

# KANBAN: INCREASING QUALITY AND EFFICIENCY IN SOFTWARE DEVELOPMENT COMPANIES



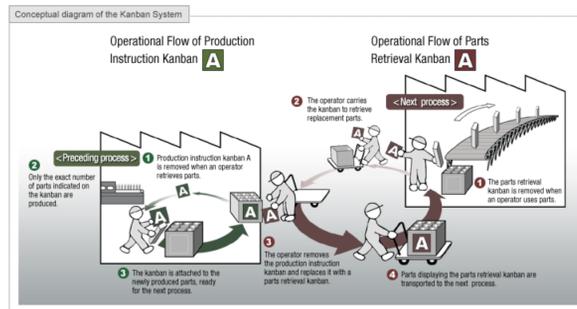
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## What is Kanban?

- Visually-driven scheduling system
- Workflow methodology that increases quality and productivity
- Creates a collaborative, goal-oriented environment

## History of Kanban

- Means “visual note” in Japanese
- Created by Taichii Ohno in the 1950s at Toyota
- Inspired by grocery store inventory techniques



## Foundations of Kanban

- Visualize your work
- Limit Work-In-Progress (WIP)
- Pull Method

## Visualize your Work

- Kanban boards are centrally located in the office or online
- This allows team members to continually update the status of tasks as they are completed
- Kanban increases efficiency by eliminating the need for status update meetings and confusing emails
- Holds team members accountable because their progress is continually tracked
- Promotes collaboration between team members; members can work together to further the status of a task

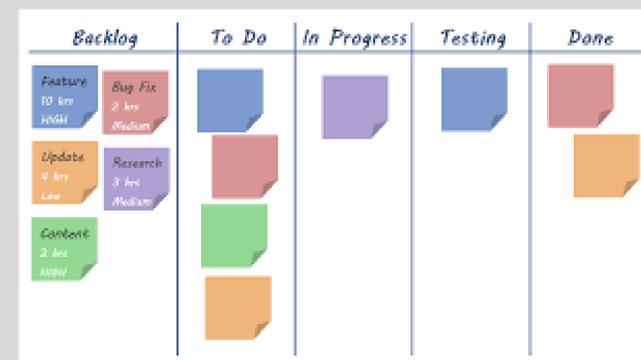
## Limit WIP

- **Physically limiting the number of notecards in each column**
- Ensures that employees remain focused, dedicated, and cognizant of the particular project’s goals and their respective statuses
- Prevents the accumulation of tasks that lead to worker fatigue and stress
- Having too many tasks in progress at one time impedes on general productivity, which inhibits sustainability
- Makes sure there are enough tasks in each column so that every team member has a task to work on, and it allots extra tasks for developers to switch to if working on one task becomes unproductive

## Pull Method

- Tasks are “pulled” from column to column depending on their status
- Prompts teams to prioritize tasks and only pull in new tasks when a team member is ready for more work
- Allows effective collaboration and cooperation among team members
- Emphasizes proactivity instead of reactivity
- Compared to the push method which historically slams team members with various tasks leading to worker fatigue and stress

## A Typical Kanban Board



## Potential Drawbacks

- Competition between team members to complete the most tasks
- No deadlines designated on the Kanban board
- Demand as the sole indicator of when to increase inventory – if demand drastically changes over a short amount of time companies may not be able to stay on pace with the needs of the consumers

## Kanban at Software Development Companies



Kanban at Xbox	Kanban at Spotify
<p><b>Kanban Board:</b></p> <ul style="list-style-type: none"> <li>• “Visualize work and limit WIP”</li> <li>• Columns: Backlog, Specify, Implement, Validate</li> <li>• Sub-columns within each column, serve as a quality check on each task</li> </ul>	<p><b>Kanban Board:</b></p> <ul style="list-style-type: none"> <li>• Columns: To-Do, Doing, Done</li> <li>• Rows: Tangible, Intangible, Expedite</li> <li>• Separates Operations Team tasks and tasks for other departments</li> </ul>
<ul style="list-style-type: none"> <li>• Mathematical formula to determine WIP limit</li> <li>• Enough tasks for each developer</li> <li>• Extra tasks if work on one task becomes unproductive</li> </ul>	<ul style="list-style-type: none"> <li>• Low WIP limits</li> <li>• Ensures that “Intangible” tasks are completed</li> </ul>
<p>“Every minute of work my teams do adds value for customers to our products.”</p>	<p>“We’ve noticed that our lead times are shorter, we get more internal tasks done, and the departments we interface with are happier.”</p>

## Other Workflow Methodologies

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| <p><b>Kanban</b></p> <ul style="list-style-type: none"> <li>• Builds a solid foundation for long-term success by improving quality of whole processes</li> <li>• Promotes a sense of positive collaboration</li> <li>• Saves employees time and money</li> <li>• Improves the standard and quality of projects</li> <li>• Highly adaptable</li> <li>• Continual feedback and quality checks</li> <li>• Simple workflow terminology</li> <li>• Stimulates and maintains productivity</li> </ul> | <p><b>Lean and Six Sigma Manufacturing</b></p> <ul style="list-style-type: none"> <li>• Focus on decreasing waste and reducing the number of product defects                             <ul style="list-style-type: none"> <li>• <b>Scrum</b></li> </ul> </li> <li>• Two to four-week sprints</li> <li>• Focus solely on a specific project to complete in that time frame</li> <li>• Highly technical, so it tends to be harder for new employees to grasp the terminology                             <ul style="list-style-type: none"> <li>• <b>Waterfall</b></li> </ul> </li> <li>• Clear flowchart-like path which is designed based on cost and time allotted</li> <li>• Very little flexibility</li> </ul> |
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