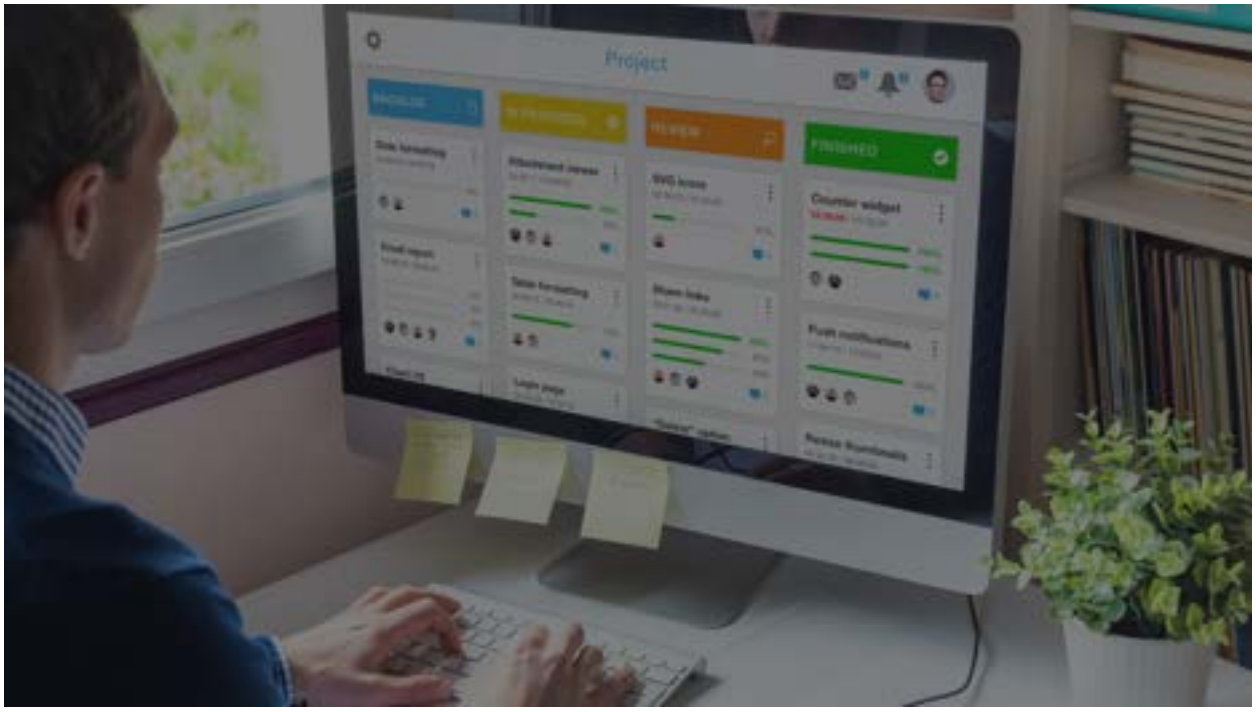
Kanban Study Guide



I. Introduction to Kanban

A. Definition and principles of Kanban

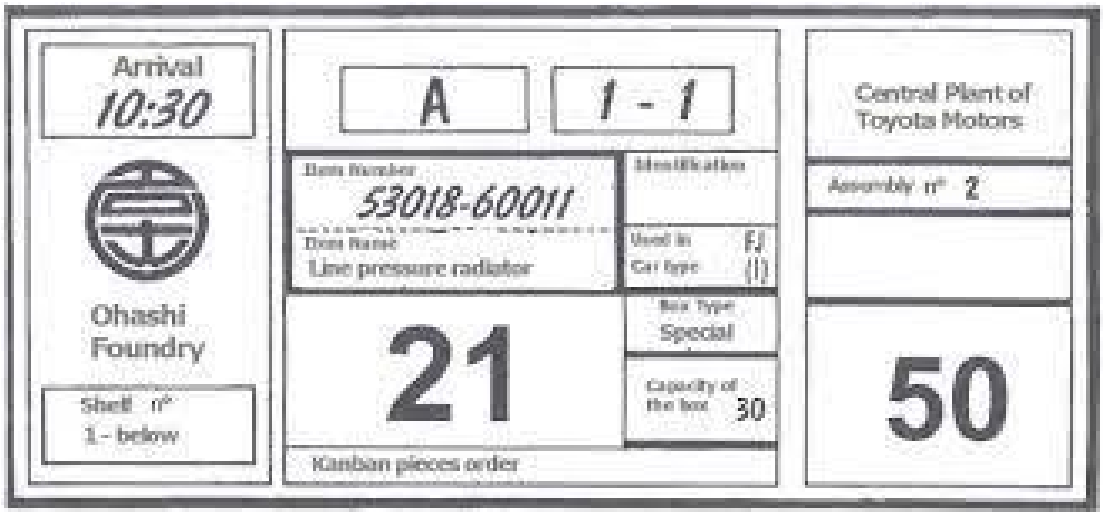
Kanban is a project management and workflow methodology that focuses on visualizing work, limiting work in progress, and optimizing flow. Its key principles include:

- **Visualize Work:** Tasks or work items are represented visually on a Kanban board, providing a clear and shared understanding of the work in progress, its status, and dependencies.
- **Limit Work in Progress (WIP):** Setting a maximum limit on the number of tasks or work items that can be in progress at any given time, preventing overloading and improving focus and efficiency.
- **Manage Flow:** Emphasizing the smooth flow of work through the system, ensuring tasks move steadily from one stage to the next without bottlenecks or delays.

- **Make Policies Explicit:** Clearly defining the rules, policies, and expectations for the workflow, enabling team members to understand and adhere to them.
- **Improve Collaboratively and Evolve Experimentally:** Encouraging a culture of continuous improvement, where teams regularly reflect on their processes, experiment with changes, and make incremental improvements.

By following these principles, Kanban helps teams visualize, manage, and optimize their work, leading to increased productivity, efficiency, and customer satisfaction.

B. Brief history and origins of Kanban



The origins of Kanban can be traced back to the 1940s and 1950s in Japan. The Toyota Motor Corporation, under the guidance of engineer Taiichi Ohno, was developing its Toyota Production System (TPS) with the goal of improving efficiency and reducing waste in manufacturing processes.

Inspired by the management practices of supermarkets, where inventory was restocked based on customer demand, Ohno introduced the concept of Kanban. The term "Kanban" translates to "visual card" or "signal card" in Japanese.
In its early form, Kanban involved the use of physical cards or tags, known as Kanban cards, to signal the need for replenishment of parts or materials in the production process. These cards were placed on containers or pallets, indicating

that more items were required. This visual signal helped synchronize production and avoid overproduction.

Throughout the 1960s and 1970s, Kanban continued to evolve within Toyota's manufacturing processes. The system gained recognition for its ability to reduce inventory, minimize waste, and ensure a smooth flow of materials and products.
In the 1990s, Kanban began to attract attention beyond Toyota and the manufacturing industry. Its principles were adapted and applied to other domains, such as software development and project management.
In the early 2000s, software development teams started adopting Kanban as an alternative or complement to traditional project management methodologies like Scrum. David J. Anderson played a crucial role in popularizing Kanban for software development, introducing the Kanban Method and its associated practices.

Anderson's book, "Kanban: Successful Evolutionary Change for Your Technology Business," published in 2010, provided detailed guidance on applying Kanban in software development and other knowledge work domains. The Kanban Method emphasizes visualizing work, limiting work in progress, and continuously improving the workflow.
Since then, Kanban has gained widespread adoption across industries and domains. It offers a flexible and adaptable approach to managing work, promoting transparency, collaboration, and efficiency. Kanban boards and digital tools have become popular for visualizing and managing tasks, allowing teams to optimize their workflow and achieve better outcomes.

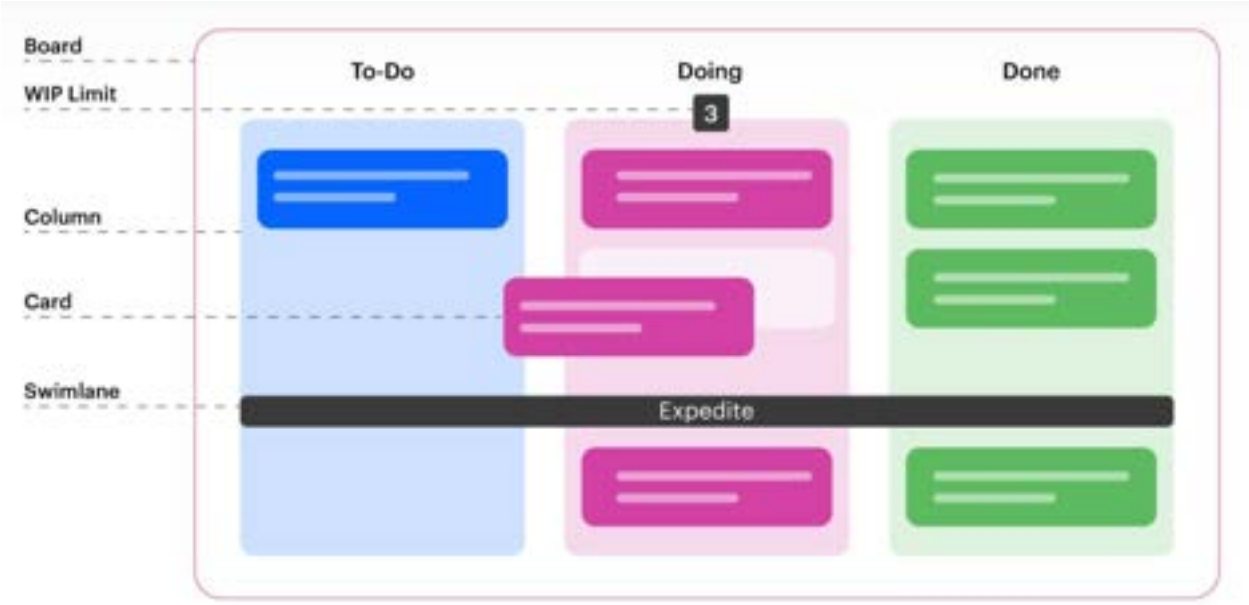
C. Benefits of using Kanban

- Promotes visibility and transparency
- Helps manage and optimize workflow
- Enables effective prioritization
- Fosters a culture of continuous improvement

II. Kanban Basics

A. Kanban board and visualization

1. Understanding the structure and elements of a Kanban board



At its core, a Kanban board consists of a visual display divided into columns that represent different stages of a workflow or process. Each column represents a specific stage, such as "To Do," "In Progress," and "Done." Work items or tasks are visualized as cards, often using sticky notes or digital representations, and are placed in the corresponding column based on their current status.

Let’s dive into each element of the Kanban Board:

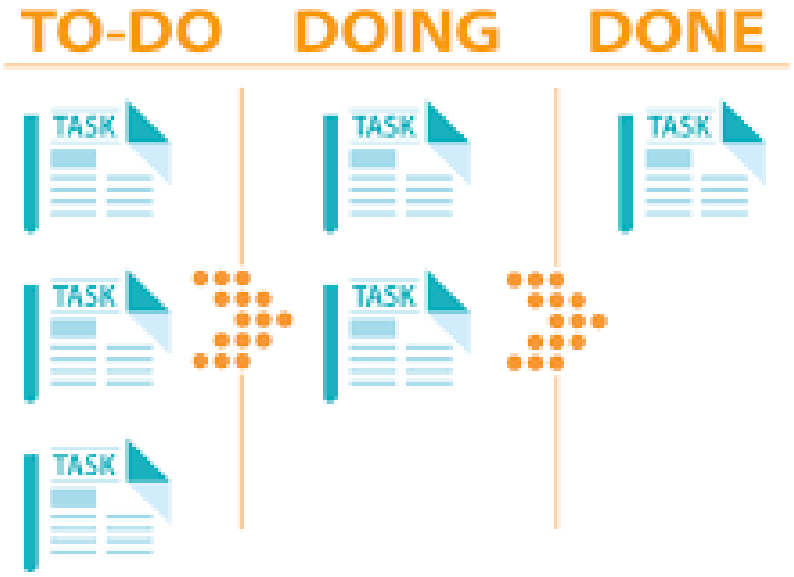
- **Kanban Cards:** Kanban cards are physical or digital representations of work items or tasks. They provide essential information about the task, such as its title, description, priority, assigned team member, and any relevant due dates. Each task is visualized as a card on the Kanban board, and its movement across columns represents its progress through the workflow.
- **Kanban Columns:** Kanban columns represent the different stages or steps in the workflow. Common column names include "To Do," "In

Progress," and "Done." The number and names of the columns can vary depending on the specific workflow and team's needs. Each column typically has a designated purpose or criteria for moving tasks from one column to the next.

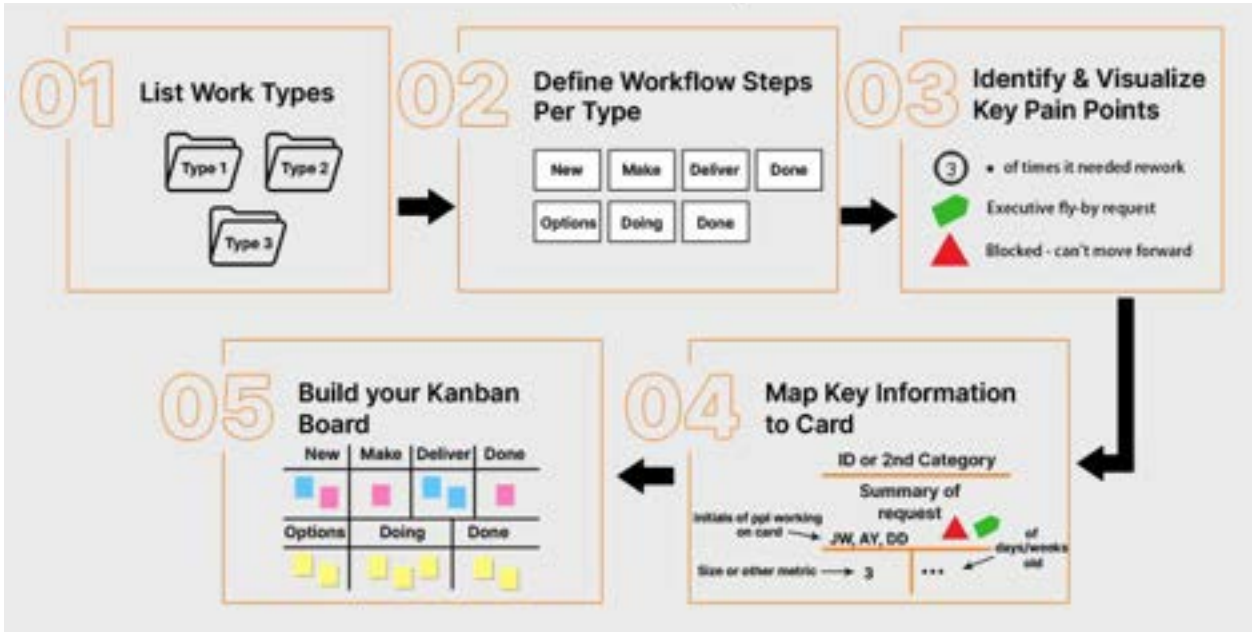
- **Work-in-Progress (WIP) Limits:** WIP limits are the maximum number of tasks or work items allowed in each column at any given time. WIP limits prevent overloading team members and help maintain a steady flow of work. By limiting the number of tasks in progress, teams can focus on completing existing work before starting new tasks, reducing multitasking and bottlenecks.
- **Kanban Swimlanes:** Swimlanes provide additional visual organization on a Kanban board. They divide the board into horizontal sections, often representing different categories, teams, or projects. Swimlanes help distinguish and prioritize tasks based on their respective areas, providing clarity and structure to the workflow.
- **Commitment Point:** The commitment point is a specific column on the Kanban board where work items are selected for execution. It represents the stage where tasks are committed to and taken up for active work by the team. Before reaching this point, tasks may go through stages like backlog or prioritization.
- **Delivery Point:** The delivery point, also known as the "Done" column, represents the final stage of the workflow. It indicates that a task has been completed or delivered. Tasks that reach the delivery point are considered finished and ready for review, deployment, or handover, depending on the context.

These elements work together to provide a clear visualization of the workflow, facilitate collaboration, and improve productivity.

2. Creating a visual representation of work items and their flow



B. Work item types and classification



"work type" typically refers to different categories or classifications of work items based on their nature, characteristics, or specific attributes. Work types help in

organizing and managing the various types of work that need to be tracked and completed on the board.

For example, in software development, common work types on a Kanban board might include "User Stories," "Bugs/Defects," "Tasks," "Enhancements," or "Epics." Each work type represents a specific kind of work item with its own unique characteristics and requirements.

By categorizing work items into different types, teams can gain better visibility and understanding of the different kinds of work they need to address. It helps in prioritizing and allocating resources effectively, as well as in analyzing and monitoring the flow and progress of different work types on the Kanban board.

Work types can vary based on the specific domain, project, or team, and they are often customized to suit the needs and terminology of the organization.

1. Classify Work Types

Identifying and establishing a classification criteria for work types in Kanban involves understanding the unique characteristics and requirements of the work being managed and defining a set of criteria that can effectively categorize and differentiate the various types of work. Here are some steps to help in this process:

- **Analyze the Work:** Start by analyzing the work items or tasks that need to be managed on the Kanban board. Understand the different types of work involved, their purpose, and their specific attributes. Consider factors such as the nature of the work, its complexity, dependencies, and any unique characteristics.
- **Identify Common Patterns:** Look for common patterns or recurring themes in the work. Identify similarities or shared attributes among certain work items that can serve as a basis for classification. For example, you may notice that some work items involve user requirements, while others relate to technical issues or system maintenance.
- **Consider Stakeholder Perspectives:** Take into account the perspectives of different stakeholders involved in the work. Consider how various stakeholders view and prioritize different types of work. This can help

identify classification criteria that align with the needs and expectations of different stakeholders.

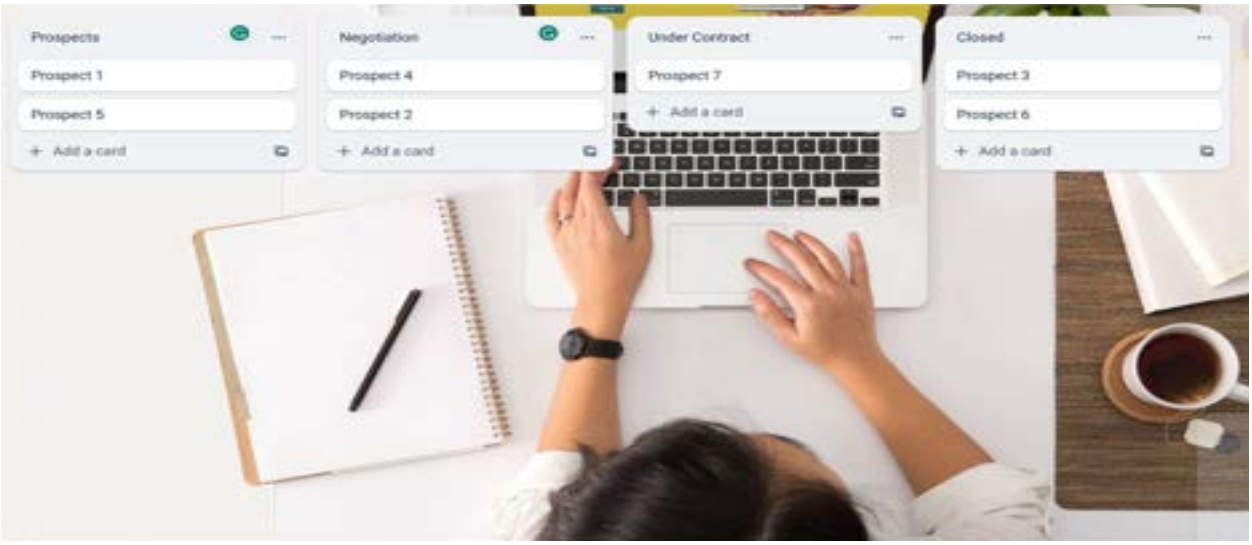
- **Define Classification Criteria:** Based on the analysis and identified patterns, establish a set of classification criteria that can effectively categorize the work items. These criteria can include attributes such as functionality, priority, urgency, domain, size, or impact. Ensure that the criteria are clear, meaningful, and relevant to the work being managed.
- **Validate and Refine:** Share the proposed classification criteria with the team and stakeholders for feedback and validation. Incorporate their input and insights to refine and improve the criteria. Strive for consensus and clarity to ensure everyone understands and agrees on the classification approach.
- **Communicate and Document:** Once the classification criteria are established and validated, document them clearly. Communicate the criteria to the team, ensuring that everyone understands how to categorize work items based on the defined criteria. Use visual cues or documentation on the Kanban board to indicate the different work types.

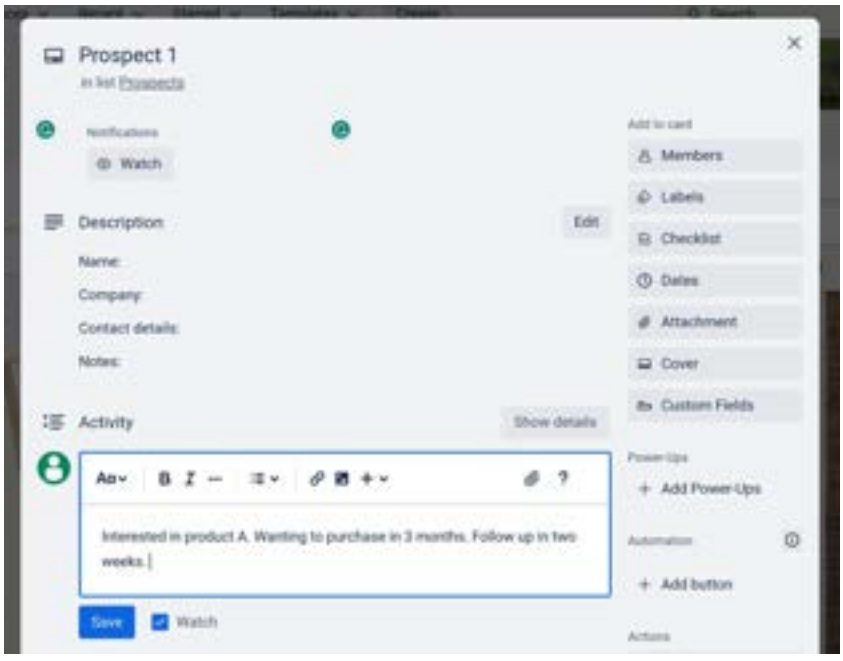
Adapt and Evolve: Recognize that classification criteria may evolve over time as the work and team dynamics change. Be open to adjusting the criteria based on feedback and insights gained from the Kanban board's usage. Continuously review and refine the classification approach to ensure its effectiveness.

2. Kanban board examples

Here are some examples of kanban boards:

Sales:





Each Kanban card on the board represents a specific lead or prospect. The card contains information such as the prospect's name, company, contact details,

relevant notes, and next steps. Sales representatives can easily update and track the progress of each prospect by moving their cards across the columns as they advance through the sales process.

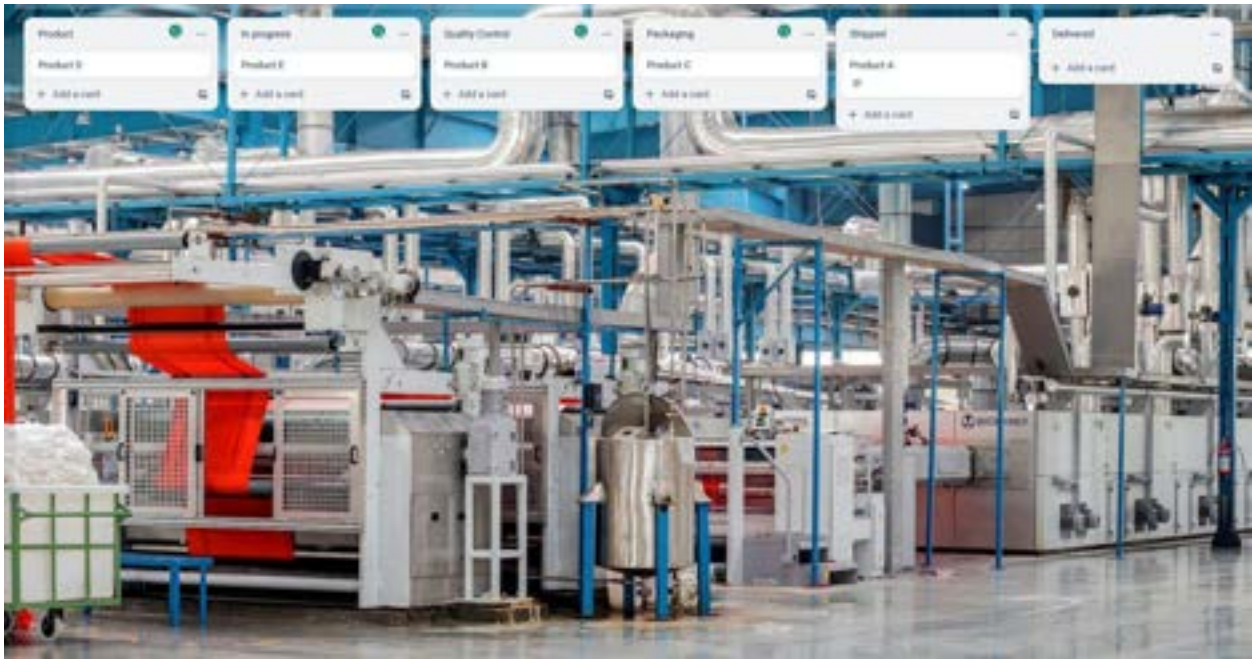
Work-in-Progress (WIP) Limits:

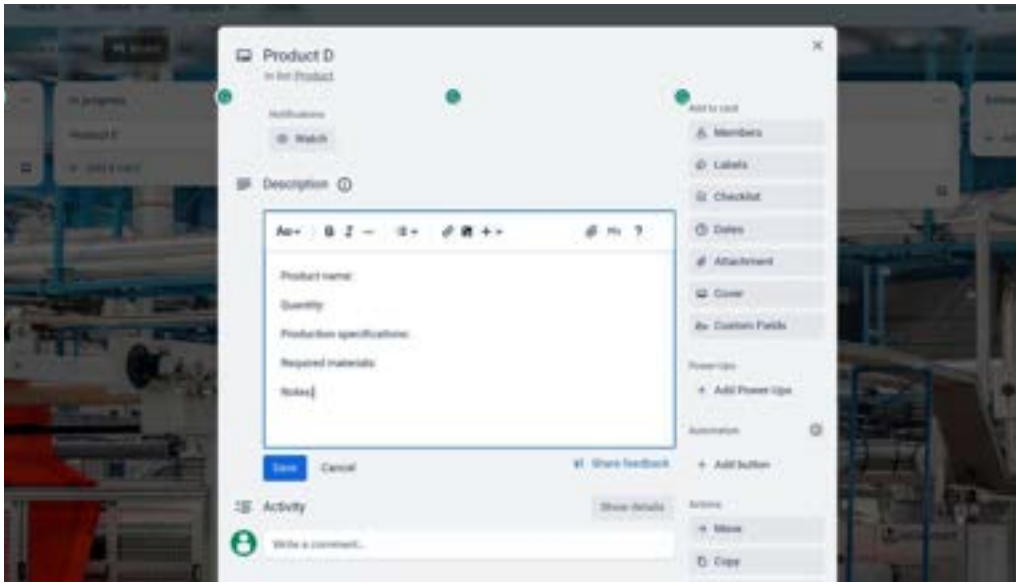
WIP limits can be set for each column to ensure that sales representatives do not overload themselves or the system. It helps maintain focus and prevents bottlenecks in the sales process by limiting the number of prospects in each stage.

Additional Swimlanes or Customizations:

Depending on the specific needs of the sales team, additional swimlanes or customizations can be added. For example, swimlanes can be used to differentiate between different sales territories or product lines, providing further organization and visibility.

Example of a Kanban board in manufacturing:





In Progress: Once the production process begins, the cards representing the work orders or tasks move to this column. It indicates that the manufacturing process is in progress.

Quality Control: After the production is complete, the items move to this column for quality control checks. This stage ensures that the finished products meet the required quality standards before proceeding to the next stage.
Packaging: In this column, the items that have passed quality control are packaged and prepared for shipment or distribution. Packaging materials, labels, and other related tasks are managed in this column.

Shipment: Once the items are packaged, they are moved to this column, ready for shipment or delivery to customers or distributors.
Delivery: When the items are successfully delivered, they are moved to this column, indicating that the manufacturing and delivery process is complete.

Kanban Cards: Each Kanban card represents a specific work order, product, or batch. The card contains essential information such as the product name, quantity, production specifications, required materials, and any additional instructions or notes.

III. Implementing Kanban
A. Assessing the current state

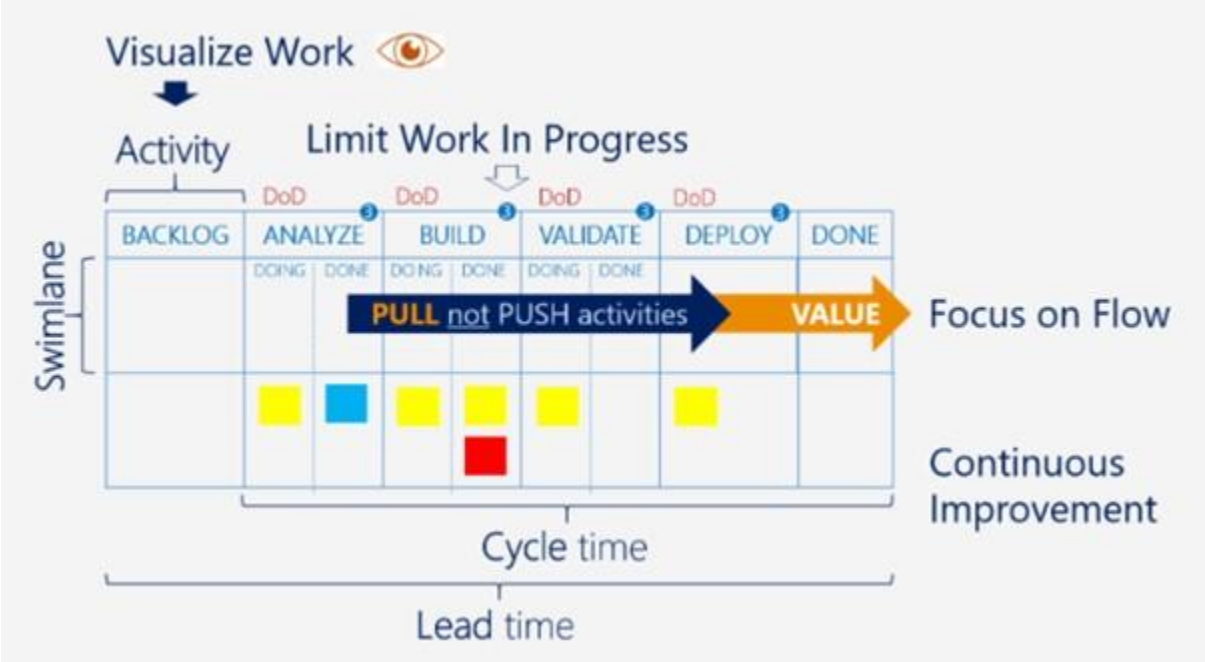
Analyzing existing workflows and processes

- Conduct a thorough analysis of the current workflows and processes within the organization.
- Identify the key steps, dependencies, and handoffs involved in the work.
- Document any inefficiencies, bottlenecks, or pain points that hinder the smooth flow of work.

Identifying bottlenecks and areas for improvement

- Identify bottlenecks or constraints that impede the flow of work and cause delays.
- Look for opportunities to improve productivity, reduce waste, and enhance efficiency.
- Involve the team members and stakeholders in this assessment to gather diverse perspectives.

B. Designing the Kanban system



Defining work item states and workflow stages

- Define the various states or statuses that a work item can go through during its lifecycle.
- Map out the workflow stages that represent the progression of work from initiation to completion.
- Ensure that the defined states and stages accurately reflect the organization's unique processes and requirements.

Determining work item limits and policies

- Set appropriate limits for work items at each stage to manage and optimize the flow of work.
- Define policies and rules for transitioning work items between stages, such as criteria for moving items forward or backward.
- Consider the capacity of the team, available resources, and external dependencies when establishing these limits and policies.

C. Establishing metrics and measurements

Selecting key performance indicators (KPIs) for continuous improvement

- Identify the key areas of focus and improvement within the organization.
- Select relevant KPIs that align with the goals and objectives of the Kanban implementation.
- Examples of KPIs include cycle time, lead time, throughput, customer satisfaction, and defect rate.
- Establish a baseline for these metrics to track progress over time and measure the impact of Kanban implementation.

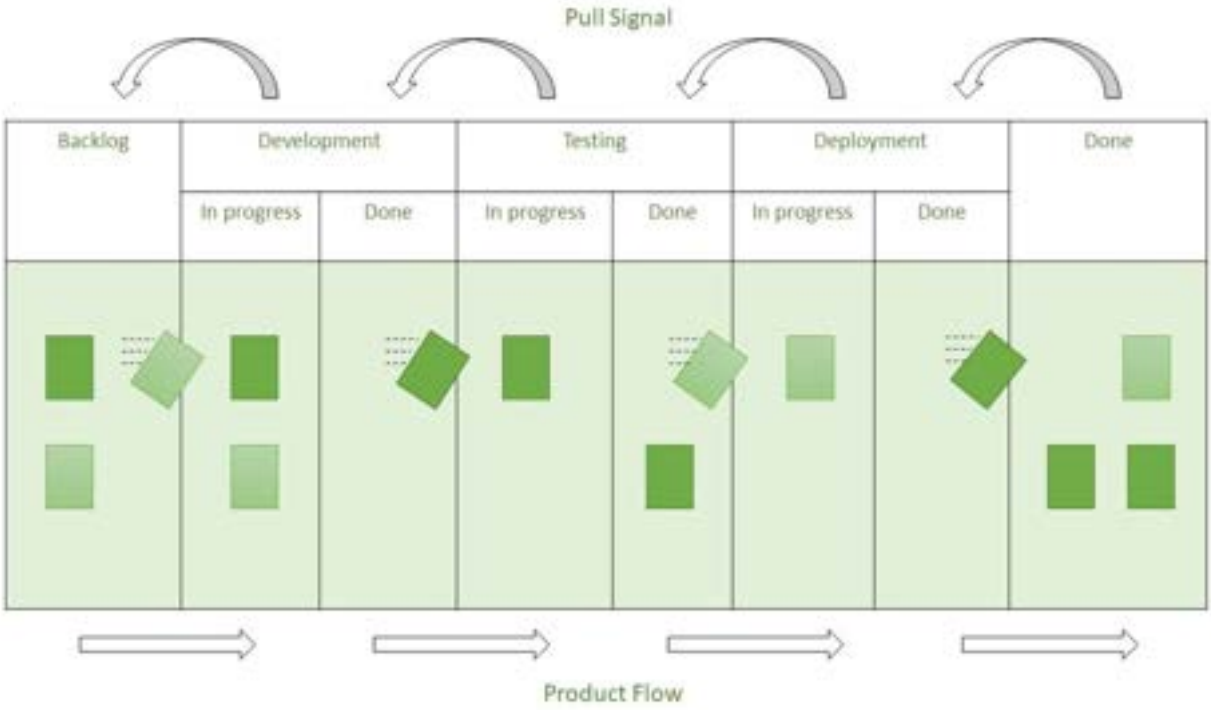
Setting up data collection and visualization techniques

- Define the data collection methods and tools to gather relevant data for the selected KPIs.
- Determine how and when data will be collected, whether manually or through automated systems.
- Implement data visualization techniques, such as charts, graphs, or dashboards, to provide clear and meaningful representations of the collected data.
- Ensure the availability and accessibility of the data and visualizations to the team members and stakeholders for analysis and decision-making.

By following these steps in implementing Kanban for continuous improvement, organizations can assess their current state, identify areas for improvement, design a tailored Kanban system, and establish meaningful metrics to drive ongoing enhancements and optimize their workflows. This iterative approach helps foster a culture of continuous improvement and empowers teams to deliver higher-quality work in a more efficient manner.

IV. Managing Kanban Flow

A. Pull-based system and WIP limits



Understanding the concept of pull-based work

- Kanban operates on the principle of pull-based work, where work is pulled into the system based on available capacity rather than pushed in.
- Teams only start new work when there is capacity to do so, ensuring a balanced workflow and reducing overburdening.
- Work is initiated based on actual demand, preventing unnecessary work accumulation.

Setting appropriate work-in-progress (WIP) limits

- Work-in-progress (WIP) limits are predetermined thresholds that cap the number of work items allowed in a particular stage.
- Establishing WIP limits helps maintain a smooth flow of work, prevent overloading, and identify bottlenecks or issues in the process.
- WIP limits should be set based on the team's capacity, capability, and the nature of the work to optimize flow efficiency.

B. Managing queues and prioritization

Prioritizing work items based on value and urgency

- Work items should be prioritized based on their value to the organization, customer needs, and urgency.
- Consider factors such as customer requirements, strategic objectives, dependencies, and deadlines when prioritizing work.
- Prioritization ensures that the most valuable and time-sensitive work is completed in a timely manner.

Handling queues and managing flow efficiency

- Kanban boards may have queues of work items waiting in different stages.
- Regularly review and manage these queues to ensure that items are flowing smoothly and efficiently through the system.
- Use techniques such as expedite lanes, swarm approaches, or re-prioritization to address any backlog or queues and maintain flow efficiency.

C. Handling blocked items and impediments

Strategies for addressing blocked work items

- Blocked work items are those that cannot progress due to dependencies, resource constraints, or external factors.

- Implement strategies to address blocked items promptly, such as identifying and resolving the root cause of the blockage.
- Encourage collaboration and communication to remove obstacles and unblock work items effectively

Escalation and resolution procedures for impediments

- Establish escalation and resolution procedures to handle significant impediments that affect the flow of work.
- Define clear communication channels and responsibilities for raising and addressing impediments.
- Encourage a culture of transparency and continuous improvement to identify and resolve impediments efficiently.

These practices promote continuous improvement, reduce delays, and optimize the overall efficiency and effectiveness of the Kanban process.

V. Continuous Improvement with Kanban

A. Iterative optimization and evolutionary change

Applying the concept of small, incremental improvements

- Embrace the principle of continuous improvement by implementing small, incremental changes to the Kanban system.
- Encourage teams to identify and implement improvements on a regular basis, even if they seem minor.
- Small changes can have a significant cumulative effect over time and contribute to ongoing optimization.
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Experimentation and adaptation within the Kanban framework

- Foster a culture of experimentation and learning within the Kanban framework.
- Encourage teams to experiment with new approaches, techniques, or practices to discover better ways of working.
- Emphasize the importance of collecting data, measuring outcomes, and using feedback to guide iterative adjustments.

B. Scaling Kanban for larger projects or organizations

Strategies for scaling Kanban principles and practices

- Identify strategies to scale Kanban principles and practices to larger projects or organizations.
- Consider techniques such as creating multiple Kanban boards, implementing portfolio-level Kanban, or integrating Kanban with other scaling frameworks.
- Adapt Kanban principles to suit the specific needs and complexity of the larger context while preserving the core values and principles.