Kanban

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Module Code: COMP1929

Module Name: Software Engineering

Credits: 15

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Introduction

- Developed by Taiichi Ohno(Industrial Engineer and Businessman) for Toyota automotive.
- early 1940's
- Simple planning system, the aim of which was to control and manage work and inventory at every stage of production optimally.
- David J. Anderson who was the first to apply the concept to IT, Software development and knowledge work in general in the year 2004

Four Foundational Principles

1. Start with what you are doing now
2. Agree to pursue incremental, evolutionary change
3. Initially, respect current roles, responsibilities and job-titles
4. Encourage acts of leadership at all levels

Six Practices of the Kanban Method

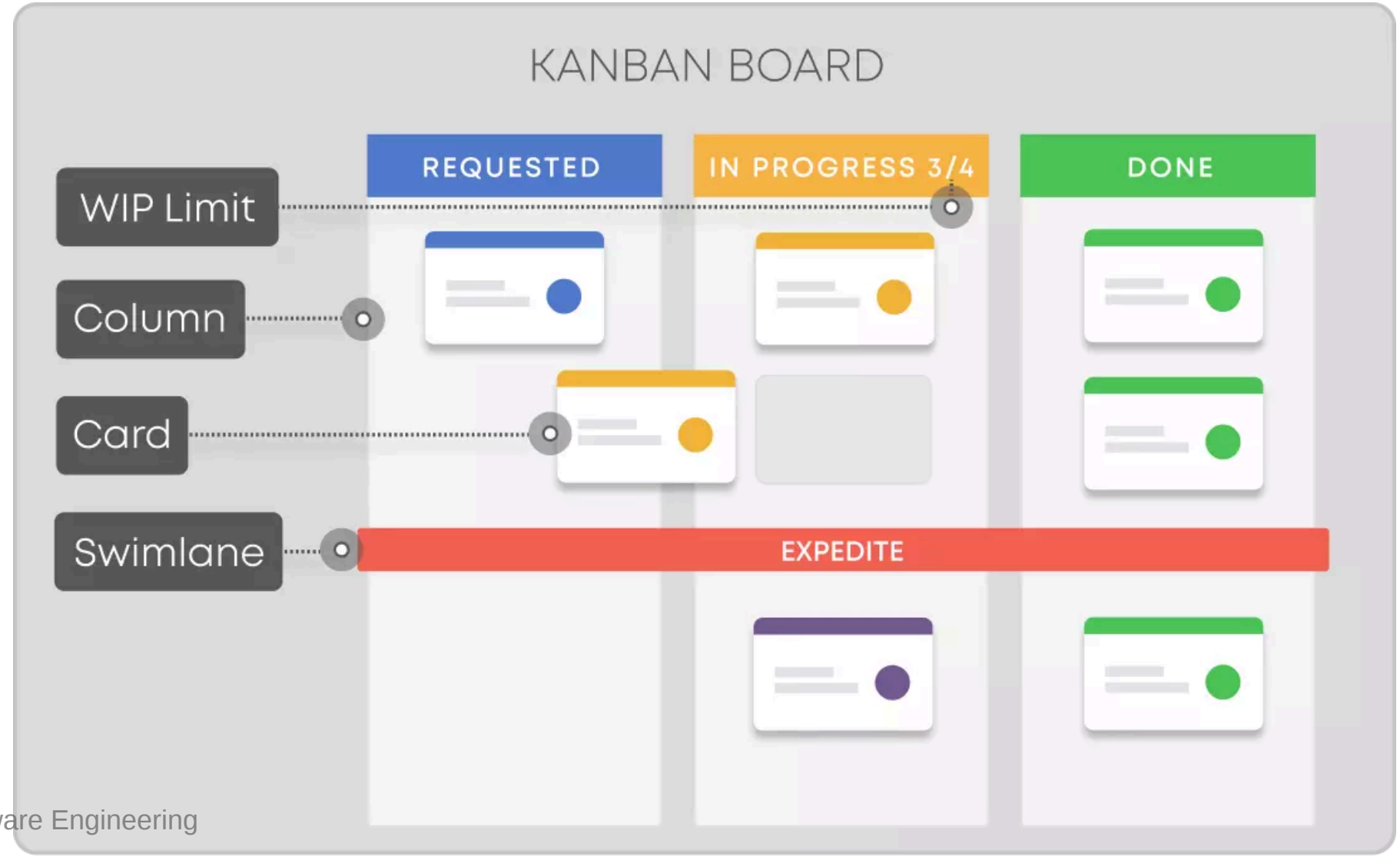
1. Visualize the flow of work
2. Limit WIP (Work in Progress)
3. Manage Flow
4. Make Process Policies Explicit
5. Implement Feedback Loops
6. Improve Collaboratively, Evolve Experimentally

Classic Kanban

In a classic Kanban board model, there are three columns, as shown in the picture above:

- “To Do”: This column lists the tasks that are not yet started. (aka “backlog”)
- “Doing”: Consists of the tasks that are in progress.
- “Done”: Consists of the tasks that are completed

Kanban Diagram



Work-in-Progress (WIP) Limits

1. Rather than timeboxing, like we do with sprints in Scrum, Kanban is a continuous flow of work, limited by the constraint on that column of the Kanban board.


center

2. You set your column limits to avoid bottlenecks in your development process. If there is a build up or slow movement in one stage, you can adjust the WIP limits in the columns either side to prevent a build up of stress on a single point in the system.

Why do we limit WIP?

How to decide WIP limits?

- Measure flow
- Where are your bottlenecks?
- How do you manage them?
- Do you throw more engineering resource at one of the stages? If you do, then what impact will that have on the following stage?
- Redeployment of resource to earlier stages or later stages may be a better way to ensure a constant flow.

Kanban Flow

The concept of Flow is critical and by measuring Flow metrics and working to improve them, you can dramatically improve the speed of your delivery processes while reducing cycle time and improving the quality of your products or services by getting faster feedback from your customers – internal or external.

Cumulative Flow Diagrams

- In Kanban we use cumulative flow diagrams to show how much work we are completing

Releasing in Kanban

- Using Kanban, **continuous deployment** is possible.
- You can release a new iteration of your product every day.
- This has a huge advantage, even over **Scrum**, which pridws itself on releasing early and often
- Where feedback in **Scrum** can only be gathered at the end of the sprint, meaning any feature built in day one has a feedback lag of *~2 weeks*, new features can Kanban can be tested by users as soon as they are completed.

Kanban for you

- Kanban is a great approach for small projects, it helps you focus on actually finishing features.
- As an agile methodology, the idea of Kanban is to increase the likelihood that your project is going to be successful.
- Especially when working on your own, you may be tempted to work on features in an arbitrary fashion eg. half building a form, then realizing you need a database, so half building a database, then building part of the logic, while finishing nothing.
- Using Kanban, visualizing your work and limiting WIP can help prevent this.

Kanban in your career

- Aside from fast moving startups or small projects you probably won’t be developing using Kanban.
- However, a working knowledge of Kanban is in demand

Kanban as a Tool

- Rather than look for companies that solely use Kanban, it is important to know that Kanban is a tool that you can utilize.
- When presented with a project, consider whether Scrum, Kanban or waterfall would fit the project best.
- A lot of R&D departments will use Kanban due to the lightweight nature of the methodology and the speed at which you can deliver features.

Kanban in Enterprise

- I’ve not seen a good example of Kanban scaling up very well
- Some teams use a modified version of Kanban
- This embraces the Agile mindset of ‘use what works’
- Hybrid approaches such as ScrumBan are relatively popular
- Some corporate management teams do not like Software Development teams using Kanban, as it can be hard to track progress and make estimates.
- This is where Scrum helps.

Summary

- Another agile methodology
- A very different use to Scrum
- Spotify is known for utilizing Kanban amongst other agile methodologies
- Very good for extremely small teams or even individuals.