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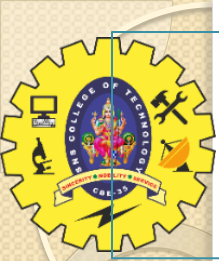
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DEPARTMENT OF AUTOMOBILE ENGINEERING

COURSE NAME : 19AUZ405 – LEAN MANUFACTURING

IV YEAR / VII SEMESTER

Topic – Value Stream Mapping



Value Stream Mapping



- “Value stream mapping is a lean manufacturing or lean enterprise technique used to document, analyze and improve the flow of information or materials required to produce a product or service for a customer.”



Value Stream Mapping

Definition.

Value-stream mapping, also known as "material- and information-flow mapping", is a lean-management method for analyzing the current state and designing a future state for the series of events that take a product or service from the beginning of the specific process until it reaches the customer.



Value Stream Mapping

Importance Value Stream map

It is a visual tool that displays all critical steps in a specific process and quantifies easily the time and volume taken at each stage.

Its show the flow of both materials and information as they progress through the process.

It is a series of steps that occur to provide the product or service that their customers want or need.

It provides us with a structured visualization of the key steps and corresponding data needed to understand and intelligently make improvements that optimize the entire process



Process Mapping Symbols

Lean Process Mapping Symbols:

Generic Start / Stop block. Start begins with the start of the process and stops typically close to the next customer.

Generic Process step: It can be used to any process stepstep , represent step.

Generic Decision step: It can be used to represent any process step.

Supplier Customer icon: When in the pp / upper left, the usual starting point for material flow it represents the Supplier.

The Customer is typically placed in the upper right and represents the end of the process flow.



Process Mapping Symbols

General Process icon.

It can represent an operation, machine or department, through which material flows.

Shared Process icon.

A process operation, department or work-center that other value stream families share.

Estimate the number of operators required for the Value Stream being mapped, not the number of operators required for processing all products.



Process Mapping Symbols

Data Box icon. Typically goes under process icon, information placed in a Data Box .

It may include CT (Cycle Time) i.e. part to part time. C/O (Changeover Time), Uptime- percentage time that the machine is available for processing, Operation time

i.e. number of shifts, and total minutes available for work.

Cell icon. Cells typically have multiple processes are integrated together.

Most often used for limited family of similar products or a single product. Product moves from process step to process step in small pieces batches or single pieces.



Process Mapping Symbols

Inventory icon. Represents inventory between two processes. It may also be used to storage for raw materials and finished goods.

Material Movement icons. The down arrow is used for incoming raw Value Stream material from suppliers to the receiving area. The upward arrow is used to show the movement of finished goods to the customers.

Push material icon. It represents the “pushing” of material from one process to the next process. Push means that a process produces something regardless of the immediate needs of the downstream process.



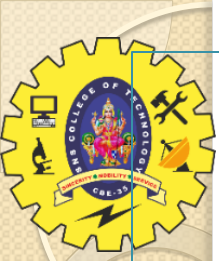
Process Mapping Symbols

Storage or Supermarket icon. Typically used as a Kanban stock point.

Like a supermarket, a small inventory is available and one or more downstream customers come to the supermarket to pick out what they need.

The upstream work center or receiving then replenishes stocks as i d required.

When continuous flow is impractical, and the upstream process must operate in batch mode, a supermarket reduces over production and limits total inventory



Process Mapping Symbols

Pull icon. Supermarkets connect to downstream processes with this Value Stream “Pull” icon that indicates physical removal.

FIFO icon.. This icon is used to represent processes which are connected with a First-In-First-Out inventory system that limits input. (i e roller possible top or FIFO i.e. conveyor)
Record the maximum inventory on Mapping bottom of icon.

Shipping icon. This icon is used to represent external shipping either from a supplier for incoming material or deliverable to a customer



Process Mapping Symbols

- **Production Control icon.** This box represents a central production scheduling or control department, person or operation.
- **Electronic Information icon.** This is used to represent electronic information flow such as electronic data interchange (EDI), the Internet, LANs (local area network), WANs (wide area network), etc. Mapping You may indicate the frequency of information/data interchange, the type of media used ex. fax, phone, etc. and the type of data exchanged.



Process Mapping Symbols

- **Manual Information icon.**
- The manual flow of general information. This can come from face to face conversations, memos, and/or reports. Frequency and other notes may be relevant.
- **Production Kanban icon.**
- This icon represents a card, device or signal that instructs a material handler to transfer parts from a supermarket to the receiving process..

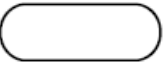


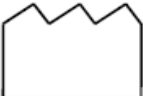
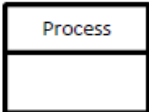


Process Mapping Symbols

- **With drawl Kanban icon.** This icon represents a certain amount of stock or inventory has been used to signal that a replenishment may be needed.
- **Kaizen Burst icon.** These icons are used to highlight improvement needs and plan kaizen workshops at specific processes that are critical to achieving the Future State Map of the value stream.
- **Operator icon.** Used to show where operator(s) are present. This maybe multiple copies of the icon or a number placed next to it to show when more than one are present.
- **Timeline icon.** This is used to calculate the Value Added (VA) and Non- Value Added (NVA) time in the process.

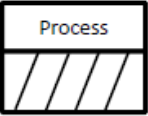
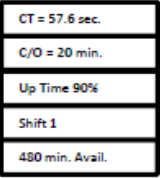

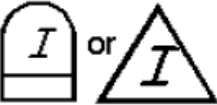



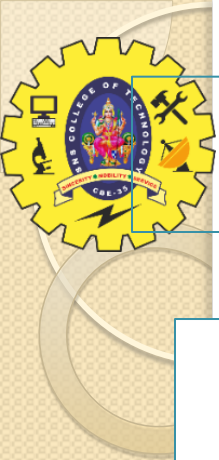
Process Mapping Symbols

SYMBOL	DESCRIPTION	WHERE USED
	Generic Start / Stop block. Start begins with the start of the process and stops typically close to the next customer.	Simple flow charting
	Generic Process step, can be used to represent any process step.	Simple flow charting
	Generic Decision step, can be used to represent any process step.	Simple flow charting
	Supplier / Customer icon. When in the upper left, the usual starting point for material flow it represents the Supplier. The Customer is typically placed in the upper right and represents the end of the process flow.	Value Stream Mapping
	General Process icon. It can represent an operation, machine or department, through which material flows. Typically, to avoid unwieldy mapping of every single processing step, it represents one department with a continuous, internal fixed flow path. In the case of assembly with several connected workstations, even if some WIP inventory accumulates between machines (or stations), the entire line would show as a single box.	Value Stream Mapping

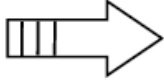





Process Mapping Symbols

SYMBOL	DESCRIPTION	WHERE USED
	Shared Process icon. A process operation, department or work-center that other value stream families share. Estimate the number of operators required for the Value Stream being mapped, not the number of operators required for processing all products.	Value Stream Mapping
	Data Box icon. Typically goes under process icon, information placed in a Data Box may include CT (Cycle Time) i.e. part to part time. C/O (Changeover Time), Uptime- percentage time that the machine is available for processing, Operation time i.e. number of shifts, and total minutes available for work.	Value Stream Mapping
	Cell icon. Cells typically have multiple processes are integrated together. Most often used for limited family of similar products or a single product. Product moves from process step to process step in small batches or single pieces.	Value Stream Mapping
	Inventory icon. Represents inventory between two processes. It may also be used to storage for raw materials and finished goods.	Value Stream Mapping
	Material Movement icons. The down arrow is used for incoming raw material from suppliers to the receiving area. The upward arrow is used to show the movement of finished goods to the customers	Value Stream Mapping



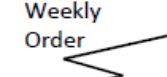



Process Mapping Symbols

SYMBOL	DESCRIPTION	WHERE USED
	Push material icon. It represents the “pushing” of material from one process to the next process. Push means that a process produces something regardless of the immediate needs of the downstream process.	Value Stream Mapping
	Storage or Supermarket icon. Typically used as a kanban stock point. Like a supermarket, a small inventory is available and one or more downstream customers come to the supermarket to pick out what they need. The upstream work center or receiving then replenishes stocks as required. When continuous flow is impractical, and the upstream process must operate in batch mode, a supermarket reduces over production and limits total inventory.	Value Stream Mapping
	Pull icon. Supermarkets connect to downstream processes with this "Pull" icon that indicates physical removal..	Value Stream Mapping
	FIFO icon.. This icon is used to represent processes which are connected with a First-In-First-Out inventory system that limits input. (i.e. roller conveyor) Record the maximum possible inventory on top or bottom of icon.	Value Stream Mapping



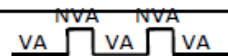
Process Mapping Symbols

SYMBOL	DESCRIPTION	WHERE USED
	Shipping icon. This icon is used to represent external shipping either from a supplier for incoming material or deliverables to a customer.	Value Stream Mapping
	Production Control icon. This box represents a central production scheduling or control department, person or operation.	Value Stream Mapping
	Electronic Information icon. This is used to represent electronic information flow such as electronic data interchange (EDI), the Internet, Intranets, LANs (local area network), WANs (wide area network), etc. You may indicate the frequency of information/data interchange, the type of media used ex. fax, phone, etc. and the type of data exchanged.	Value Stream Mapping
	Manual Information icon. The manual flow of general information. This can come from face to face conversations, memos, and/or reports. Frequency and other notes may be relevant.	Value Stream Mapping



Process Mapping Symbols

SYMBOL	DESCRIPTION	WHERE USED
	Production Kanban icon. This icon represents a card, device or signal that instructs a material handler to transfer parts from a supermarket to the receiving process. Although there are many such icons used, it may also be used to signal the up stream process to make more product.	Value Stream Mapping
	With drawl Kanban icon. This icon represents a certain amount of stock or inventory has been used to signal that a replenishment may be needed.	Value Stream Mapping
	Kaizen Burst icon. These icons are used to highlight improvement needs and plan kaizen workshops at specific processes that are critical to achieving the Future State Map of the value stream	Value Stream Mapping
	Operator icon. Used to show where operator(s) are present. This maybe multiple copies of the icon or a number placed next to it to show when more than one are present.	Value Stream Mapping
	Timeline icon. This is used to calculate the Value Added (VA) and Non-Value Added (NVA) time in the process.	Value Stream Mapping





Thank You !