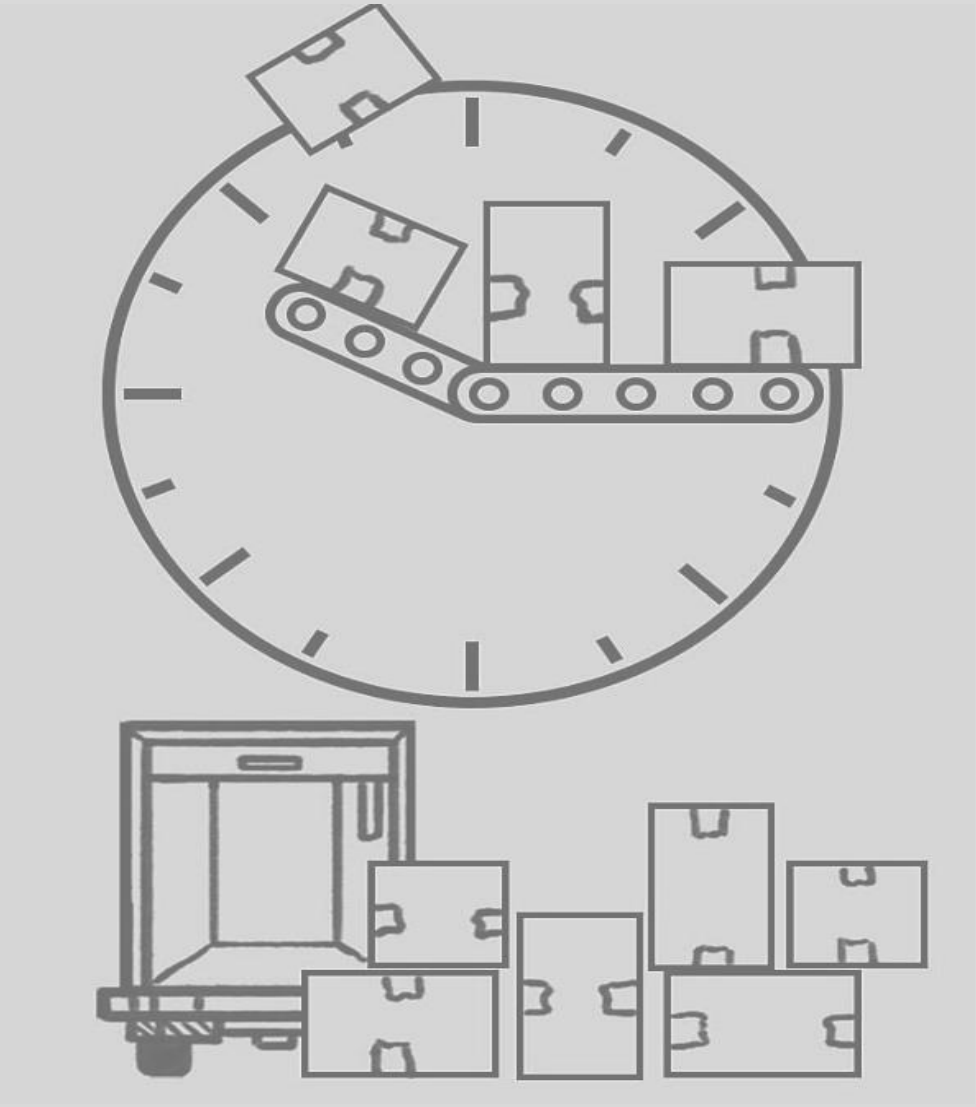
JUST IN TIME AND LEAN



Course Description

Journey of reducing waste, optimizing processes, and engaging your team starts here. Just- in-Time manufacturing (JIT), popularized by Toyota in the 20th century, remains the time- tested cornerstone of any lean organization. Its principles have lifted businesses out of crises and propelled them to heightened levels of profitability. Whether you are a lean sensei who is continuously learning or a beginner new to the world of lean manufacturing, this course is for you. While basic knowledge of lean is helpful, ultimately there are no prerequisites. The course is ideal for lean practitioners, operations managers, line supervisors, business leaders, and quality professionals alike who want to set a lean example. JIT manufacturing will improve your on-time delivery, reduce inventory, increase morale, and ultimately save costs.

Course Objective and Learning Outcome

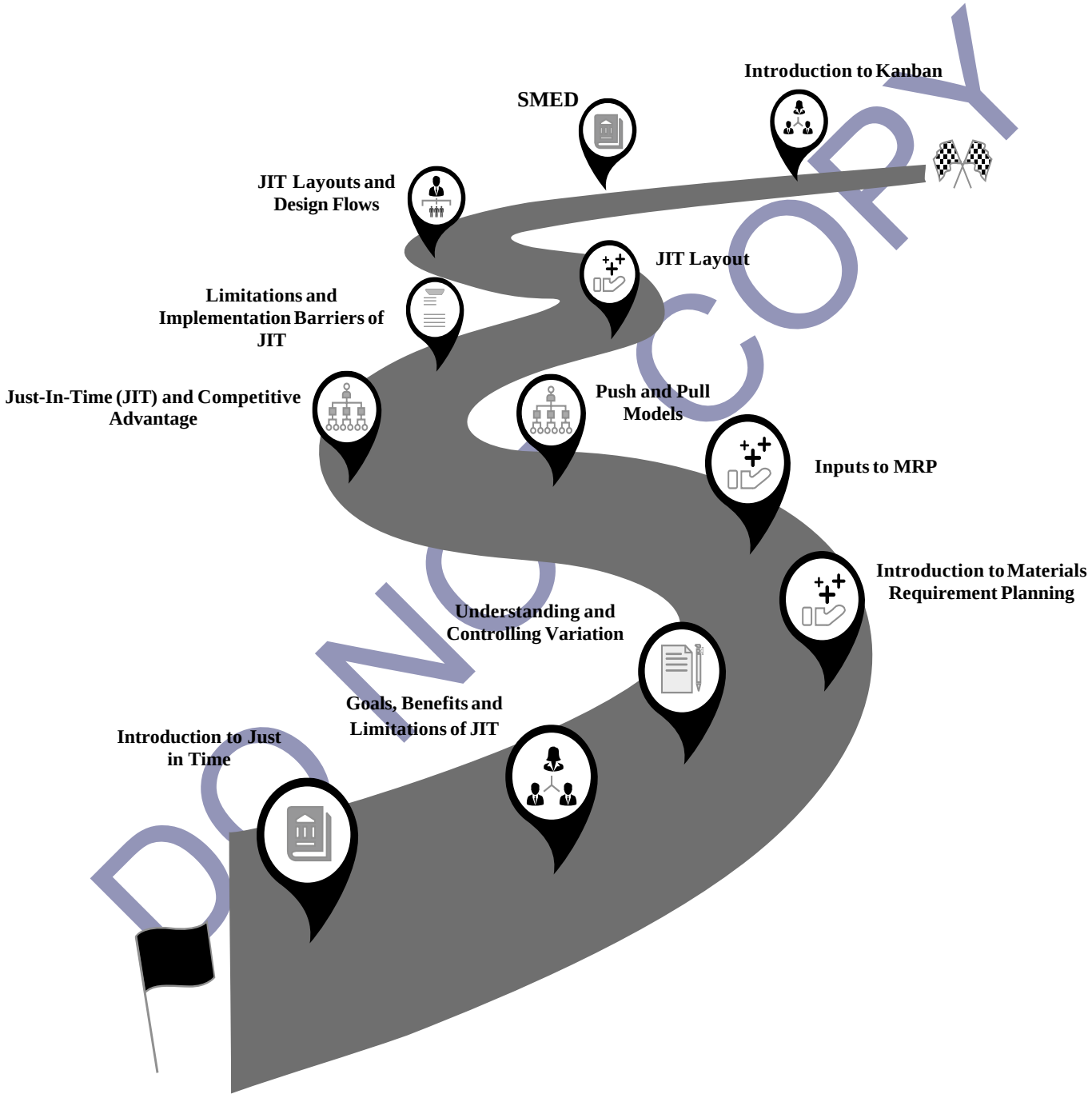
Course Objectives

- To impart knowledge for facilitating worker environment.
- To identify hidden manufacturing wastes.
- To impart knowledge on systematic approach for implementing lean manufacturing practices

Learning Outcomes

- Identify and quantify the hidden manufacturing wastes in industries.
- Develop a roadmap for successful implementation of lean principles ,Identify and organize the element.
- Analyze the effectiveness of lean manufacturing tools.
- Identify and organize the elements of just in time manufacturing, and lean manufacturing.

ROAD MAP



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Just In Time And Lean

12 INTRODUCTION TO KANBAN

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UNIT OBJECTIVES

After studying this unit, you will be able to:

- Explain the origin and History of Kanban.
- Identify the reasons for implementing Kanban.
- Explain in detail the steps and process of Implementing Kanban.

INTRODUCTION

Kanban is a popular framework used to implement agile and DevOps software development. It requires real-time communication of capacity and full transparency of work. Work items are represented visually on a Kanban board, allowing team members to see the state of every piece of work at any time.

Kanban is a visual method for managing workflow at the individual, team, and even organizational level. Pronounced "kahn-bahn," the term translates from its original Japanese to "visual signal" or "card.

Unlike other workflow management methods that force change from the outset, Kanban is about evolution, not revolution. It hinges on the fundamental truth that you must know where you are before you can get to your desired destination.

Kanban can be applied to virtually any type of work that follows a repeatable process; if your work follows the pattern of "To Do," "Doing," and "Done," it can be managed on a Kanban board.

Before we dive any deeper, let's take a minute to explain what we mean when we talk about Kanban boards and cards.

Imagine a whiteboard, divided into vertical lanes. Each lane represents a step in your process, from "To Do," to "Doing," to "Done."

In Kanban, work always begins on the left side of the board, and works its way to the right: The far left lane typically holds work items that have not been started, and the far right lane holds work items that have been completed.

In addition to visualizing the steps in your process, Kanban boards can also provide visibility into other information about your work, such as process

policies (rules for using the board), and work-in-process (WIP) limits. You can learn more about Kanban boards.

LEARNING OUTCOMES

The content and assessments of this Unit have been developed to achieve the following learning outcomes:

- Understand the importance and Scope of Kanban.
- Understand the need of Kanban.
- Understand the steps of implementing Kanban.
- Understand the various steps in forming Kanban Team

12.1 BRIEF HISTORY OF KANBAN

Notes

A key reason for the development of Kanban was the inadequate productivity and efficiency of Toyota compared to its American automotive rivals.

It all started in the early 1940s. The first Kanban system was developed by Taiichi Ohno (Industrial Engineer and Businessman) for Toyota automotive in Japan. It was created as a simple planning system, the aim of which was to control and manage work and inventory at every stage of production optimally.

A key reason for the development of Kanban was the inadequate productivity and efficiency of Toyota compared to its American automotive rivals. With Kanban, Toyota achieved a flexible and efficient just-in-time production control system that increased productivity while reducing cost-intensive inventory of raw materials, semi-finished materials, and finished products.

A Kanban system ideally controls the entire value chain from the supplier to the end consumer. In this way, it helps avoid supply disruption and overstocking of goods at various stages of the manufacturing process. Kanban requires continuous monitoring of the process. Particular attention needs to be given to avoid bottlenecks that could slow down the production process. The aim is to achieve higher throughput with lower delivery lead times. Over time, Kanban has become an efficient way in a variety of production systems.

While Kanban was introduced by Taiichi Ohno in the manufacturing industry, it is David J. Anderson who was the first to apply the concept to IT, Software development and knowledge work in general in the year 2004. David built on the works by Taiichi Ohno, Eli Goldratt, Edward Demmings, Peter Drucker

and others to define the Kanban Method, with concepts such as pull systems, queuing theory and flow. His first book on Kanban – "Kanban: Successfully Evolutionary Change for your Technology Business", published in 2010, is the most comprehensive definition of the Kanban Method for knowledge work.

The Kanban Method is a process to gradually improve whatever you do – whether it is software development, IT/ Ops, Staffing, Recruitment, Marketing and Sales, Procurement etc. In fact, almost any business function can benefit from applying the principles of the Kanban Methodology.

The Kanban body of knowledge has abstracted and benefited from the works of various thought leaders since the original book was written! People such as Don Reinertsen (author of Principles of Product Development Flow), Jim Benson (pioneer of Personal Kanban) and several others

SELF ASSESSMENT QUESTIONS

1. The first Kanban system was developed by _____ (Industrial Engineer and Businessman) for Toyota automotive in Japan
2. A Kanban system ideally controls the entire value chain from the supplier to the end consumer. T/F

12.2 REASONS FOR IMPLEMENTING KANBAN SCHEDULING

The term Kanban system refers to using Kanban boards and cards to manage work, improve workflow, and practice continuous improvement. Kanban systems harness the power of visual management to help teams maximize time and efficiency.

Here's why you should consider implementing a Kanban system with your team.

Why Use a Kanban System?

When it comes to identifying opportunities for improvement like using a Kanban system, your busy team members are among the people who can provide the most insight.

Notes

Kanban systems harness the power of visual management to help teams maximize time and efficiency.

However, pulling these people off task and facilitating their input may not seem possible. After all, who will get the work done while the team is brainstorming and implementing improvements?

This is the unfortunate catch-22 that many teams find themselves in: Because they're too busy to make improvements, things that could alleviate some of their busyness don't get finished. So, the cycle of inefficiency continues.

To overcome the challenges of having too much work and not enough time to take a step back, many teams have found a Kanban system to be a good starting point.

A Kanban system offers a systematic approach to identifying opportunities for improving efficiency by tracking and managing work in a visual way.

Kanban isn't a separate improvement-focused initiative that pulls people away from their "actual" work. It's a systematic approach to tracking and managing a team's work that, when used correctly, will naturally highlight opportunities for improvement. When teams identify those opportunities, they can implement solutions and track their progress on the same Kanban board.

With a Kanban system, "doing the work" and "improving the way we work" can be performed simultaneously – helping teams truly embrace the continuous part of continuous improvement.

A Kanban System for Software Development and Beyond

The Kanban system we know today, which involves the use of virtual boards and cards to track work as it moves through a process, largely took shape in the later part of the last century, when it was embraced by software development teams.

Unlike the manufacture of physical goods, the development of software isn't something that is tangible; raw materials are not manipulated on an assembly line to create physical objects. Instead, the work of software development happens within the minds of developers – it's one of many types of knowledge work.

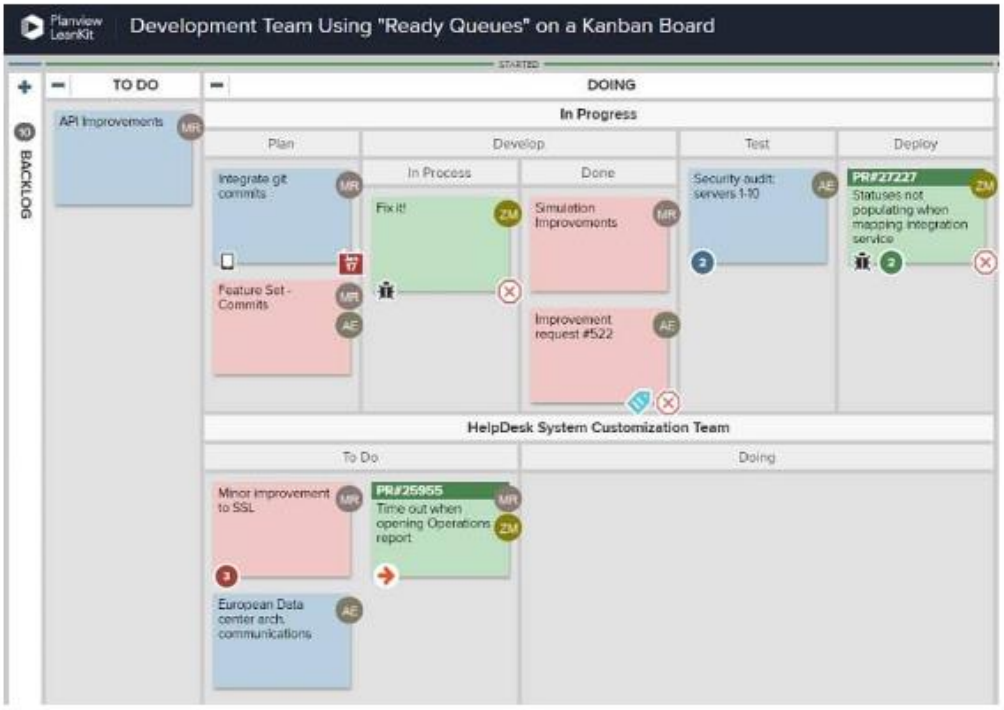

Figure 12.1: Software Development Team Leveraging a Kanban System

Image Source: https://www.planview.com/resources/guide/introduction-to-kanban/kanban-system-maximize-time/

Software development was a new type of work that required a different type of workflow. Teams needed a way to:

- Practice iterative development
- Balance multiple types of work
- Align efforts across the team

They needed to be able to track, measure, and improve upon their processes in the same place.

The Kanban system, as we know it today, emerged as a highly flexible, visual tool that enabled software development teams to manage their work in a way that made sense for their workflows.

Since then, Kanban has been used by virtually every type of team in every industry

SELF ASSESSMENT QUESTIONS

1. The term _____ refers to using Kanban boards and cards to manage work.
2. A Kanban system offers a systematic approach to identifying opportunities for improving efficiency by tracking and managing work in a visual way. T/F

ACTIVITY 1

1. List down the reasons for implementing Kanban
2. List down the 2 important outcomes by implementing Kanban.

12.6 SUMMARY

Kanban is a popular framework used to implement agile and DevOps software development. It requires real-time communication of capacity and full transparency of work. Work items are represented visually on a Kanban board, allowing team members to see the state of every piece of work at any time.

Kanban is a visual method for managing workflow at the individual, team, and even organizational level. Pronounced “kahn-bahn,” the term translates from its original Japanese to “visual signal” or “card.

It all started in the early 1940s. The first Kanban system was developed by Taiichi Ohno (Industrial Engineer and Businessman) for Toyota automotive in Japan.

When it comes to identifying opportunities for improvement like using a Kanban system, your busy team members are among the people who can provide the most insight.

The Kanban system we know today, which involves the use of virtual boards and cards to track work as it moves through a process, largely took shape in the later part of the last century, when it was embraced by software development teams

Kanban is an incredibly powerful method for managing your workflow process and gradually improving your performance. It encourages all of the core best practices of agile, like cross-functional teams, fast feedback, co-location and pairing, and continuous integration and deployment.

12.7 KEYWORDS

- **Archive:** Archive is the last stage in the life-cycle of a work-item in SwiftKanban and contains completed cards (Stories/ Defects/ Issues). This stage cannot be modified. The lead/ cycle time of a story is calculated when it is archived from the Kanban board.
- **Backlog:** Backlog is a notional placeholder/ view which shows a consolidated list of work-items (User Stories/ Defects/ Issues) which are to be worked upon. One can search through the Backlog and add cards to the Kanban Board Software.
- **Blocked Time:** This is the duration for which the card was in a blocked state on the board.
- **Card:** A card in SwiftKanban can be any work-item, a user Story/ Defect or an Issue or a mailer campaign, etc. and represents a piece of work to be done.

12.8 SHORT ANSWER QUESTIONS

1. According to SMART goals, what does the letter 'A' refer to?

   a. Abstract
   b. Attainable
   c. Ask
   d. Abstain

2. How does Kanban prevent work over capacity?

   a. By using Work In Progress (WIP) Limit.
   b. By setting a robust Kanban workflow.
   c. By having daily meetings about work in progress.
   d. By defining explicit policies.

12.9 HIGH ORDER THINKING SKILL

1. Match the following

List I	List II
(1)____ was the first to apply the concept to IT, Software development and knowledge work	(i) David J. Anderson
(2) The ____ of knowledge has abstracted and benefited from the works of various thought leaders since the original book was written	(ii) Kanban boards
(3) The term Kanban system refers to using _____ and cards to manage work.	(iii) Kanban body

a. 1- (iii) 2- (i) 3- (ii) b. 1- (i) 2- (iii) 3- (ii)
c. 1- (ii) 2-(iii) 3- (i) d. 1- (ii) 2- (iii) 3- (i)

2. Match the following

List I	List II
(1) Kanban isn't a ____ that pulls people away from their "actual" work	(i)Separate improvement-focused initiative
(2) With a Kanban system, _____ and "improving the way we work" can be performed simultaneously.	(ii) "Doing the work"
(3 The Kanban system, as we know it today, emerged as a _____ that enabled software development teams to manage their work in a way that made sense for their workflows.	(iii) Highly flexible, visual tool

a. 1- (iii) 2- (i) 3- (ii) b. 1- (i) 2- (iii) 3- (ii)
c. 1- (ii) 2-(iii) 3- (i) d. 1- (ii) 2- (iii) 3- (i)

12.10 DESCRIPTIVE QUESTIONS

1. What is Kanban system, explain with an example?
2. What are the 6 rules of Kanban?
3. What are the steps of Kanban system?

4. What is the key aim of Kanban?

5. How do you implement a Kanban?

12.11 ANSWER KEY

A. SELF-ASSESSMENT QUESTIONS

Topic	Q. No.	Answer
A Brief History of Kabana	1	Taiichi Ohno
	2	True
Reasons for Implementing Kanban Scheduling	1	Kanban system
	2	True

B. SHORT ANSWER QUESTIONS

Question No.	Answer
1	Attainable
2	By using Work In Progress (WIP) Limit.

C. HIGHER ORDER THINKNG SKILLS (HOTS)

Question No.	Answer
1	1- (i) 2-(iii) 3- (ii)
2	1- (ii) 2-(i) 3- (iii)

12.12 SUGGESTED READINGS AND E RESOURCES

Suggested Readings

- Real World Kanban: Do Less, Accomplish More with Lean Thinking by Mattias Skarin
- Starting, Start Finishing by Arne Roock
- Kanban from the Inside by Mike Burrows

E-Resources

- https://itsm.tools/getting-started-with-kanban/
- https://getnave.com/blog/what-is-the-kanban-method/#:~:text=Limiting%20WIP%20is%20critical%20for,lead%20times%20and%20avoiding%20delays.
- https://kanbanize.com/kanban-resources/getting-started/what-is-wip