

LEAN MANUFACTURING

WHAT IS LEAN MANUFACTURING?

A way to

“Eliminate waste”

“Improve Efficiency”

in a manufacturing process

LEAN GOAL

- Improve quality



- Elimination of waste



- Reduce time



- Reduce Total cost



WHAT IS WASTE?

Waste is anything that happens to a product/service that "does not add value" from the customer's perspective.



TYPES OF WASTE

Non-value added: Hold all waste in “CLOSED MITT”.

- Complexity
- Labor
- Overproduction
- Space
- Energy
- Defects
- Materials
- Idle materials
- Transportation
- Time

COMPLEXITY

1. Poor Communication
2. Excessive Approvals
3. Excessive Paperwork



LABOR

1. Excessive Labor
2. Inconsistent Working Method
3. Doing Unnecessary Tasks



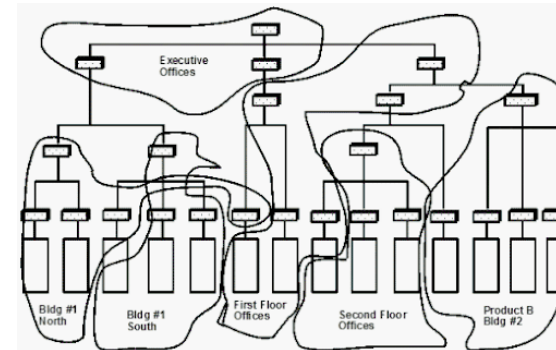
OVERPRODUCTION

1. Wrong inventory management.
2. Customer needs not understood
3. Desire to utilize full employees performance until finishing raw materials



SPACE

1. Excessive equipment
2. Poor Layout



ENERGY

1. People using more energy
2. Machines using more energy



DEFECTS

1. Poor quality system
2. Inadequate Training/Education
3. Customer needs not understood
4. Poor information/Communication



MATERIALS

1. Not understanding the cost
2. Customer needs not understanding
3. Lack of standard



IDLE MATERIALS

1. Poor suppliers
2. Long Process Time



TRANSPORTATION

1. Poor plant layout
2. Large storage areas
3. Unplanned Movements



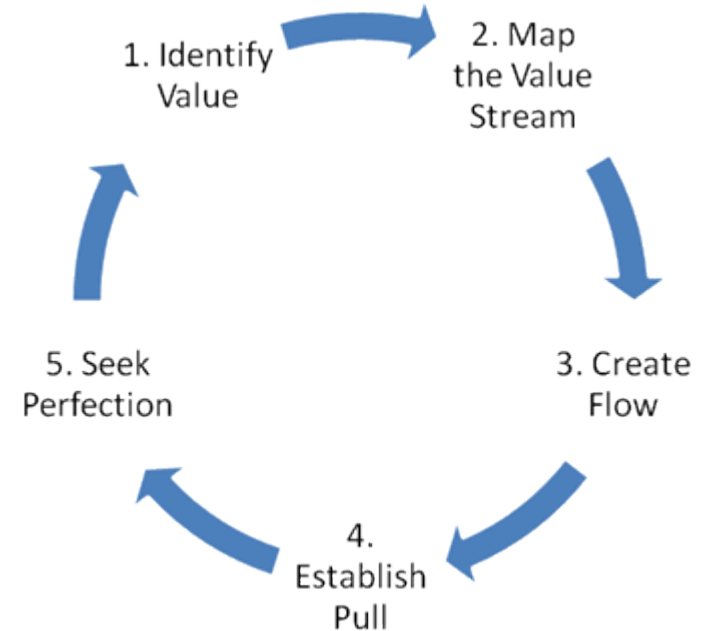
TIME

1. Waiting for material
2. Doing Unnecessary tasks
3. Gossips



PRINCIPLES OF LEAN MANUFACTURING

- Production of value
- Optimizing the value stream
- Converting the process to flow
- Establish pull
- Perfection of all products, processes and services.



PRODUCTION OF VALUE:

- Value – It is what the customer is willing to pay for.
- Important to discover the actual needs of customer.

MAPPING THE VALUE STREAM:

- Overall goal – To utilize the customer's value as a reference point and locate areas that correlate with their values.
- Any activities and processes that do not add value to the end customer - **waste**.
- Two categories of waste- necessary and unnecessary wastes.
- Pure waste should be eliminated.

CREATING FLOW:

- After removing waste, ensure that flow of remaining step will run smoothly without interruption.

ESTABLISH PULL:

- The production is authorized (pulled) by customer, as opposite to a push system where the finished goods are pushed to the customer.

PERFECTION:

- Constantly identify and remove any kind of waste along the value stream to achieve perfection

IMPLEMENTARY STEP OF LEAN MANUFACTURING

- Identify the fact that there are wastes to be removed.
- Analysing the wastes and finding the root causes for these wastes.
- Finding the solution for these root causes.
- Application of these solutions and achieving the objective.

LEAN TOOLS

- 5S
- Continuous flow
- Just In Time
- Kaizen
- Kanban
- Value stream mapping

5S



How does 5S help?

- Helps in saving time

Saves time in looking for items/tools

- Improves workplace condition

Clean, spacious work centres help in increasing safety.

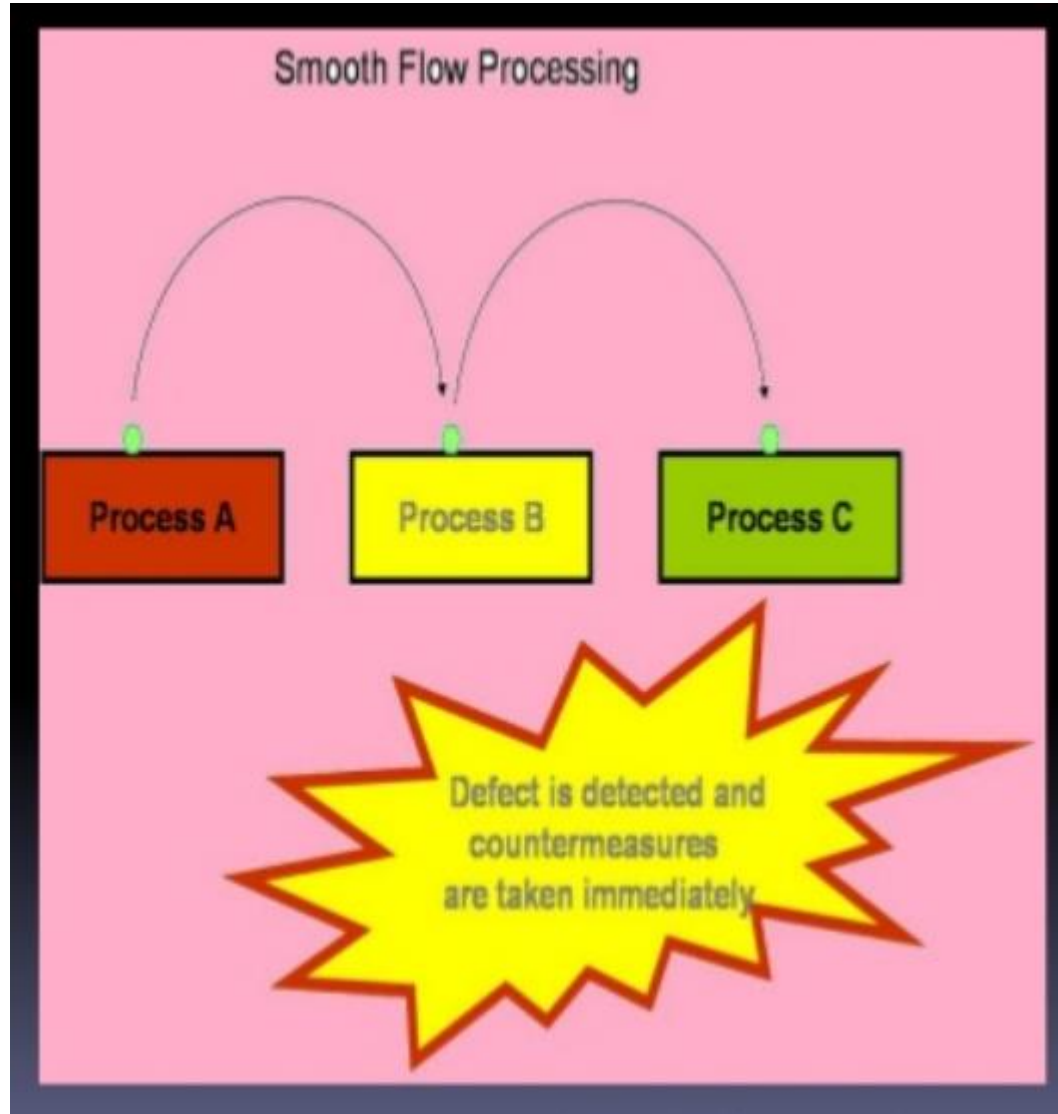
- Helps in increasing productivity

Unnecessary items and dirt get in the way of employees and negatively impact productivity.

- Helps in eliminating other waste

Waste of motion, transport and waiting.

CONTINUOUS FLOW



HOW DOES CONTINUOUS FLOW HELP?

- Helps in establishing the flow

Reduces batching, establish process flow, minimising waiting between steps, improves quality and reduces lead time.

- Helps in eliminating

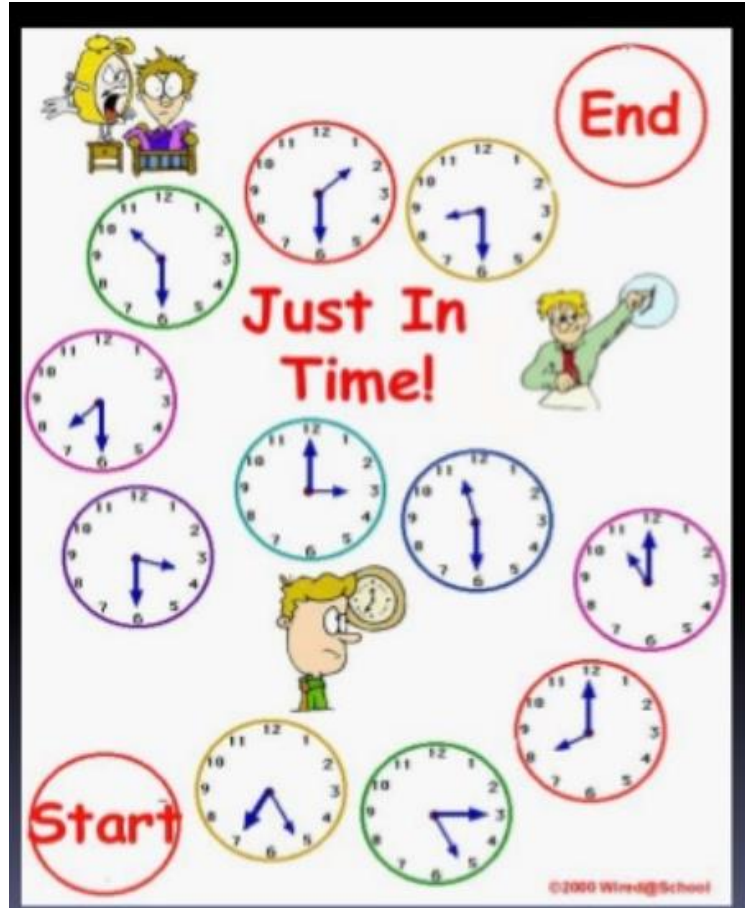
Waste of inventory and waiting.

- Helps in increasing the profit

Continuous flow in production cycle helps in increasing the production with minimal waste which in turn increases the profit

JUST IN TIME

- Production is done as per the customer demand



HOW DOES JUST IN TIME HELP?

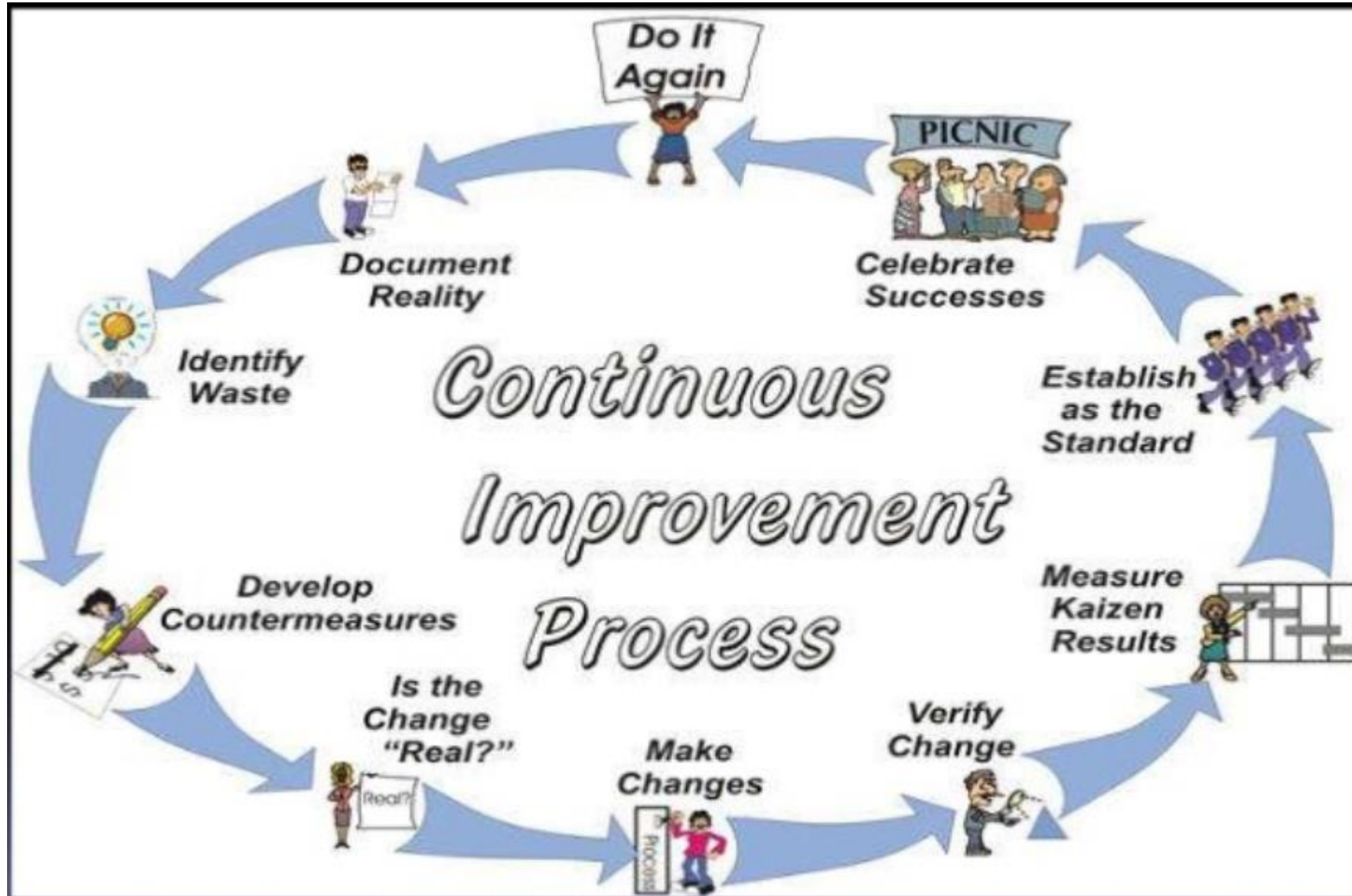
- Effective in reducing the inventory level

As the production is done after receiving the customer order, inventory storage is not required. Hence, reduces storage space.

- Helps in eliminating

Waste of overproduction, idle time, and inventory.

KAIZEN



HOW DOES KAIZEN HELP?

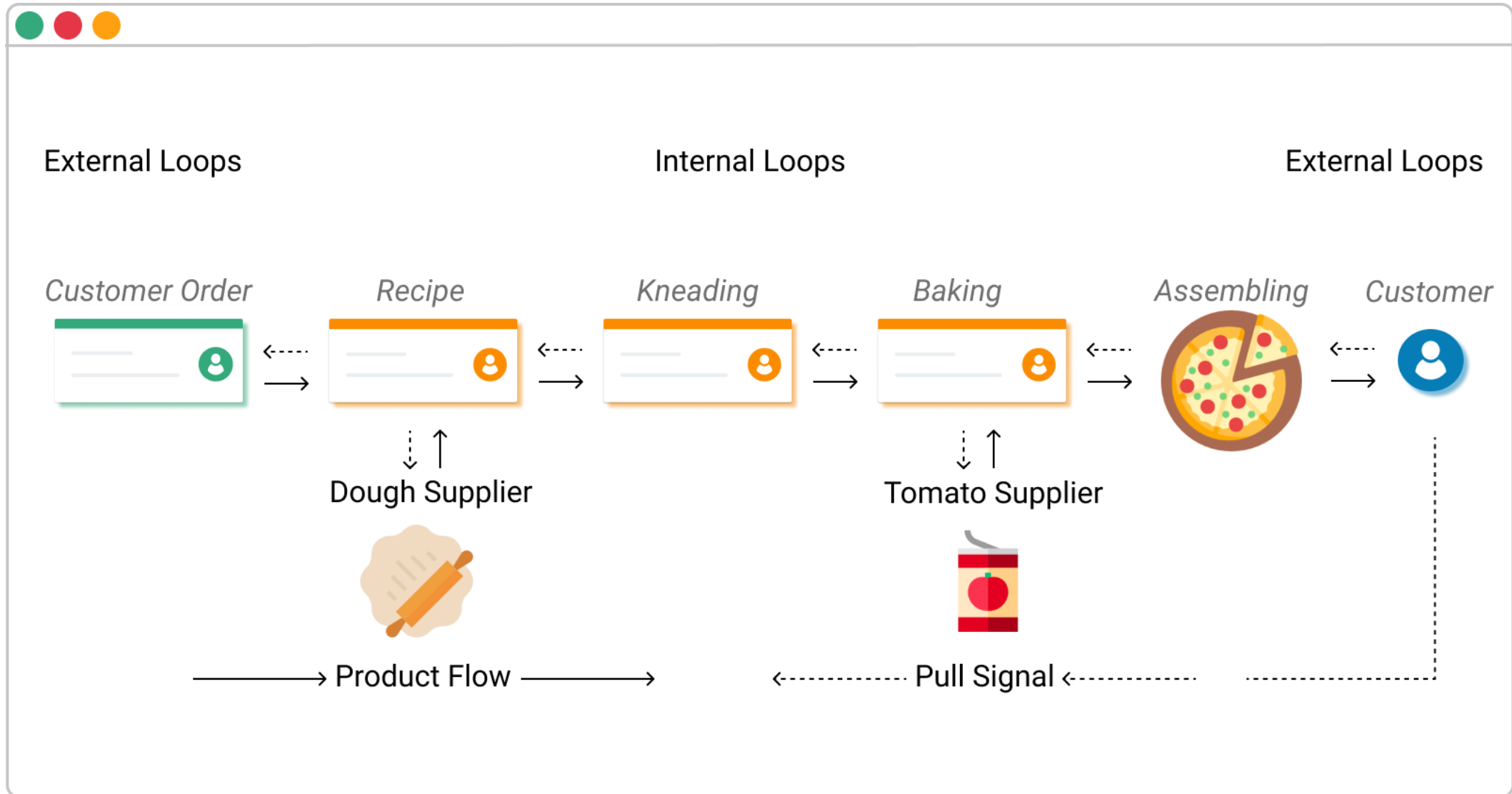
- Helps in making assigning responsibility

Helps in providing strategy where employees work together proactively to achieve regular, incremental improvements in the manufacturing process.

- Helps in eliminating wastes.

Combines the collective effort of the employees of a company to create an continuous process of eliminating waste.

KANBAN (PULL SYSTEM)



HOW DOES KANBAN HELP?

- Helps in preventing overproduction and over ordering.

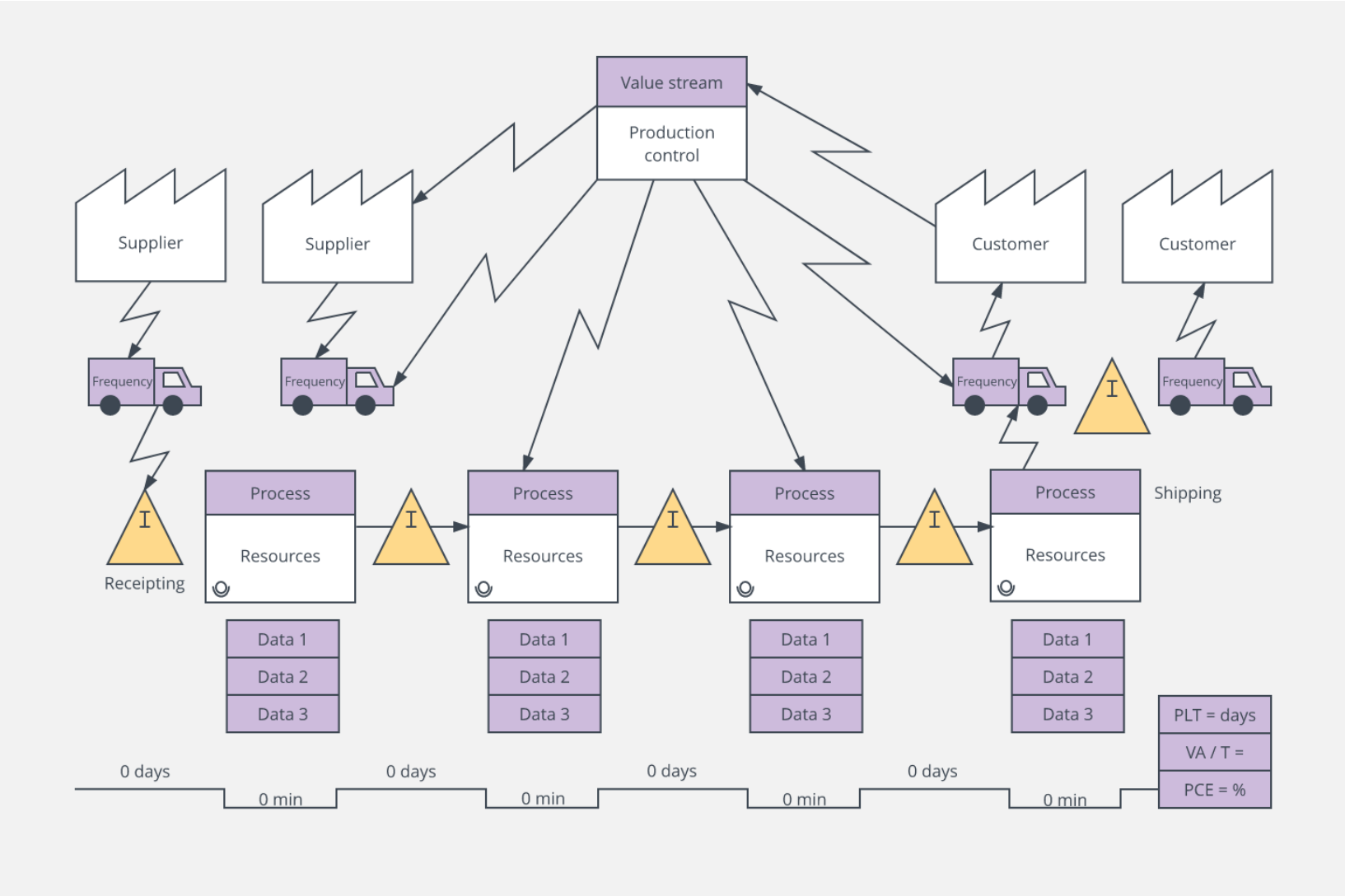
Replenish only what has been used and reorder based on rate of consumption, delivery frequency, and minimum order quantity.

- Helps in reducing
overall inventory, and order lead time.

- Increase customer satisfaction

High quality goods is achieved as the goods are produced as per the customer order.

VALUE STREAM MAPPING



HOW DOES VALUE STREAM MAPPING HELP?

- Helps in mapping the flow of the process
 - Helps in mapping the current and future state of value stream
- Helps in streamlining the process
 - Helps you quickly visualize your entire process, identifying bottlenecks where the processes can be streamlined or improved.
- Helps in eliminating the wastes
 - Easy to identify the wastes

ADVANTAGES OF LEAN MANUFACTURING

- Waste elimination
- Work place standardisation
- Effective plant layout
- Enhanced quality
- Increase the productivity by 30% from the existing level
- Reduction the risk of non-compliance
- Eliminate late delivery

THANK YOU