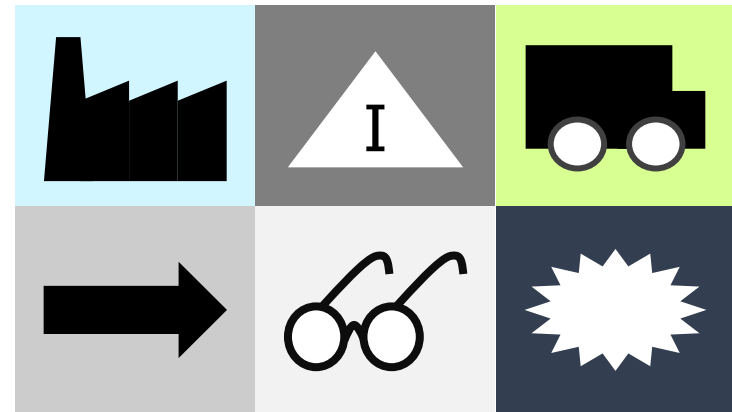


Value Stream Mapping

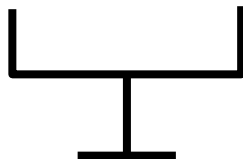
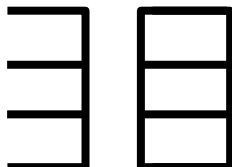
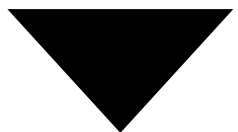
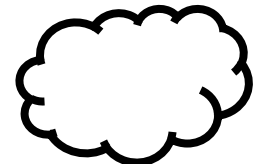
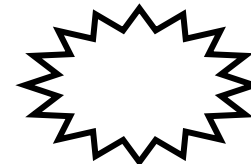
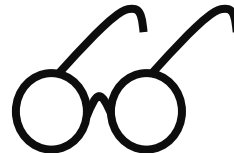
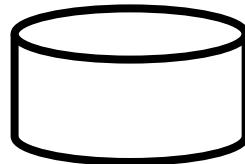
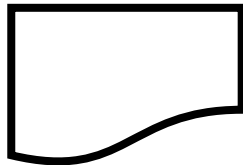
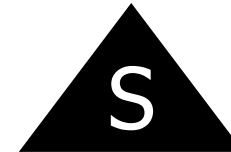
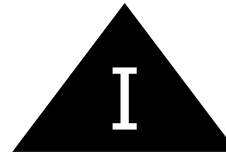
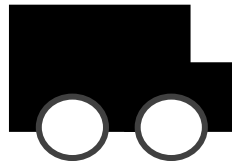
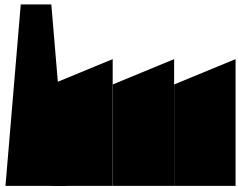
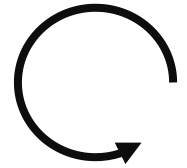
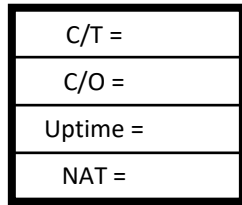
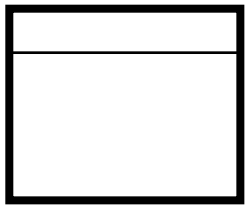
Value Stream Mapping Symbols

Value stream mapping uses a set of symbols to denote the various details

The type of symbols that are used usually depends on the **industry** and the type of work



Value Stream Mapping



Value Stream Mapping

The list is by
no means complete!

You may design **your own symbols** to express your details

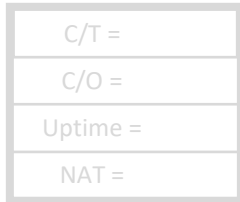
New symbols should be **easy to design**

They should be **understandable** by everyone working or visiting the area

Value Stream Mapping



Process box



Data box



Information flow



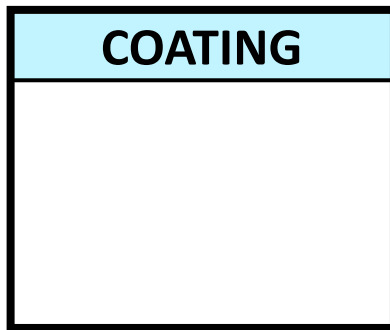
Material flow



Push



Withdrawal



Process or
operation box

Covers one area of continuous flow, where materials flow without being stored, queued or delayed.

Used when a part is intentionally changed in any of its characteristics, assembled or disassembled, or arranged for another operation, transportation, inspection, or storage.

Also used to represent a person (or department) doing work, or when information is given or received.

Value Stream Mapping



Process box

C/T =
C/O =
Uptime =
NAT =

Data box



Information flow



Material flow



Push



Withdrawal

COATING
C/T = 2.3 seconds
C/O = 52 minutes
Uptime = 85%
NAT = 25,200 seconds
Scrap rate = 3.1%

Data box

Optionally used to list key information related to processes.

Can be placed under other symbols (e.g. transportation, inventory or key customers or suppliers) to list key information.

Value Stream Mapping



Process box

C/T =
C/O =
Uptime =
NAT =

Data box



Information flow



Material flow



Push



Withdrawal

Drawing

Prod. Rate = 2450

C/T = 30 sec

C/O = N/A

Uptime = 98%

Rinsing

Prod. Rate = 2400

C/T = 376 sec

C/O = 60 min

Uptime = 94 %

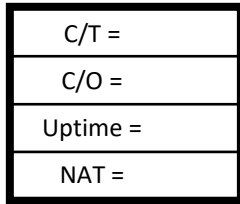
Helps later when creating the timeline and the summary box, and when comparing between the different workstations or processes.

For example, analyzing which workstation has the maximum number of operators or has the maximum change-over time.

Value Stream Mapping



Process box



Data box



Information flow



Material flow



Push



Withdrawal

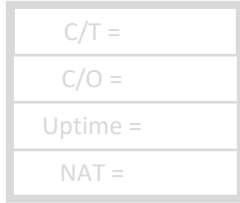
Information related to processes depend on the needs and may include:

Cycle times (C/T)	Changeover times (C/O)	Net available working times (NAT)
Defect or scrap rates	Machine uptime rates	Production rates or EPE
Processing times	Setup times	Number of workers per machine
Batch sizes	Maximum capacities	Number of product variations
Rework rates	Product flow (push or pull)	Overall equipment effectiveness

Value Stream Mapping



Process box



Data box



Information flow



Material flow



Push



Withdrawal



Manual information flow



Electronic information flow

Generally used to represent flow of information.

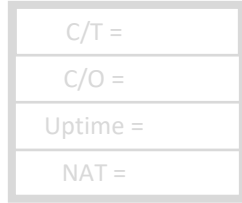
Can be accompanied with text or other icons to indicate the type of information, the frequency of information interchange, and the type of media used (telephones, emails, Intranets, LANs, etc.).

Some lean practitioners simply use the straight arrow for all types of information flow.

Value Stream Mapping



Process box



Data box



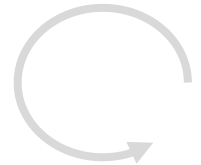
Information flow



Material flow



Push



Withdrawal



Material flow or shipping

Represents the transfer or movement of materials from one process to the next.

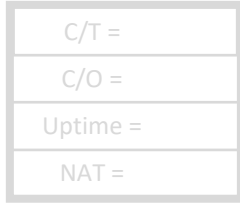
Also represents the movement of raw materials from suppliers to the receiving areas (accompanied with the shipping frequency).

Also represents the movement of finished goods from the shipping areas to the customers (accompanied with the shipping frequency).

Value Stream Mapping



Process box



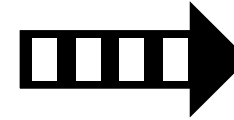
Data box



Information flow



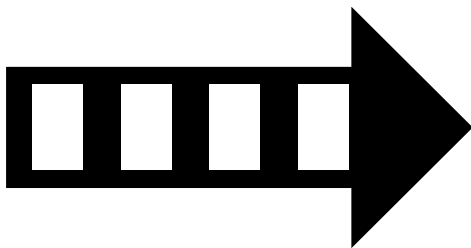
Material flow



Push



Withdrawal



A push arrow

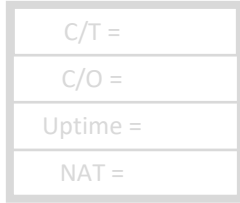
Pushing the materials from one process to the next.

Represents a material flow that is not controlled by a pull system.

Value Stream Mapping



Process box



Data box



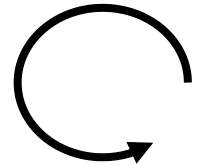
Information flow



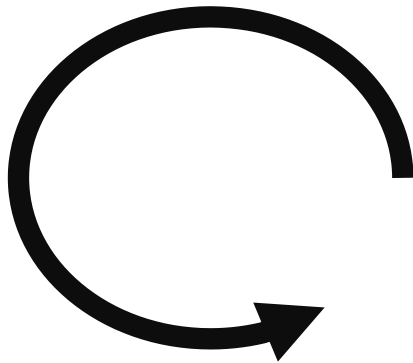
Material flow



Push



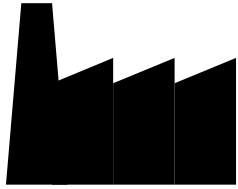
Withdrawal



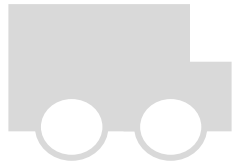
Material withdrawal
or physical pull

Used when the material is pulled from the supplying process to the supplied process.

Value Stream Mapping



External body



Transport



Worker



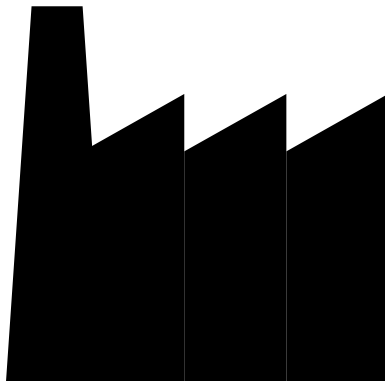
Inventory



Safety stock



FIFO sequence

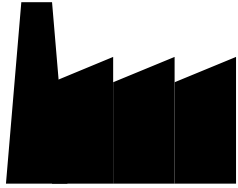


Firm name
(supplier or customer)

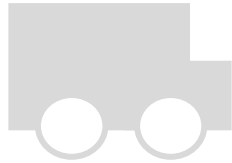
Represents an external body to the organization, and mainly indicates the key suppliers and customers along the value chain.

Often accompanied with a data box underneath which covers the characteristics of that supplier or customer.

Value Stream Mapping



External body



Transport



Worker



Inventory



Safety stock



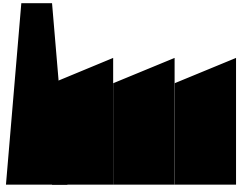
FIFO sequence

Customer Name
300 items/day
87 type A, 120 type B
Pallet = 30 items
3 shifts, 24/7operation

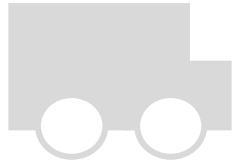
Information related to customers may include; number of customers, demand rate (items/day), packaging size requirement, actual and required lead times, error rates, customer shift pattern, product mix, etc.

Usually there is only one customer shown, but you may have more than one.

Value Stream Mapping



External body



Transport



Worker



Inventory



Safety stock



FIFO sequence



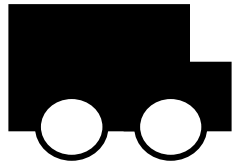
Information related to suppliers may include; number of suppliers, demand rate (items/day), packaging size requirement, actual and required lead times, error rates, supplier shift pattern, the different types of materials, etc.

Usually there is only one supplier shown, but you may have more than one.

Value Stream Mapping



External body



Transport



Worker



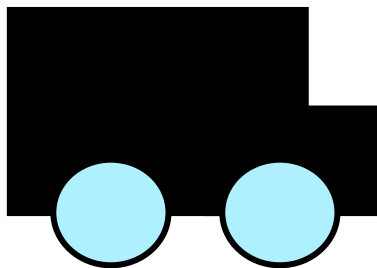
Inventory



Safety stock



FIFO sequence



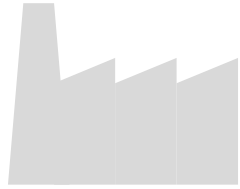
Transport or
Shipment

Represents how raw materials are brought in and how finished goods are sent out.

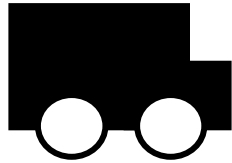
Also represents the transport of raw materials, WIP, or products within the facility by an operator.

Date related to transportation may include; distance traveled, transportation time, transportation frequency, number of product types, etc.

Value Stream Mapping



External body



Transport



Worker



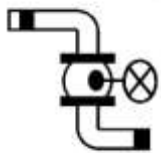
Inventory



Safety stock



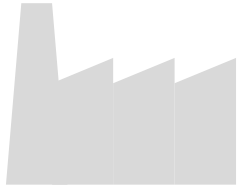
FIFO sequence



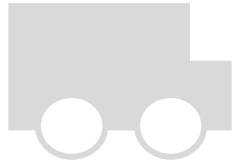
Transportation can be of three types:

- 1- External (e.g. trucking).
- 2- Internal (e.g. forklifts).
- 3- Conveying between processes.

Value Stream Mapping



External body



Transport



Worker



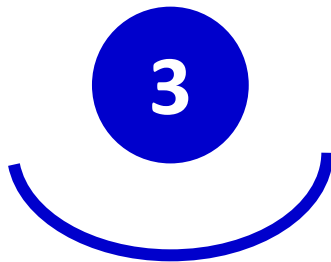
Inventory



Safety stock



FIFO sequence

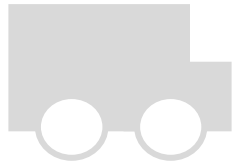


Usually placed in a process box to represents the number of workers deployed at a particular workstation.

Value Stream Mapping



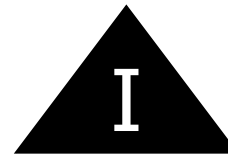
External body



Transport



Worker



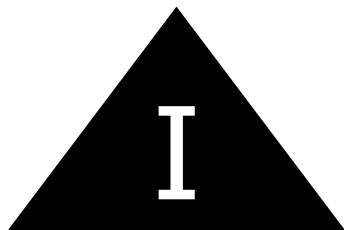
Inventory



Safety stock



FIFO sequence

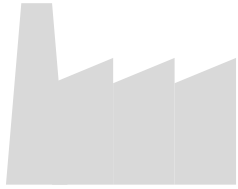


Inventory

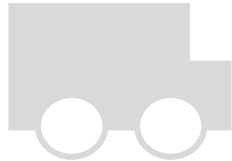
Represents the storage locations for raw materials, work-in-process (WIP), and finished products throughout the value stream.

Date related to inventory may include; inventory type, amount of inventory, queue or delay time, number of product types in the inventory, etc.

Value Stream Mapping



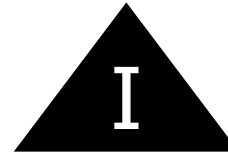
External body



Transport



Worker



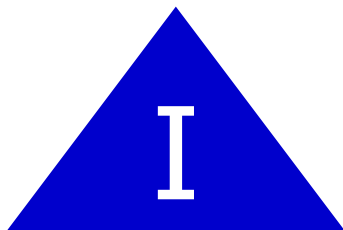
Inventory



Safety stock



FIFO sequence

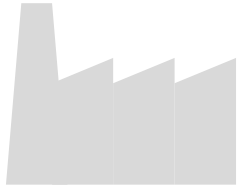


Pieces

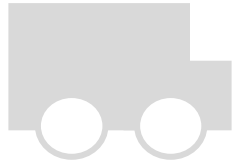
You can write a number below the triangle to indicate the approximate amount of inventory observed, or the maximum capacity.

You may indicate that the inventory is uncontrolled or has no fixed upper limit by leaving the triangle without a number.

Value Stream Mapping



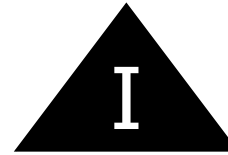
External body



Transport



Worker



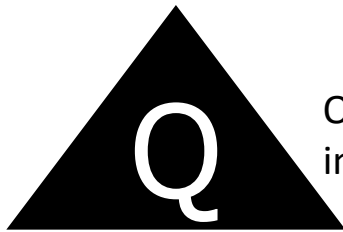
Inventory



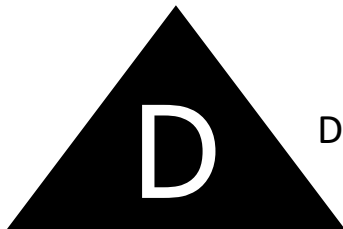
Safety stock



FIFO sequence



Quality inspection



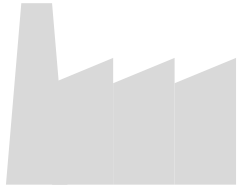
Delay

These are not standard symbols and rarely used.

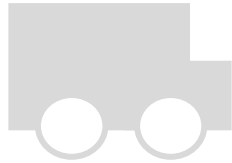
Occurs when a product is examined against pre-defined quality standards to determine whether defective products are being produced.

Represents unplanned accumulation of materials or products without a prior plan. Also represents a delay in the process, such as waiting for approval.

Value Stream Mapping



External body



Transport



Worker



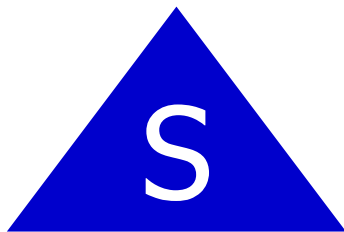
Inventory



Safety stock



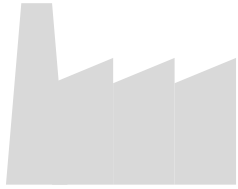
FIFO sequence



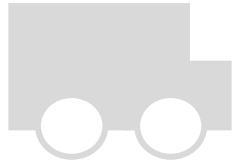
Pieces

Represents a safety stock against problems such as unplanned breakdowns, to protect the production system against failure or sudden fluctuations in customer demands.

Value Stream Mapping



External body



Transport



Worker



Inventory



Safety stock



FIFO sequence

MAX =

FIFO

FIFO lane

First In First Out lane is used to show where parts are stored or transferred to the next process in a FIFO sequence (queue).

You may write either the maximum capacity or the current capacity above or below the FIFO lane.

Value Stream Mapping



Work cell



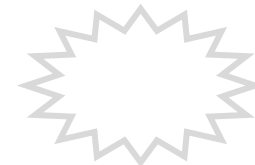
Document /
report



Business
system



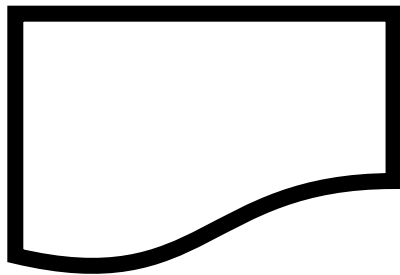
Go see



Kaizen burst



Improvement
idea



Document or report

Represents a document, form or report that is generated throughout the value stream. More than one report can be represented through the use of multiple symbols behind each other.

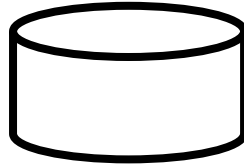
Value Stream Mapping



Work cell



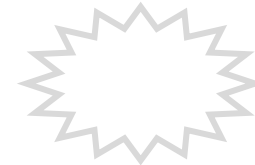
Document /
report



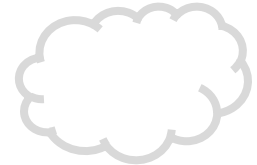
Business
system



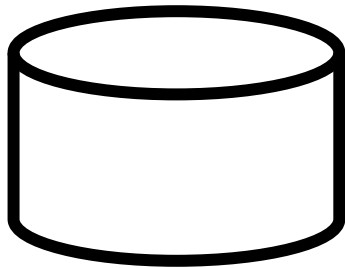
Go see



Kaizen burst



Improvement
idea



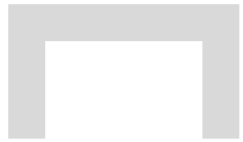
Business System

Represents a centralized system (ERP or MRP).

Note that value stream mapping considers not only the process, but also the management systems and information systems that support the process

Note that a production control or scheduling system can also be represented using a plain box.

Value Stream Mapping



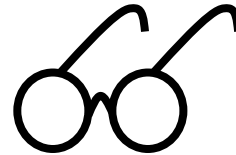
Work cell



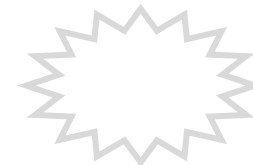
Document /
report



Business
system



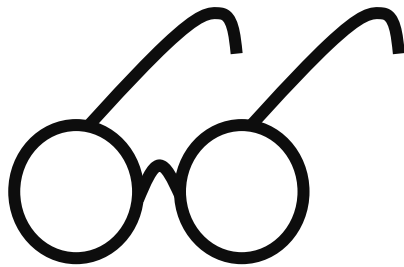
Go see



Kaizen burst



Improvement
idea



Visually checking and
gathering of
information

Visually checking material and information flows to ensure they meet quality standards and quantity requirements.

For example, a supervisor may visually check the material flow to seek for discrepancies, visually inspect a sample product as part of his routine job, or visually check the amount of inventory to decide what to produce next.

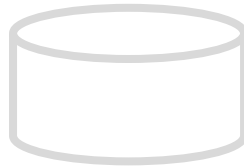
Value Stream Mapping



Work cell



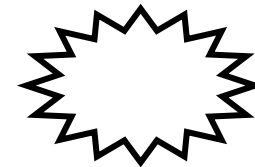
Document /
report



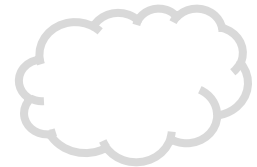
Business
system



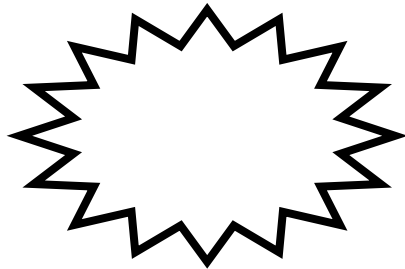
Go see



Kaizen burst



Improvement
idea



Kaizen or lightning
Burst

Used to indicate issues and problems throughout the value stream.

Kaizen bursts help launch appropriate kaizen events for continuous improvement.

Value Stream Mapping



Work cell



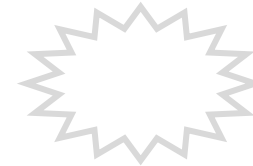
Document /
report



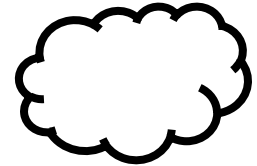
Business
system



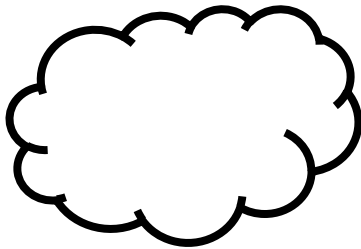
Go see



Kaizen burst



Improvement
idea

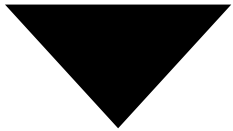


Improvement idea

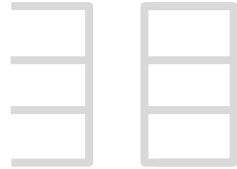
Used to indicate a solution, suggestion, or improvement idea.

The team can highlight improvement opportunities that are critical to achieve the future state of the value stream.

Value Stream Mapping



Signal Kanban



Supermarket



Kanban post



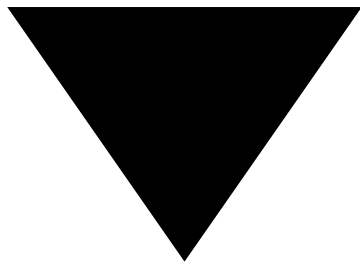
Production
Kanban



Withdrawal
Kanban



Load leveling



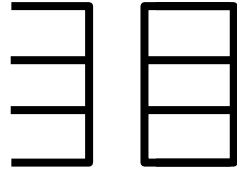
Improvement idea

Used when the on-hand inventory levels in the supermarket between two processes drops to a minimum or the trigger point.

Value Stream Mapping



Signal Kanban



Supermarket



Kanban post



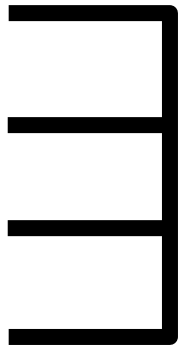
Production
Kanban



Withdrawal
Kanban



Load leveling



Supermarket

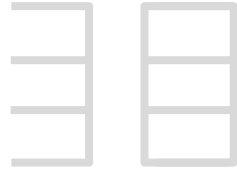
Represents an inventory supermarket or the end point of a Kanban loop.

For a supermarket to be complete, an information flow should come out of it and bring a Kanban back to one of the preceding processes or transports.

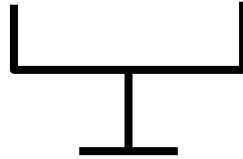
Value Stream Mapping



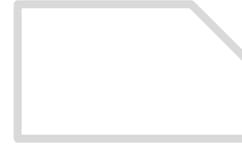
Signal Kanban



Supermarket



Kanban post



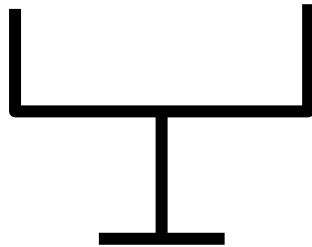
Production
Kanban



Withdrawal
Kanban



Load leveling



Kanban post

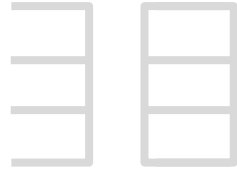
A location where Kanban signals reside for pickup.

Often used with two-card systems to exchange withdrawal and production Kanban.

Value Stream Mapping



Signal Kanban



Supermarket



Kanban post



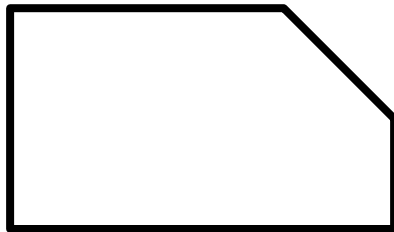
Production
Kanban



Withdrawal
Kanban



Load leveling



Production Kanban

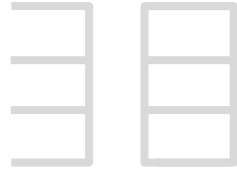
Used to signal the supplying process to trigger production and provide a pre-defined number of parts to the next process.

Usually drawn on top of the information flow going back from a supermarket to a preceding process or transport.

Value Stream Mapping



Signal Kanban



Supermarket



Kanban post



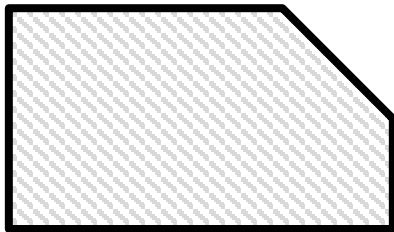
Production
Kanban



Withdrawal
Kanban



Load leveling



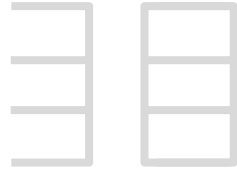
Withdrawal Kanban

A note card or device that instructs the material handler or operator to go to the supermarket and withdraw parts needed at the receiving process.

Value Stream Mapping



Signal Kanban



Supermarket



Kanban post



Production
Kanban



Withdrawal
Kanban



Load leveling



Load leveling

Part of the information flow in a Kanban loop. It is a tool to batch Kanbans in order to level the production volume and production mix over a period.