wbs

WARWICK BUSINESS SCHOOL
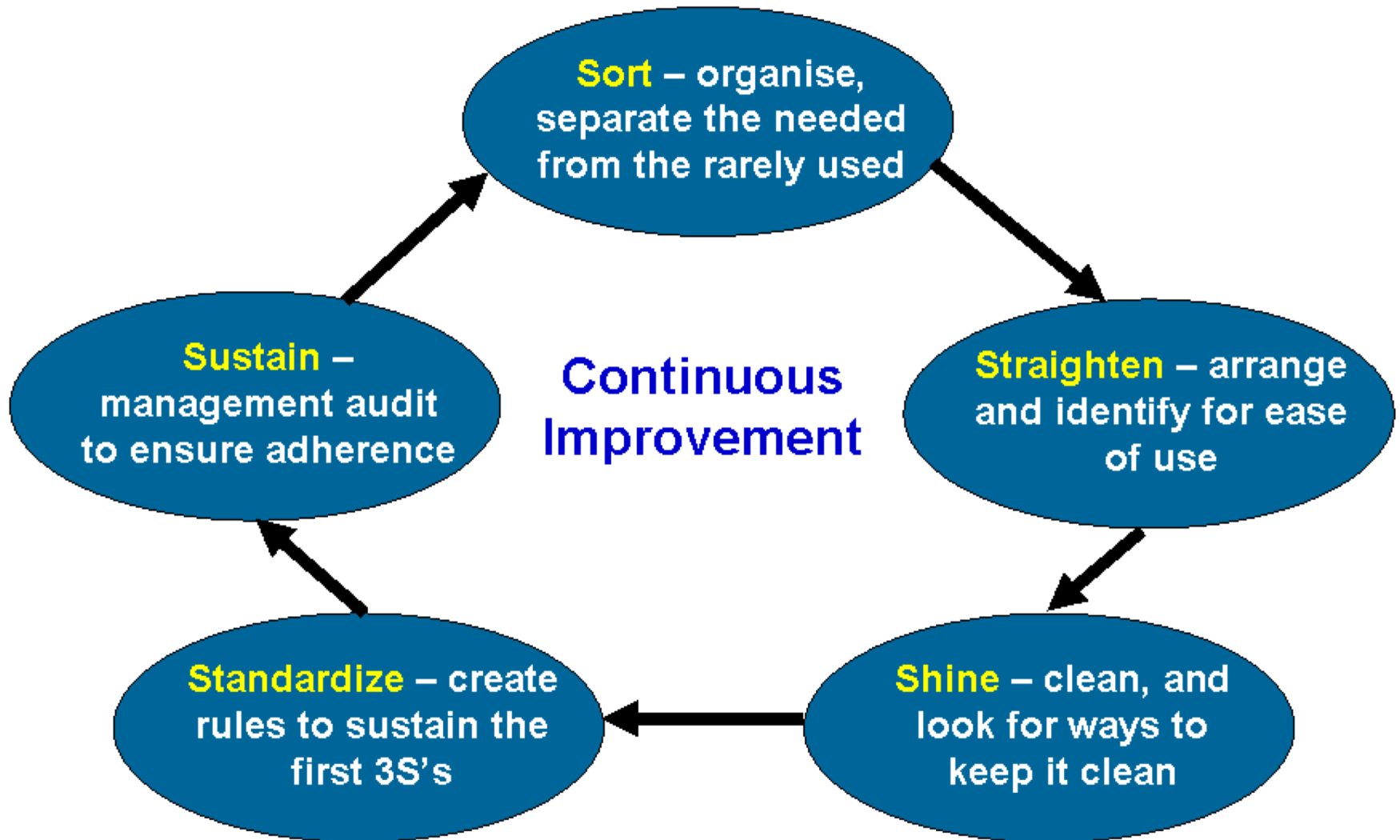THE UNIVERSITY OF WARWICK

For the Change Makers

Week 2: Process Improvement Lean (2)

How does Lean eliminate waste?

- Identify the causes and types of waste
- Eliminate waste through streamlined flow using e.g. Value stream mapping
- Eliminate waste through matching supply and demand e.g. Pull system
- Eliminate waste through minimizing variability e.g. Level delivery Schedule
- Eliminate waste through flexible processes
- Can be viewed through 5S

The 5 S's – Lean management

Sort – organise, separate the needed from the rarely used

Straighten – arrange and identify for ease of use

Shine – clean, and look for ways to keep it clean

Standardize – create rules to sustain the first 3S's

Sustain – management audit to ensure adherence

Continuous Improvement

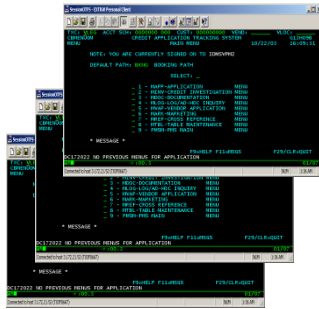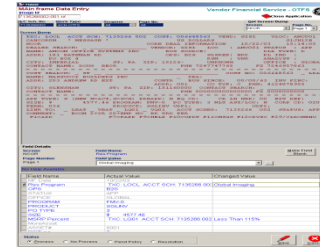http://www.youtube.com/watch?v=FZmBQRmDgIc
5S factory makeover

Sort (Seri)

- Eliminate all **unnecessary** items!!
- Unnecessary refers to those things that are not needed for current work

Person toggles between multiple screens for data entry

Person enters all data on one screen

Keep only things that are required in doing the job

Straighten (Seiton)

- **Arrange items** so that they can be found **quickly by Anybody, Anywhere, Anytime**. Items should be easy to find, easy to use and easy to put away.

- Tools

  - Colour Coding , Signboards, Labeling

*Keep things in Order*

Shine (Sieso)

- Everything is **clean, neat, tidy and ready to use**

- Tools:
    - Five Minute Shine
    - Cleaning & Inspection Checklists
    - Checklist of Activities Needing Maintenance

    e.g. the "5 second stapler" test!

A clean work place enhances health and productivity

Standardize (Seiketsu)

- To prevent setbacks in the first 3 pillars (Sort, Set In Order and Shine)
- Tools
  - Best Practice documentation and sharing
  - Checklists & job cycle charts
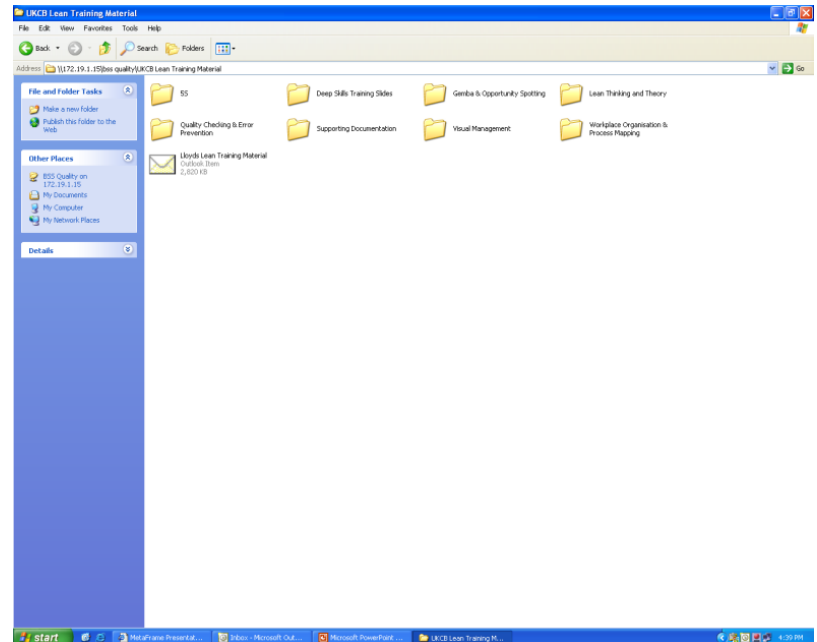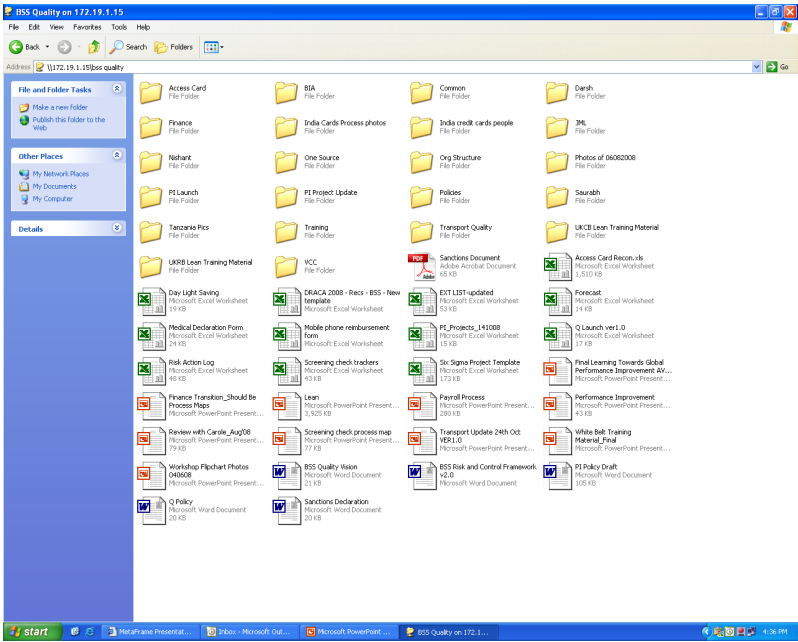
Disorganized folders on the shared drive

Standardization of folders

Learn a smarter way to Work

Sustain (Shitsuke)

- To make 5S a habit in the way we do our day-to-day activities

- Tools include…..
  - 5 S contests
  - Visual management boards showing 5S audit
  - Slogans
  - Handbooks
  - Poka Yoke!

Make 5 S a habit

Any questions?

Discuss

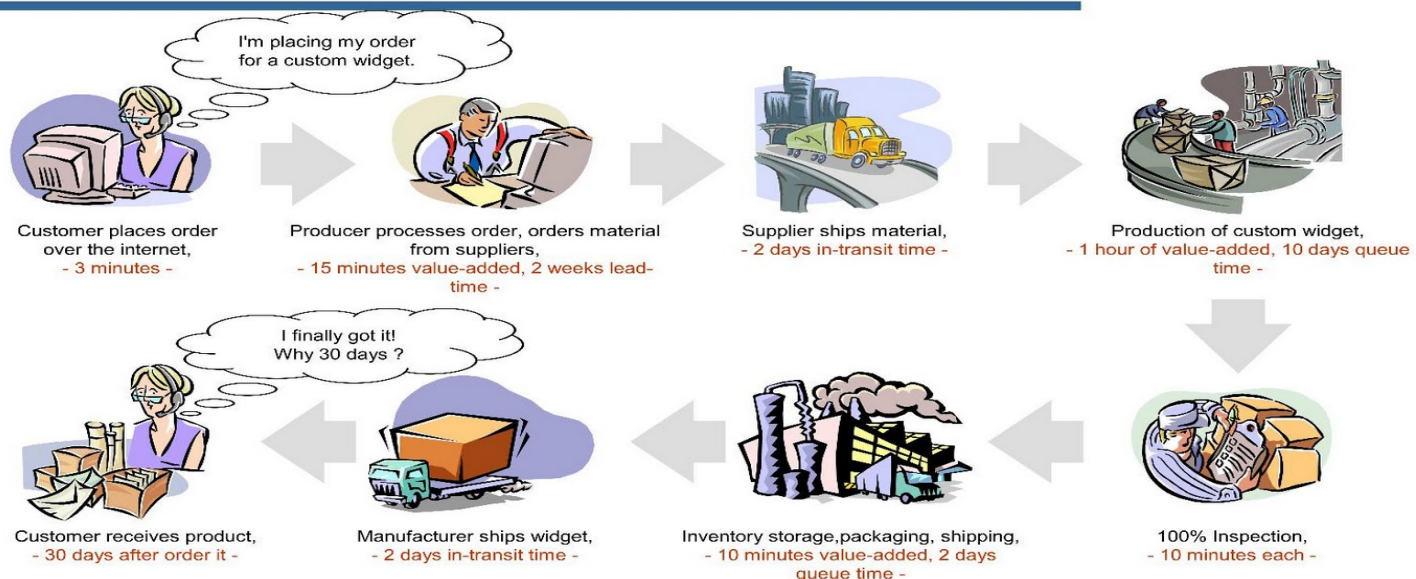1. Standardization is the bedrock of creativity

(Spear and Kent-Bowen, 2005)

2. Standardization kills innovation and creativity

Value stream' mapping

'Value stream' mapping focuses **on value-adding activities** and distinguishes between value-adding and non-value-adding activities. It .is similar to process mapping but different in four ways:
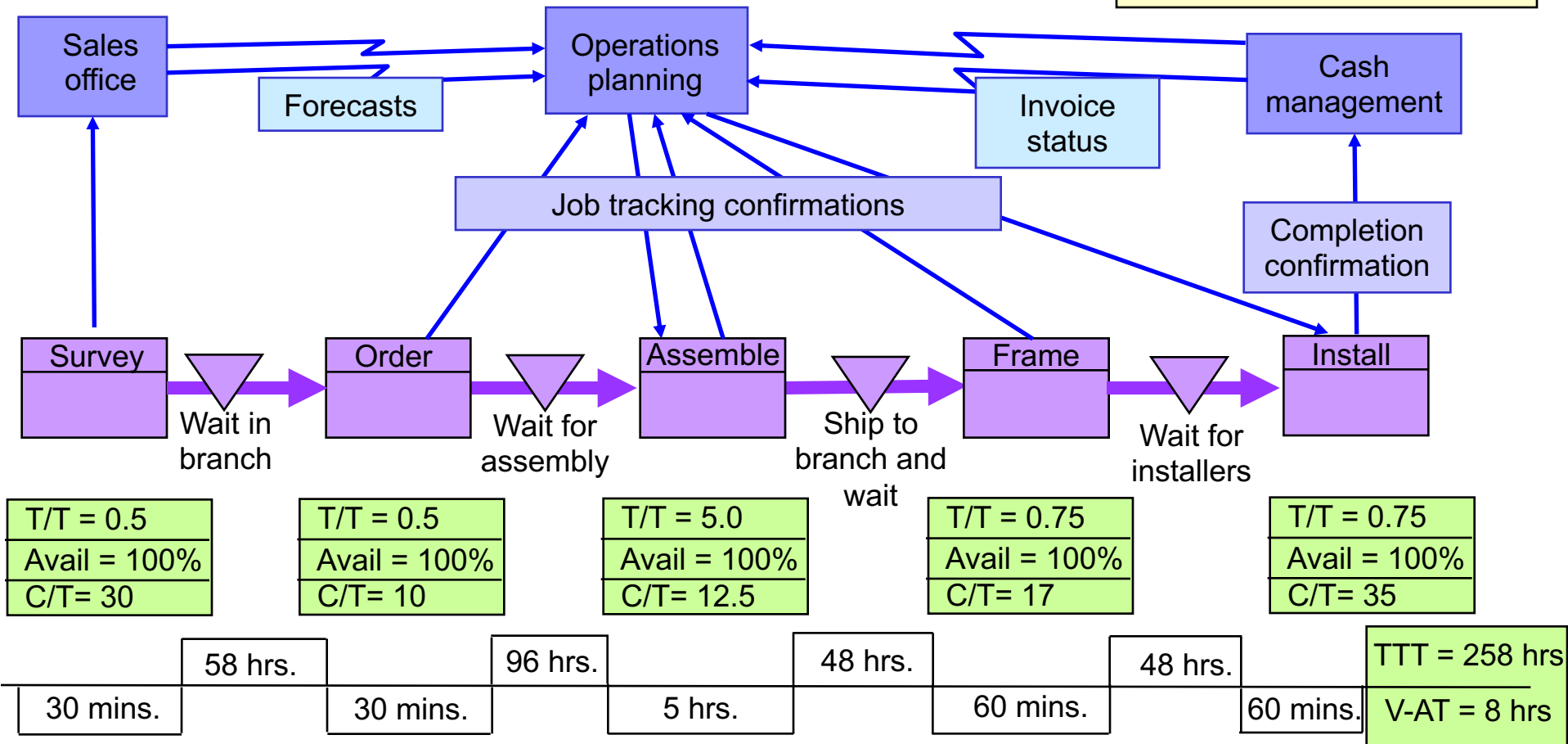
Value Stream Map for an industrial air conditioning installation service

T/T = Task time
TTT = Total throughput time
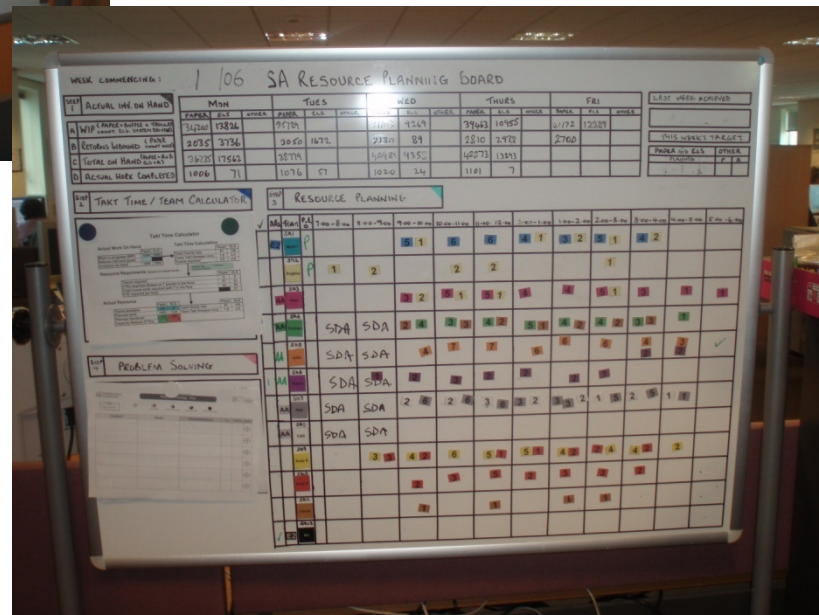V-A T = Value-added time
C/T = Cycle time

Sales office

Operations planning

Forecasts

Cash management

Invoice status

Job tracking confirmations

Completion confirmation

Survey — Wait in branch → Order — Wait for assembly → Assemble — Ship to branch and wait → Frame — Wait for installers → Install

T/T = 0.5	T/T = 0.5	T/T = 5.0	T/T = 0.75	T/T = 0.75
Avail = 100%	Avail = 100%	Avail = 100%	Avail = 100%	Avail = 100%
C/T= 30	C/T= 10	C/T= 12.5	C/T= 17	C/T= 35

| 58 hrs. | 96 hrs. | 48 hrs. | 48 hrs. | TTT = 258 hrs |
| 30 mins. | 30 mins. | 5 hrs. | 60 mins. | 60 mins. | V-AT = 8 hrs |

Visual Management

Team Communications Hub

Team Board

Resource Planning

Waste is a large part of most processes

Mapping The Value Stream - Example

High-level process steps for a loan application process

High-level process steps

| Acquire the customer | Prepare application | Process application | Advise customer | Disburse funds |

Step by step activity analysis for value-add to our customer

Activities which add value to the customer: e.g. the credit decision

Activities which don't add value to the customer but are required by regulation: e.g. KYC

Activities which neither add value nor are required by regulation: e.g. carrying files from one desk to another

Aircraft maintenance procedures - waste reduction

Start / Finish

Wait for aircraft

Start / Finish

Perform preparatory work
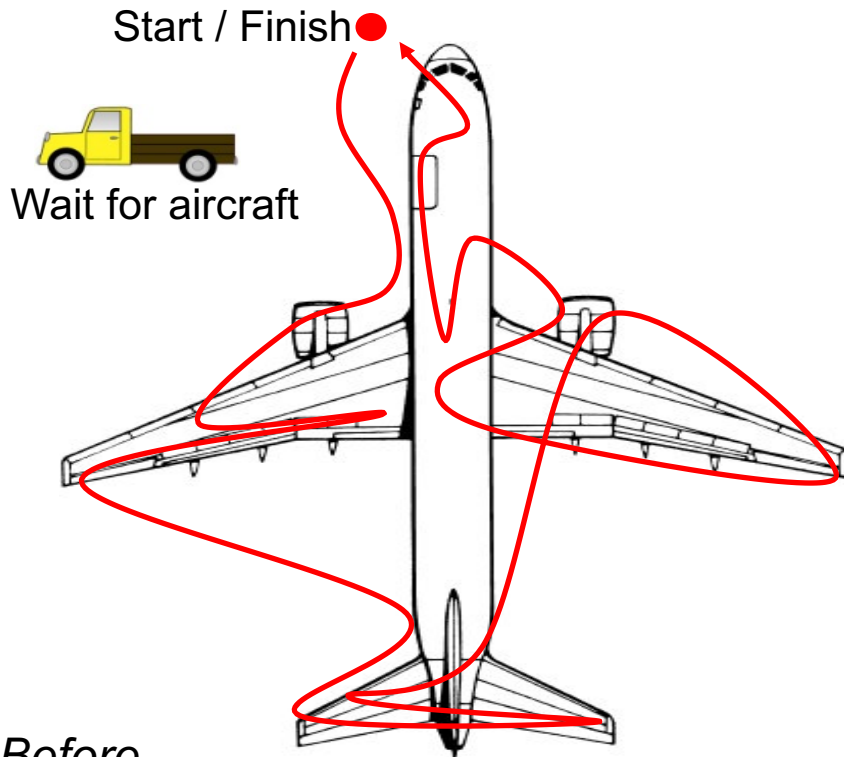
Before –
- *Maintenance staff follow the steps as detailed in the technical documentation*
- *The overall sequence of tasks is not optimized*
- *Preparation work and set-ups included as part of the task*
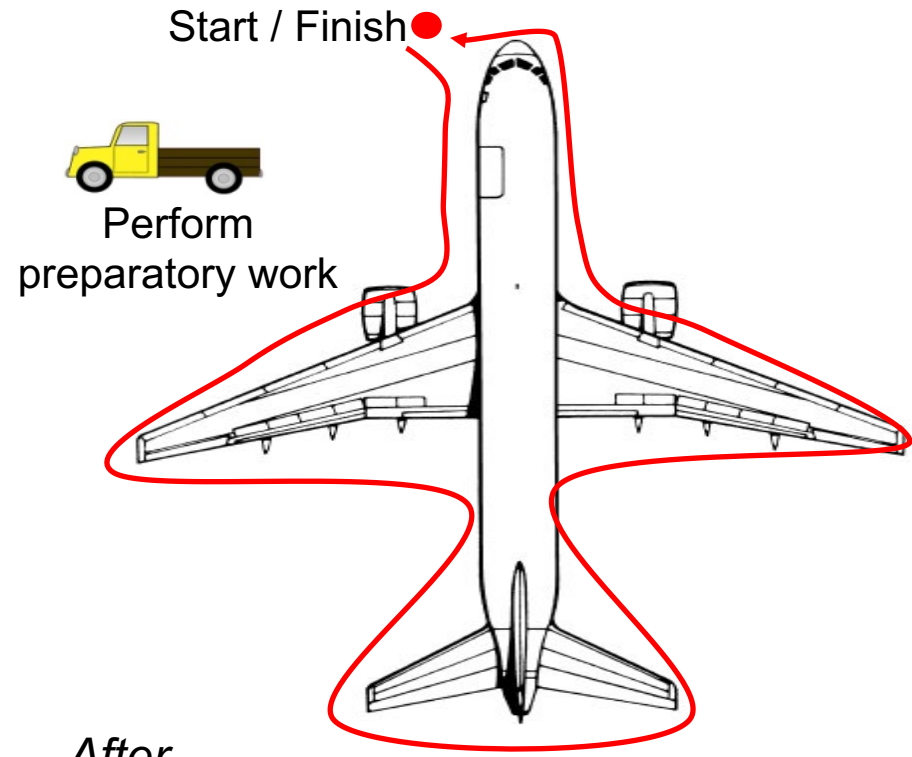
After –
- *The overall sequence of tasks is defined and allocated to minimise non-value-added*
- *Preparation work and set-ups may be done ahead of time to minimise aircraft contact time*
- *Increased productivity and reduced aircraft waiting time*

Eliminate waste through streamlined flow: Small machines

- Conventional Western approach is to purchase large machines to get "economies of scale".

- These often have long, complex set-ups, and make big batches quickly creating "waste".

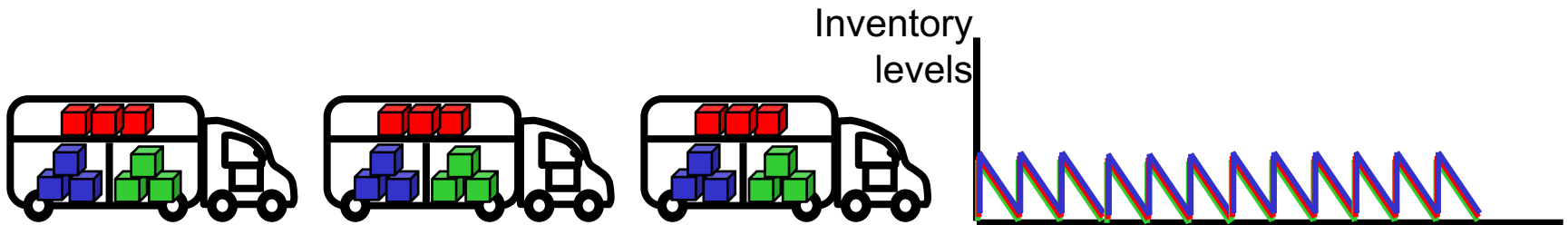

Changeovers

Inventory levels

Time
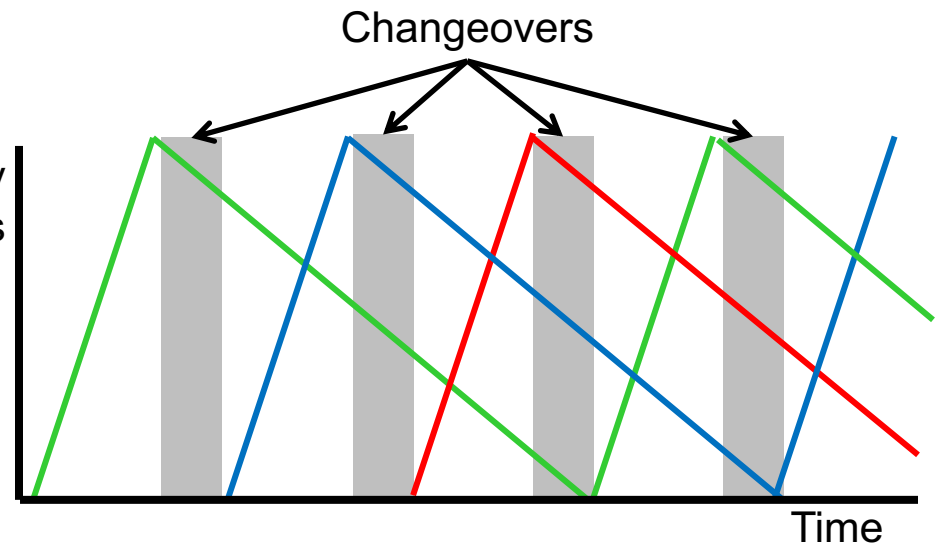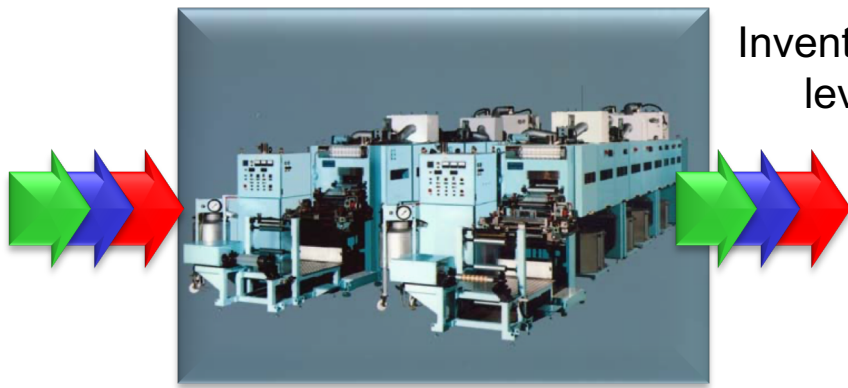
Small machines

Using several small machines rather than one large one allows simultaneous processing, is more robust and is more flexible.....
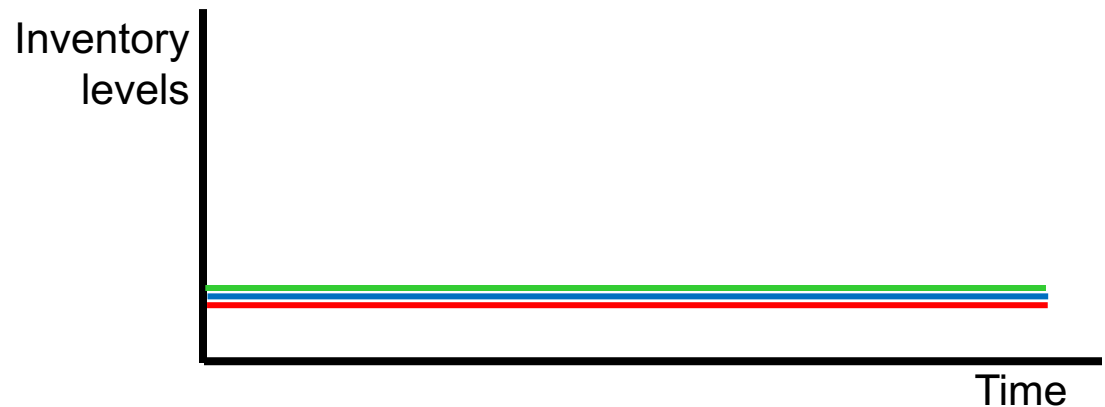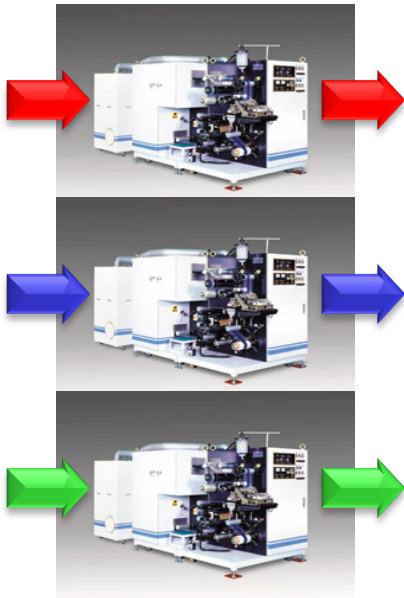
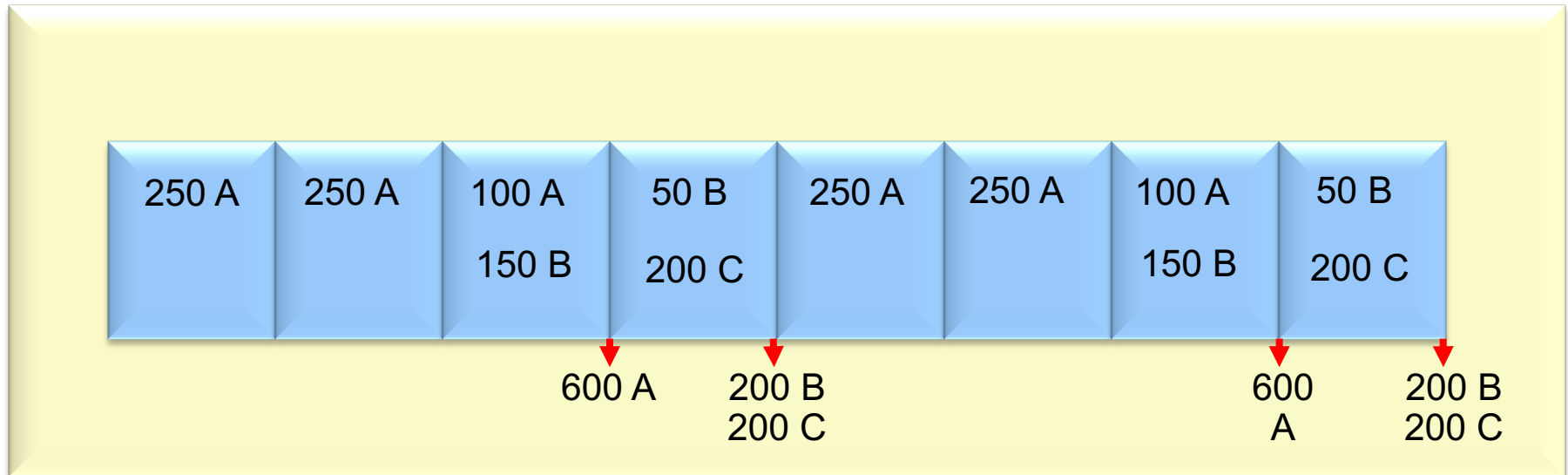# Delivering smaller quantities more often can reduce inventory levels

Eliminate waste through reducing variability: Levelled scheduling equalizes the mix of products made each day

Over an eight day period, need to make.............1200 of A

400 of B

400 of C

Scheduling in *large batches*, where *batch size A = 600, B = 200, C = 200*
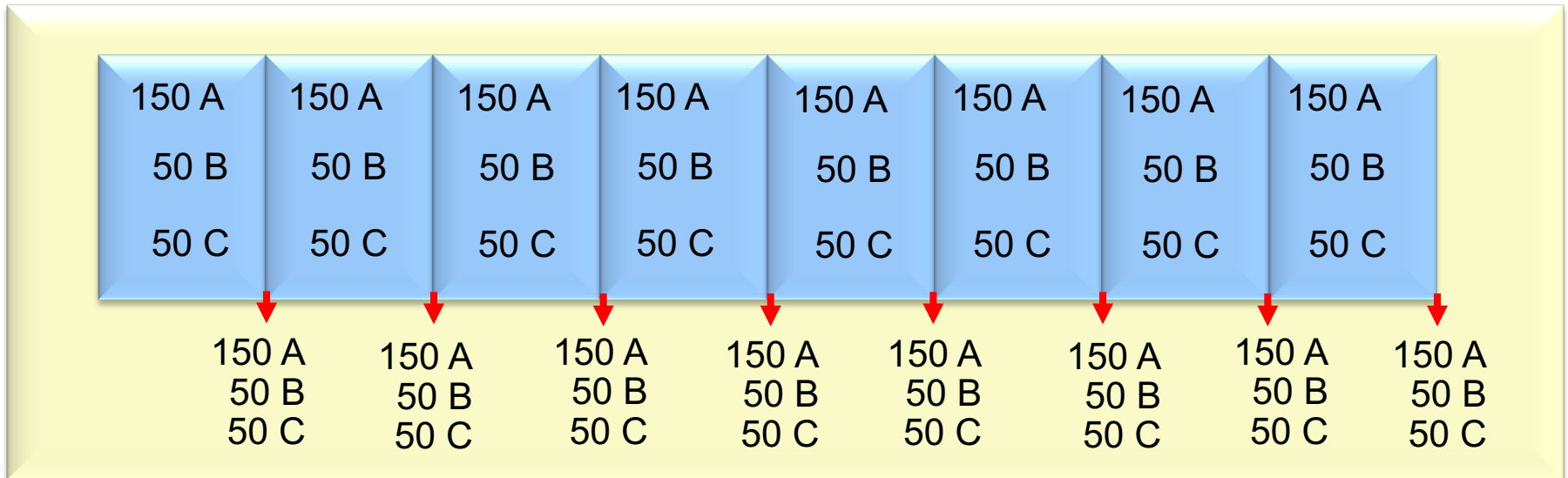
Levelled scheduling equalizes the mix of products made each day

Over an eight day period, need to make............1200 of A

400 of B

400 of C

With *levelled scheduling*, where *batch size A = 150, B = 50, C = 50*

150 A	150 A	150 A	150 A	150 A	150 A	150 A	150 A
50 B	50 B	50 B	50 B	50 B	50 B	50 B	50 B
50 C	50 C	50 C	50 C	50 C	50 C	50 C	50 C

150 A	150 A	150 A	150 A	150 A	150 A	150 A	150 A
50 B	50 B	50 B	50 B	50 B	50 B	50 B	50 B
50 C	50 C	50 C	50 C	50 C	50 C	50 C	50 C

Every day is the same. Easy to notice if falling behind schedule

End of Part 2