

L6 Systems Engineering

Introducing Flow, Pull, Waste and Quality?

Manufacturing Simulation

Manufacturing Simulation



- Why?
 - Quick results
 - Cheap to implement (we can run multiple simulations).
- What do we need?
 - 6 Production Operators
 - 1 Chief Test Pilot
 - 1 Material Handler
 - Manager
 - Run Manufacturing Simulation for 10 minutes

Manufacturing Simulation

Start and Introductions

Manufacturing Systems

Start 1st Manufacturing Simulation

Results from 1st Simulation

Manufacturing Simulation

Results from 2nd Simulation

Start 3rd Manufacturing Simulation

Results from 3rd Simulation

Discussion & Conclusion

Finish

- **Space** - Number of tables used
- **Work in Progress** - Partially built planes which cost £1million to build
- **Good Parts** - Number of good planes that can be sold for £2million
- **% Good** - Number of Good Planes / Number of planes built
- **Lead Time** – X Plane, time from start to finish to build
- **Number of People** – Start with 6, can decrease.
- **Time** – 10 Minutes
- **Productivity** – Good Planes / People / Time
- **Total Profit**

Simulation Run #1



The 7 Wastes

MUDA is the Japanese word for WASTE.



Over Processing



Processing beyond the standard required by the customer.

Rework

Non right first time. Repetition or correction of a process.



Transportation



Unnecessary movement of people or parts between processes.

Overproduction



To produce sooner, faster or in greater quantities than customer demand.

Inventory



Raw material, work in progress or finished goods which is not having value added to it.

Waiting

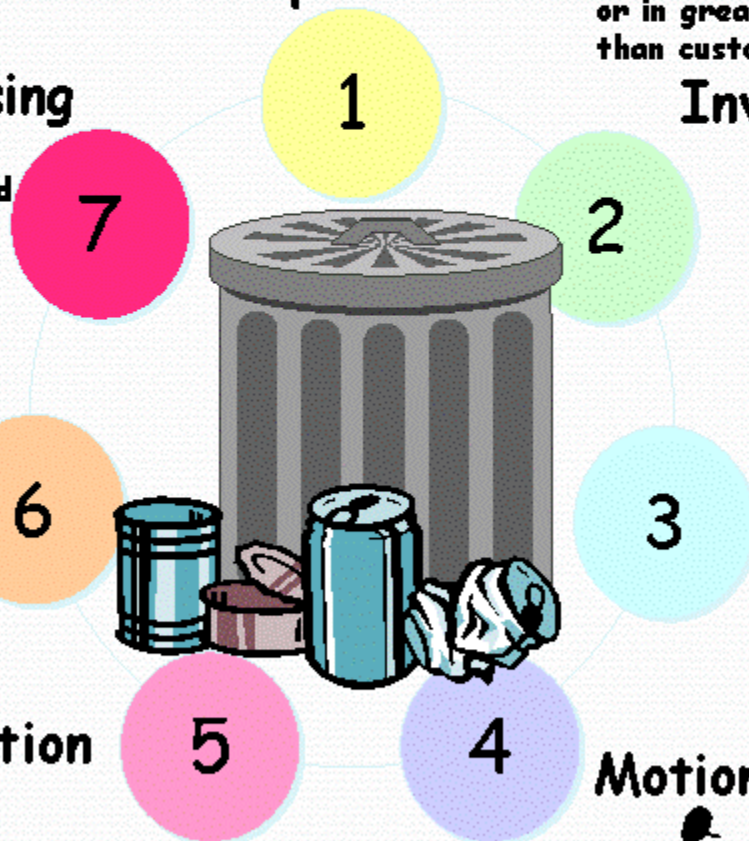


People or parts that wait for a work cycle to be completed.

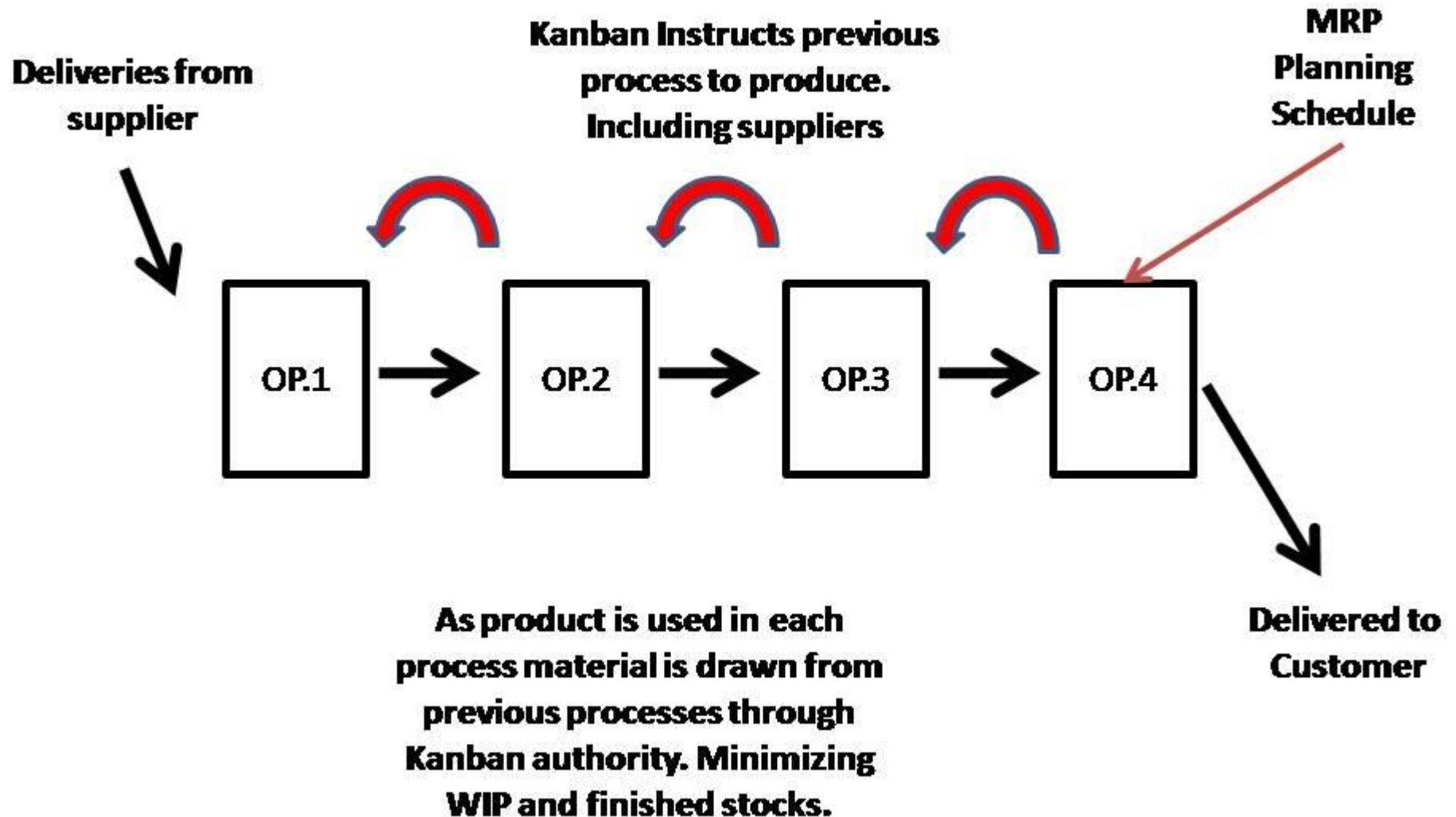
Motion



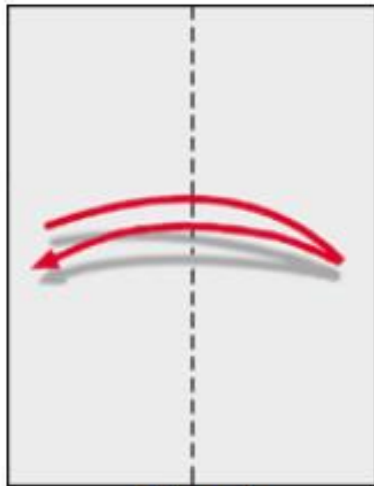
Unnecessary movement of people, parts or machines within a process.



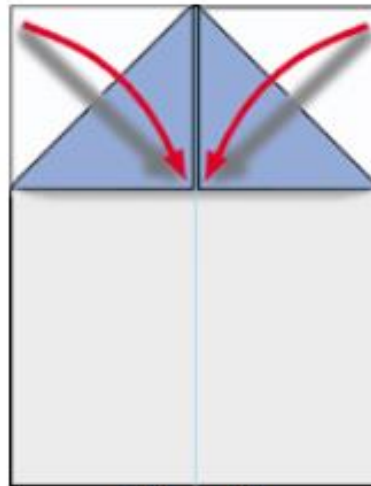
Pull Production



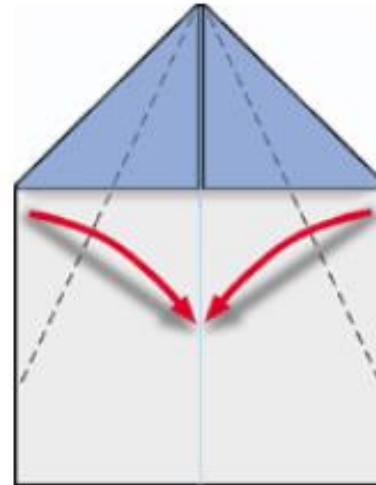
Work Instruction



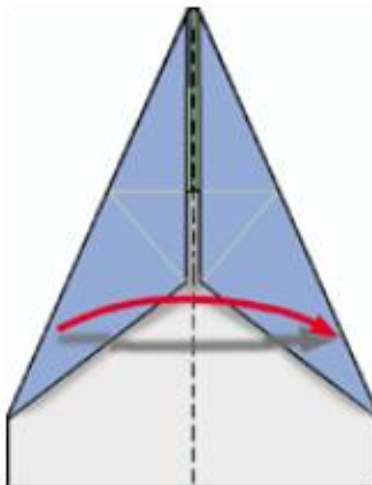
Step 1



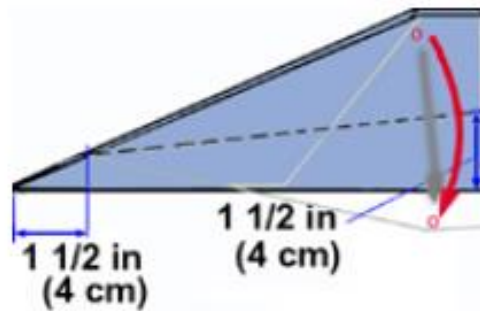
Step 2



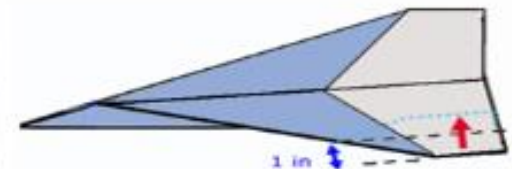
Step 3



Step 4



Step 5



Step 6

Simulation Run #2



Simulation Run #2



Value Map

