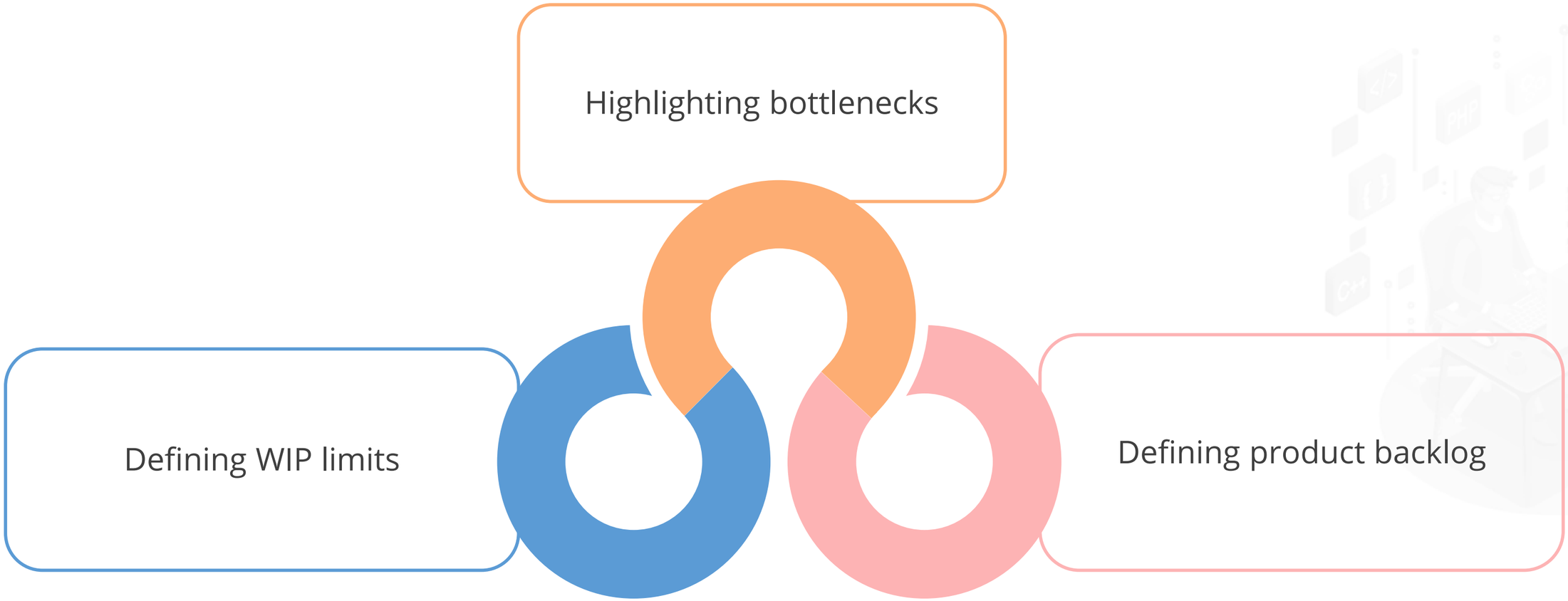
The SwiftKanban board allows the team members to juggle the cards on board, ensuring that project guidelines are met.



It offers high-quality configurations from editors to define custom cards.

SwiftKanban

The SwiftKanban board offers built-in features for:



Key Takeaways

- Kanban is a highly visual methodology which allows continuous flow.
- The Kanban board helps make work visible so it can be shown to others and keeps everyone on the same page.
- Kanban is an Agile methodology that manages creation of products with emphasis on continuous delivery without overburdening the developers.
- Kanban cards are visual artifacts that represent a work item.

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Thank You

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