

Lean

Introduction to Lean Concepts



Overview

- What is Lean?
- Lean Basics
- Eliminating Waste
- The Kaizen PDCA Cycle



What is Lean?

- While Lean practices originated in manufacturing, the philosophy, principles, and practices of Lean are applicable to any organization:
 - Production or Lean Manufacturing
 - Service
 - Office and Lean Administration
 - Management



What is Lean?

- Lean is a term originally coined by MIT researchers in the late 1980's to describe the Toyota Production System (TPS).
- System pioneered in the 1950's by Toyota's Production Manager, Taiichi Ohno, as an alternative to the Ford Motor Company's system of mass production.



What is Lean?

■ Benefits of TPS

- Needed less effort to design, make and service their products
- Required less investment to achieve a given level of production capability
- Produced products with fewer defects
- Used fewer suppliers
- Performed its key processes in less time with less effort
- Needed less inventory at every step
- Had fewer employee injuries



What is Lean?

- Based on the following ideas and concepts:
 - Value - Act on what's important to the customer of the process.
 - Value Stream – Understand which steps in the process add value, and which don't.
 - Flow – keep the work moving at all times and eliminate waste that creates delays.
 - Pull – Avoid making more, or ordering more inputs, for customer demand you don't have.
 - Strive for Perfection – there is no optimum level of performance, just continually pursue improvements.



Lean Basics

- Focus on the Customer
 - Lean always starts with the customer - the customer defines the value of the product or service.
 - To be considered value-added, any process or activity must meet the following three criteria:
 - The customer must be willing to pay for it
 - The activity must transform the product or service in some way
 - The activity must be done correctly the first time



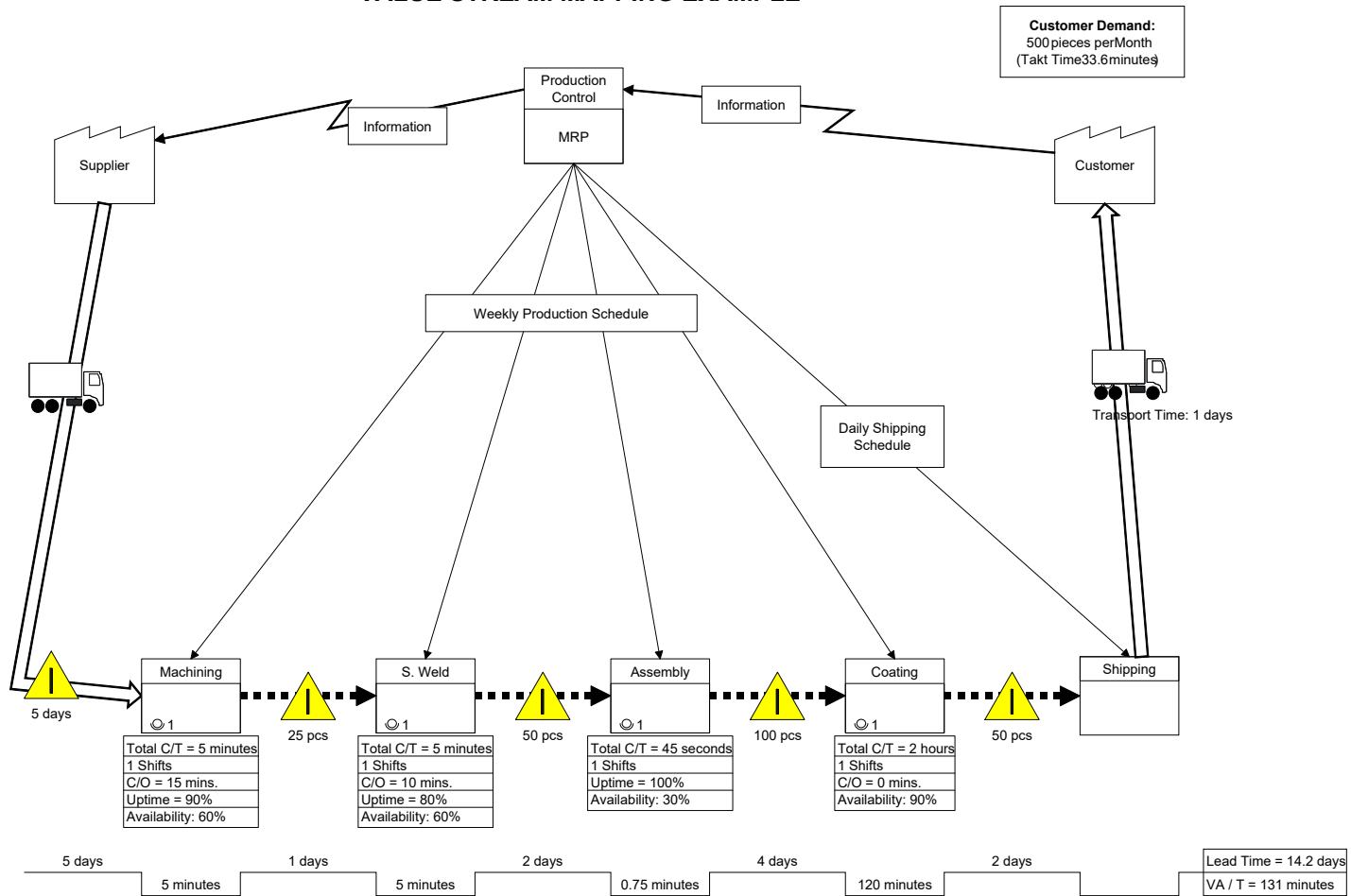
Lean Basics

- Improve the Value Stream
 - Value is delivered to the customer through the value stream.
 - Ideally, the value stream would consist of only value-adding activities.
 - Anything activity that does not add value is waste (Muda).
 - Value-Stream Mapping is used to capture and specify process activities, timing, and events in the value stream.
 - Current and Ideal-state Value-Stream Maps are defined, and used to identify and reduce the gaps between the two states.



Lean Basics

VALUE STREAM MAPING EXAMPLE





Lean Basics

■ Maintain Flow

- In Lean, the concept of flow is applied to all activities. Process must be synchronized precisely to the customer's rate of consumption.
- From the first action in the value stream, products or services never stop until they reach the customer.
- Products or services progress through a set of only value-added activities until they reach the end-user.



Lean Basics

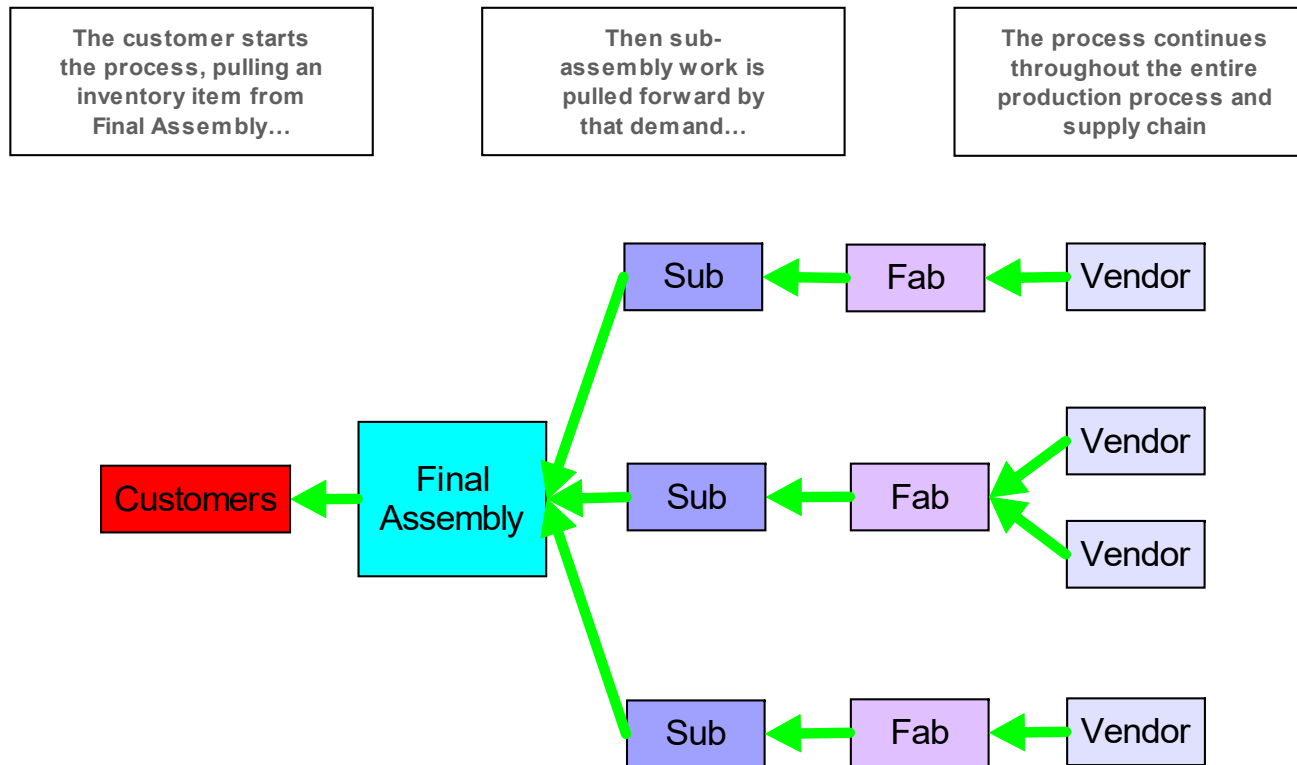
■ Pull Through the System

- In Lean, products or services are pulled through the system as a result of action by the customer.
- Lean utilizes level scheduling practices (heijunka) to keep the system operating at a steady and achievable pace.
- As a customer consumes a product or service, the system is triggered to replace what the customer has used (Kanban).



Lean Basics

PULL SYSTEM EXAMPLE





Lean Basics

■ Strive for Perfection

- Constant incremental improvements are achieved through *Kaizen* – improve something every day.
- More radical improvements are achieved through *Kaikaku*, which may imply a complete change in technology or process methodology.



Eliminating Waste

- A key to improving the health of the value stream is to eliminate waste (Muda).
 - The seven types of Muda (TWO DIMES):
 - Transport
 - Waiting
 - Overproduction
 - Defects
 - Inventory
 - Motion
 - Extra Processing
 - An eighth type of waste should also be considered – the underutilization of employees.



Lean Techniques

- Value Stream Mapping
- Quality at the Source
 - Poka Yoke
- 5S Workplace Organization
- TPM (Total Preventative Maintenance)
- Visual Management
- SMED (Setup Reduction)
- Batch Size Reduction
- Cellular Manufacturing
- Standardized Work
- Takt-Time (Work Balancing)
- Production Leveling / Smoothing
- Point-of-Use Systems
- Kanban
- Kaizen (Continuous Improvement)



Kaizen (Continuous Improvement)

- Kaizen
 - A philosophy of continual improvement, emphasizing employee participation.
 - Every process is continuously evaluated and improved in terms of time, resources, quality and other aspects relevant to the process.
- Two Types of Kaizen
 - Flow Kaizen – value stream improvement
 - Point Kaizen – elimination of waste



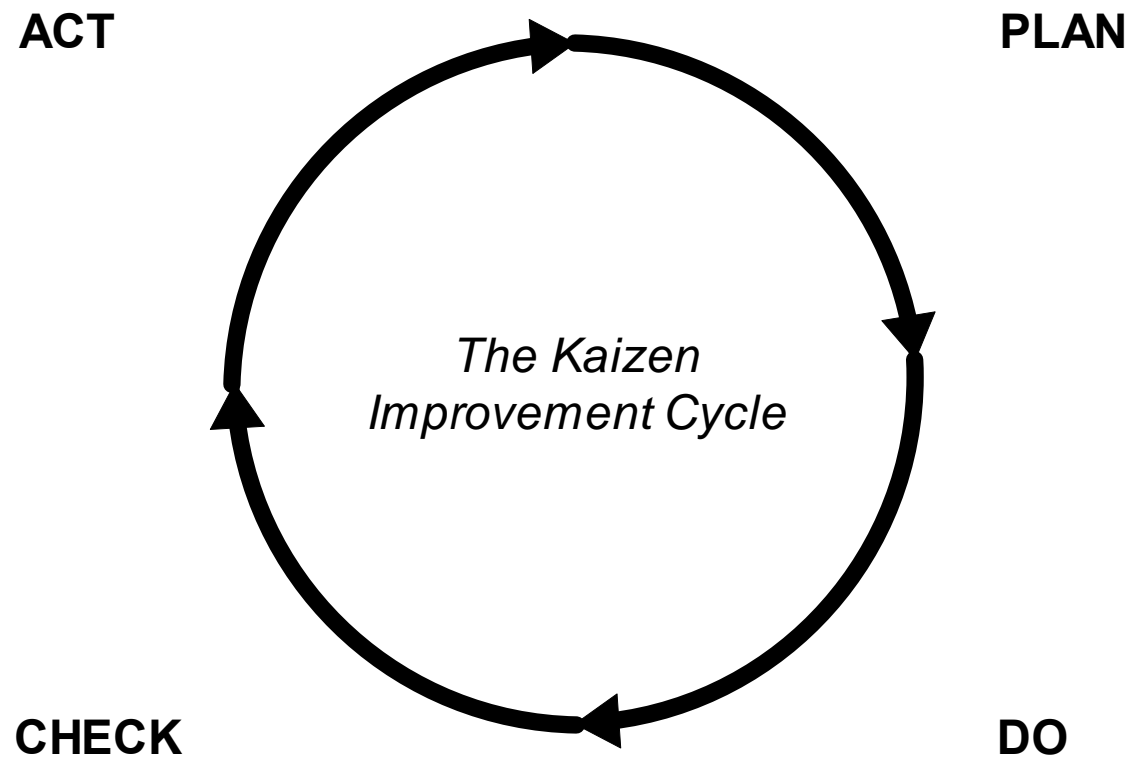
Kaizen (Continuous Improvement)

■ Kaizen Events

- Kaizen events, or Kaizen workshops, are special groups setup to quickly improve a specific area utilizing lean tools/concepts.
- Kaizen is intended to be incorporated as a normal day-to-day approach to improvement of the entire value stream.



Kaizen (Continuous Improvement)





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