KANBAN - QUICK GUIDE

KANBAN - INTRODUCTION

Kanban is a Japanese word that literally means "visual card". Kanban cards were originally used in Toyota to limit the amount of inventory tied up in "work in progress" on a manufacturing floor. Kanban not only reduces excess inventory waste, but also the time spent in producing it. In addition, all of the resources and time freed by the implementation of a Kanban system can be used for future expansions or new opportunities. The original author of Kanban was Taiichi Ohno.
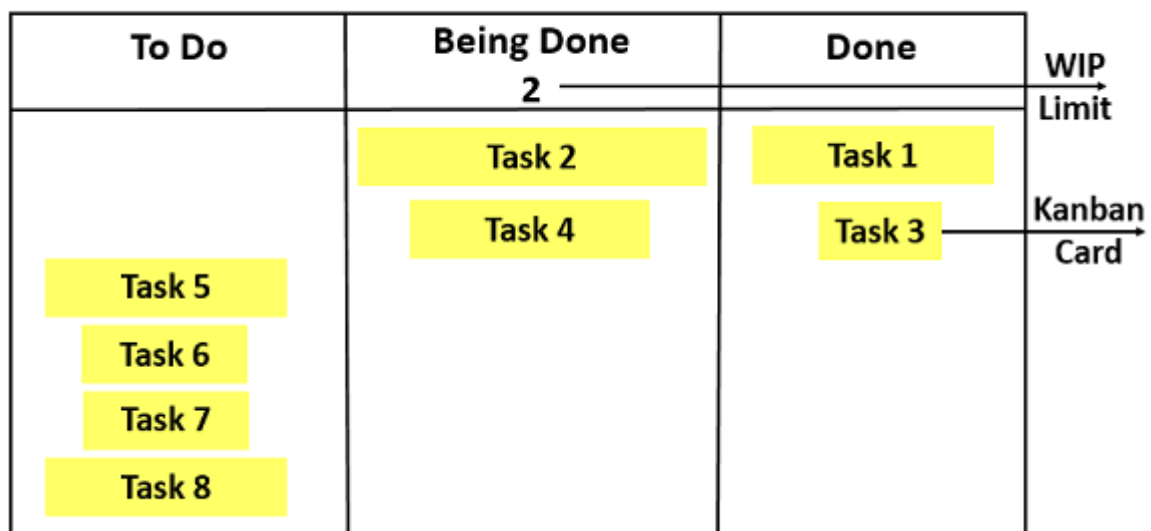
What is Kanban?

Kanban term came into existence using the flavors of "visual card," "signboard," or "billboard", "signaling system" to indicate a workflow that limits Work In Progress WIP. Kanban has been used in Lean Production for over `half-century.

The core concept of Kanban includes –

- Visualize Workflow

    - Split the entire work into defined segments or states, visualized as named columns on a wall.

    - Write each item on a card and put in a column to indicate where the item is in the workflow.

- Limit WIP

    - Assign explicit limits to how many items can be in progress at each workflow segment / state. i.e., Work in Progress WIP is limited in each workflow state.

- Measure the Lead Time

    - Lead Time, also known as cycle time is the average time to complete one item. Measure the Lead Time and optimize the process to make the Lead Time as small and predictable as possible.

This concept of Kanban is a direct implementation of a Lean Pull Scheduling System. An item can move to the next segment / state only when it obtains a slot in there.

Kanban Board

To Do	Being Done 2	Done	WIP Limit
	Task 2	Task 1	
	Task 4	Task 3	Kanban Card
Task 5			
Task 6			
Task 7			
Task 8			

Kanban - Lean Practices

The implementation of Kanban, as well as other Lean Manufacturing Methods, such as Kaizen, can have significant benefits for almost any type of work. Kanban is more effective because it visually indicates when the production should start and stop. It is faster, more efficient, and saves significant money over most other production models. It is also far more directly responsive to customer demand.

Kanban - Benefits

Kanban has the following commonly observed benefits –

- Bottlenecks become clearly visible in real-time. This leads people to collaborate to optimize the whole value chain rather than just their part.

- Useful for situations where operations and support teams have a high rate of uncertainty and variability.

- Tends to spread throughout the organization naturally, including sales and management. This increases visibility of everything that is going on at the company.

- Reduces inventory in the range of 25%-75%, thereby reducing company costs.

- Since all segments/states in the workflow are visually organized, the required items, reducing the wait times and ensuring speed, continually support all the tasks in the workflow.

- Overproduction of inventory is avoided, thereby saving resources and time as well. This is termed as eliminating waste.

Alignment with Agile

In agile, if values are combined with Kanban characteristics, the outcome would be Agile Kanban. This practice is gaining popularity in Software Development wherein the Agile iteration approach and Kanban value stream focus are combined.

KANBAN - CHARACTERISTICS

In this chapter, we will learn the characteristics of Kanban.

Flexibility in Planning

Kanban provides improvements in the workflow. With visual representation of the workflow, speed of moving from one task to another is reduced. This is accomplished through the creation of clearly marked flow lanes, Kanban cards and clearly marked columns to indicate where each item is in the workflow. If a task needs longer duration, it is allowed to execute without hindrance, and at the same time, the tasks that are completed will flow to the next state.

This allows –

- Sufficient duration for longer tasks that cannot be broken down logically.

- Preservation of value of such longer tasks.

- Effort required by each role to be expended.

- Continuous flow of the tasks that are completed without wait time.

Hence, planning is flexible and not time-boxed.

Limits Work-In-Progress WIP

Explicit limits are assigned to number of items that can be in progress at each workflow state, indicated by a column.

This allows –

- Reducing wait time.

- Avoiding stress on resources at a workflow state.

- Identifying bottlenecks causing an item to be in a workflow state than the anticipated time $usually average cycle time$ immediately.

- Resolving bottlenecks with collaboration of the entire team.

- Decreasing dependencies in completing a task by splitting it into sub-tasks, so that the sub-task is tracked independently.

Pull Approach

When you have two teams and the first one is performing better than the second one, it is likely that it pushes more work than the other can actually handle. This often creates friction between the teams. A solution to this is the Pull approach.

In Pull Approach, the next team pulls work only when it is ready for it. Pull Approach is implemented by adding a buffer with limited capacity between the two teams.

The benefits of Pull Approach are –

- Avoids piling-up of work.

- Reduces wait time.

- Facilitates a team to maintain constant pace and focus on quality.

- Provides resource balancing.

Minimize Cycle Time

The cycle time for each task is measured and the process is optimized to reduce the cycle times.

- The bottlenecks are identified immediately and resolved collaboratively by the entire team.

- The correction loops are considered to reduce rework.

Continuous Delivery

Benefits of continuous delivery are –

- Short release cycles result in continuous delivery of growing product at regular intervals.

- Continuous interactions with the customer.

  - To understand what customer wants.

  - Not to produce anything that the customer does not need.

  - Feedback on delivered modules.

- Limited requirements in each release cycle.

  - Developers are not overloaded with requests. This enables them to focus on the delivery.

  - There is no partially completed work.

- Focus is on finishing work than on starting work.

  - This enables focus on sustaining pace and quality of the product.

  - Deliver before the customer changes mind.

- Optimize flow of Work from beginning to end.

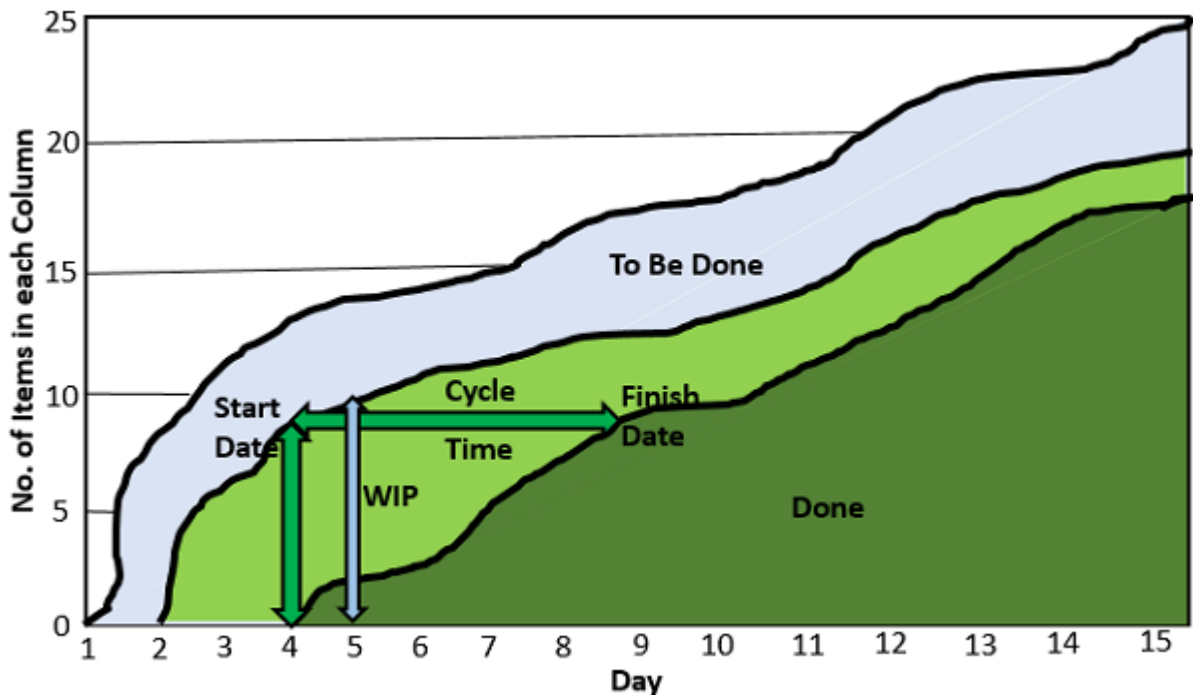 - Helps in incremental process improvements.

Visual Metrics

Visually organized workflows $on Kanban Boards$ facilitate –

- Scheduling as per WIP limits on a workflow state.

- Tracking status and progress continually.

- Assigning resources dynamically based on the role requirements.

Advantages of Visual Metrics

Each day, for each column, mark how many tasks are in it, you will see a mountain-like chart. This chart shows the past performance and allows predicting future results.

You can gather the following information from the chart –

- Measure cycle time for each feature $or story$ by marking a start date when the feature is scheduled and an end date when the feature finishes.

- Evaluate the quality of the growing product from technical, functional and user perspectives at regular time-boxes.

- Evaluate the pace of development by looking at the number of development items completed and looking at the average cycle time per development item.

- Adjust the pace of development by calculating the ratio of developer days per completed development item. You can use this ratio to estimate the completion time for the yet-to-develop items and adjust the development plan as necessary.

- Evaluate and adjust the process by using a collaborative session to identify changes that can be made to improve the quality of the product, or to improve the pace of development.

- Identify and resolve un-validated decisions by looking at the cycle time of validated decisions and focusing on the correction loops that are usually the invisible backed-up queues.

Efficiency Through Focus

By focusing on what a customer wants, the scope becomes clear. The focus is on delivering value to the customer.

Efficiency can be achieved in the following ways –

- A customer's expectations can be made realistic and focused with continuous interactions with the customer.