



# THE BEGINNER'S GUIDE TO LEAN

Professor Daniel T Jones

**Lean Enterprise Academy**



# Who am I?

- Writer – **Machine** and **Lean Thinking** books
- Researcher – on how to do lean everywhere!
- Founder of the non-profit **Lean Enterprise Academy**
- Publish workbooks on the building blocks of lean, supported by advanced level workshops
  - Lean Lexicon, Learning to See, Seeing the Whole etc
  - Creating Continuous Flow, Making Material Flow, Product Families and Levelled Production, Creating Levelled Pull etc
  - Managing a Lean Transformation, Policy Management, Value Stream Leadership etc
- Mentor to firms experimenting at the lean frontier
- Story-teller via my monthly email letter! Sign up!



# Why Lean?

- In an increasingly competitive world it is doubtful you will survive without it!
- What started in automotive is rapidly spreading to every other sector
- Finally we are gaining momentum in the UK – Foresight 2020, Manufacturing Strategy, Industry Forum, MAS
- It is not a fad that will die away tomorrow
- This is your chance to get on board!



# Early Steps

- The Wake up Call –  
Can I survive? How far behind am I?
- Clearing the decks –  
5S and harvesting the low hanging fruit!
- Falling in love with the tools –  
SMED, Kanban, TPM, 6Sigma etc.
- Involving the shop floor in learning to see **waste** in continuous improvement teams
- But this is just the start!

# Toyota's Lean Strategy



“Brilliant process management is our strategy.

We get brilliant results from average people managing brilliant processes.

We observe that our competitors often get average (or worse) results from brilliant people managing broken processes.”

**And Toyota aims to be No 1 by 2010!**



# Lean Business System

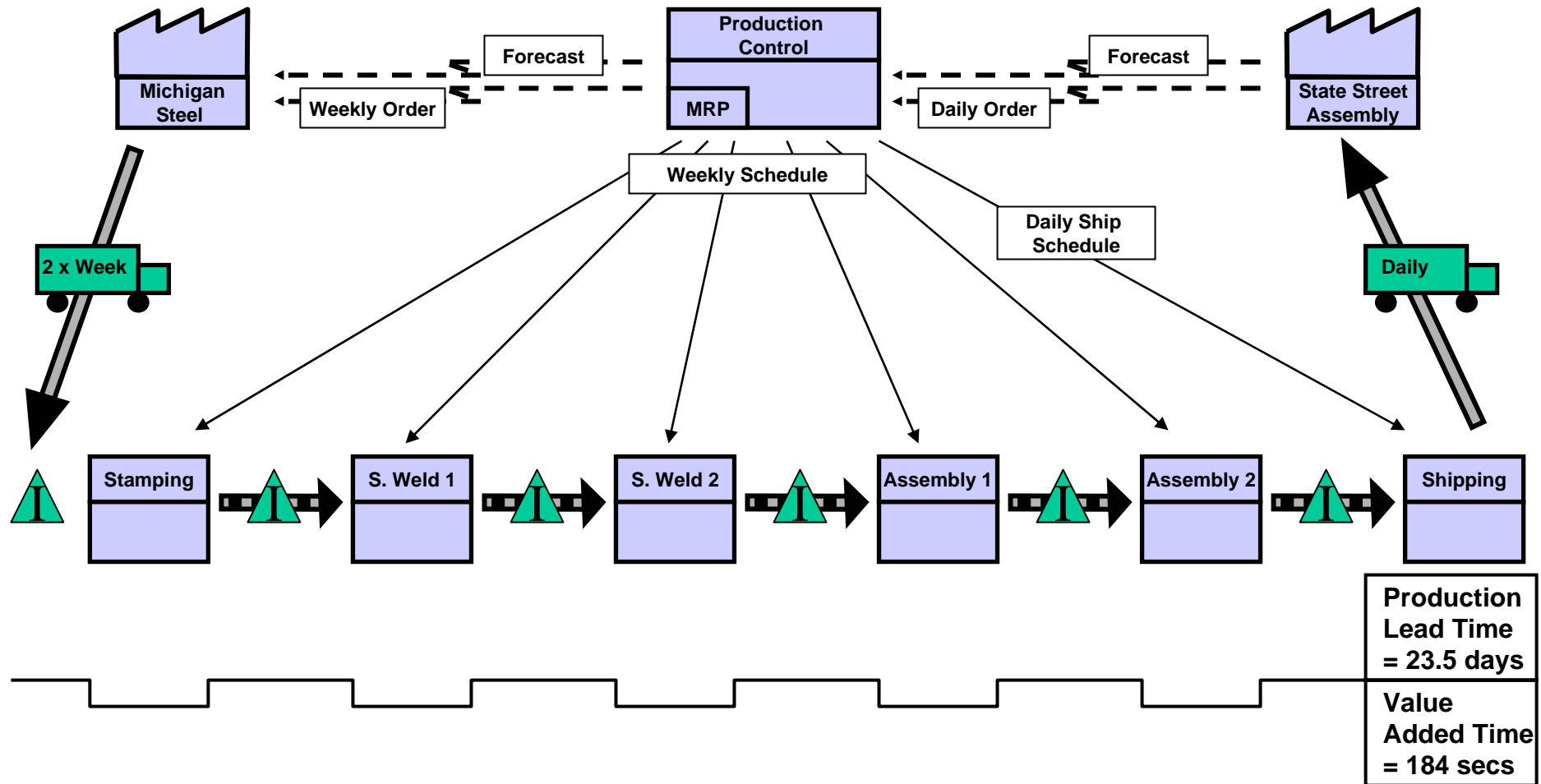
- Lean is a business system focused on **managing processes**, and improving them by compressing **time**, rather than sweating assets
- Every business is a collection of processes – **primary processes** that create **value** - and **secondary processes** that support them
- **Processes** are sequences of **steps** that must be carried out to create value for customers and managed **as a whole**, not separately



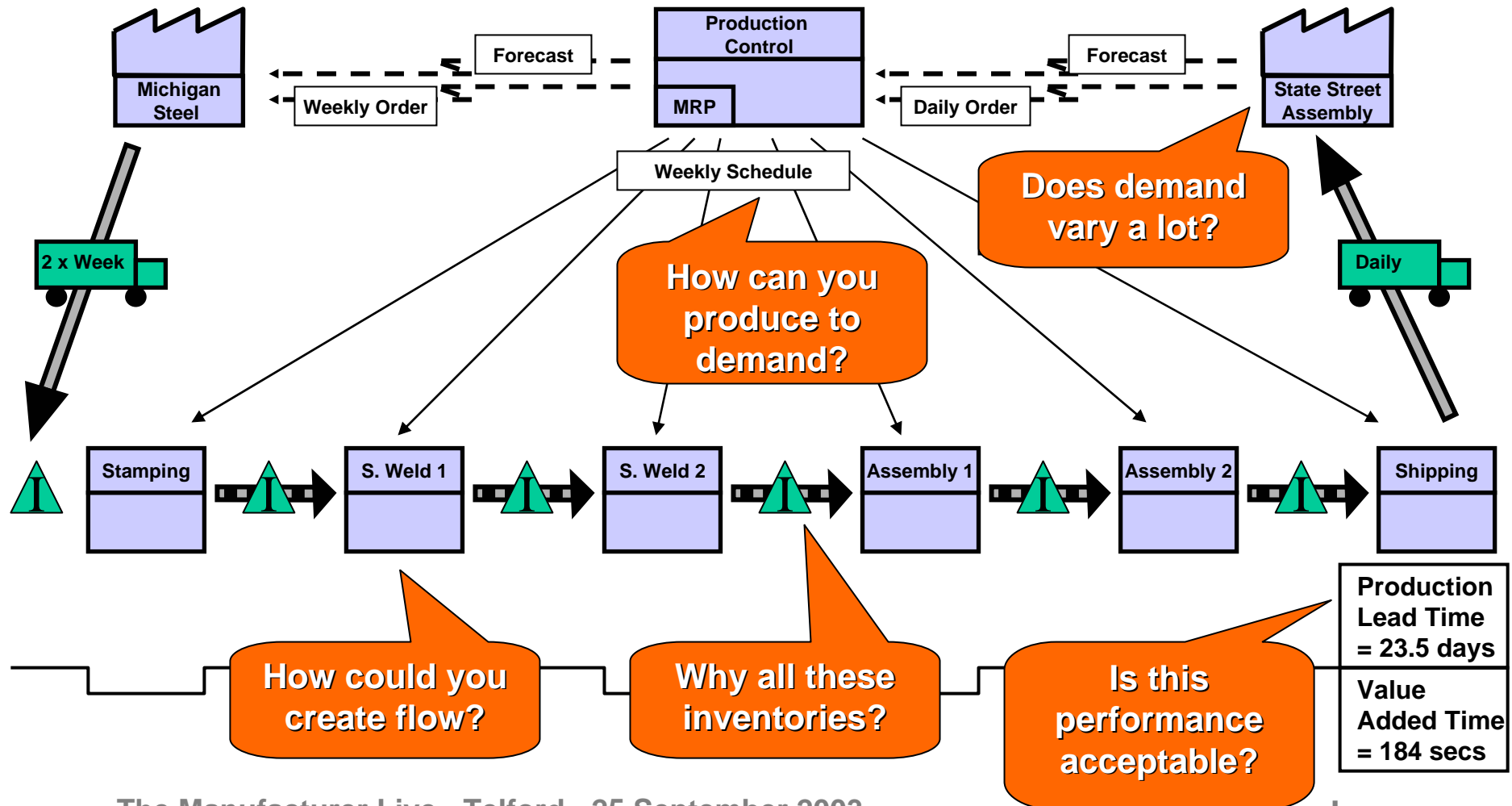
# Next Steps

- We must learn to see the process!
- We must learn how to enable the product to **flow** quickly through the process
- We must learn to trigger this flow at the **pull** of the customer
- We must learn how to **level** the requirements on production
- And someone has to take responsibility for reconfiguring this **value stream!**

# Current State Value Stream



# Current State Value Stream

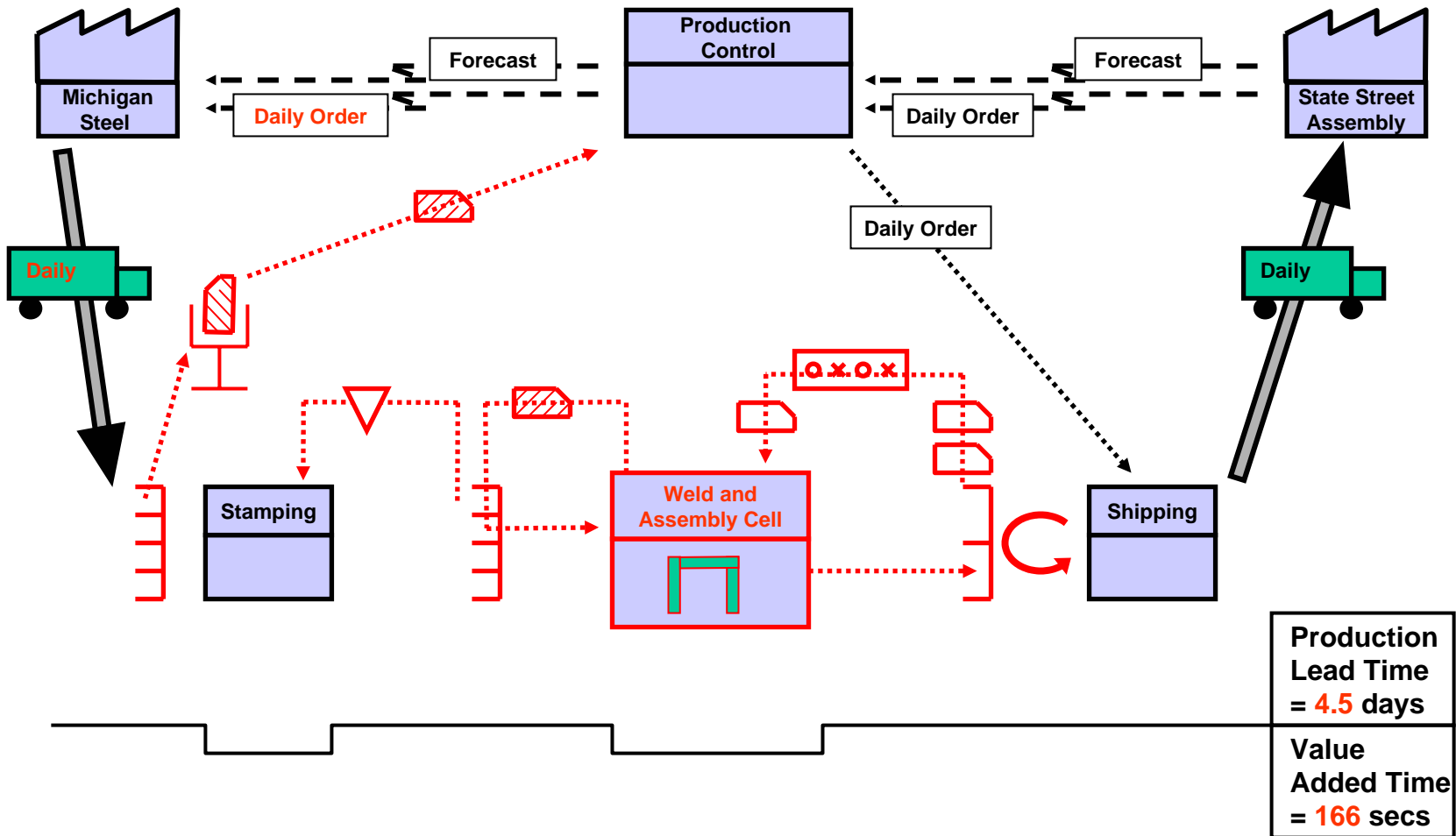


# Key Questions



- What is the rate of demand – and hence the rhythm of production?
- How much does demand vary – and how much should you flex or buffer?
- How and where should you filter and level orders to release steady instructions to what point in production?
- Where and how can you combine operations to create continuous flow?
- Where will you need to pull to link disconnected operations to make just what is needed, and how?
- How can you increase the frequency of production to make smaller batches of each product in line with demand?
- What process and equipment improvements will be necessary to achieve and sustain the above?
- Who will manage the transformation of this value stream and what support will they need from the functions?

# Future State Value Stream



# Implementation Plan



V S Manager Jim  
Date 03/02/2003

Product Family  
Steering Brackets

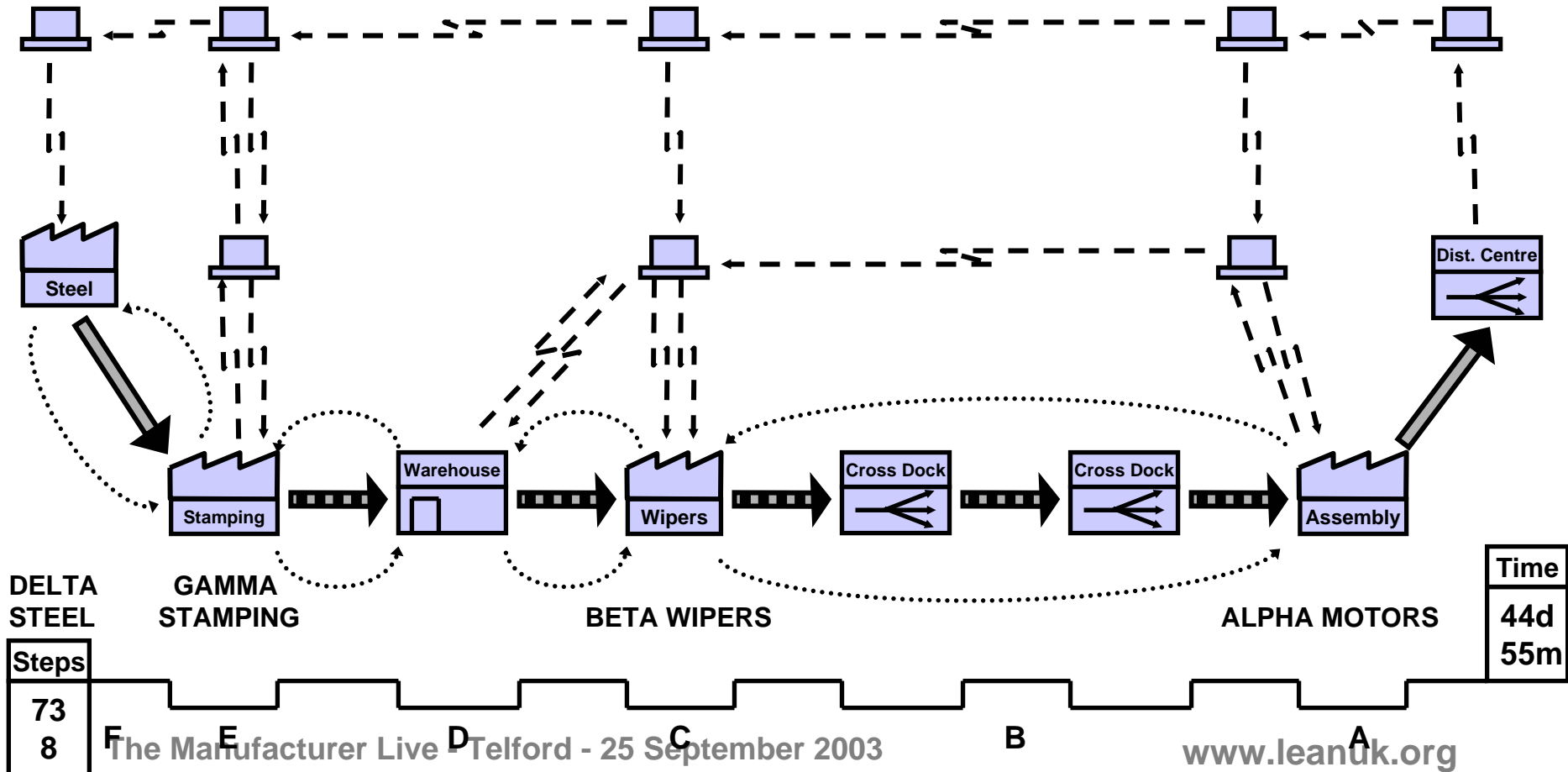
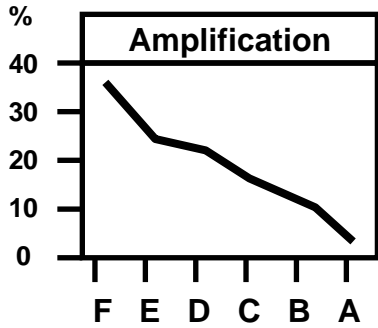
| Product Family Business Objective          | Value Stream Objective  | Measurable Goal  | Monthly Schedule |   |   |   |   |   |   |   |   | Person in Charge |  |
|--|---|--|------------------|---|---|---|---|---|---|---|---|------------------|--|
|  |   |  | 1                | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |                  |  |
| Improve Profitability In Steering Brackets | <b>Pacemaker</b><br>*Continuous flow from weld to assembly<br>*Kaizen to 168 secs<br>*Eliminate weld changeover<br>*Uptime weld #2<br>*Finished goods pull<br>*Materials handler routes | Zero WIP < 168 s/t<br><br>< 30 sec c/o<br>100%<br>2 days FG<br>Pull Schedule | →                | → |   |   |   |   |   |   |   |                  | John Dave<br><br>Sam<br>Mike<br>Sue<br>James |
|  | <b>Stamping</b><br>*Stamping Pull<br><br>*Stamping changeover   | 1 day inventory + pull schedule<br>batch size 300/160 pieces<br>c/o < 10 min |                  |   |   |   | → | → |   |   |   |                  | Fred<br><br>Tim                              |
|  | <b>Supplier</b><br>*Pull coils with daily deliveryr   | daily delivery < 1.5 days of coils at press                                  |                  |   |   |   |   |   |   | → |   |                  | Graham                                       |



# Further steps

- Unscramble your product families so you can create flow and pull across every value stream
- Do the same for all your office processes – the gains are even bigger!
- Work with your suppliers and customers to compress the whole value stream
- Build what you learnt into the design of the next generation product and tooling

# Current State

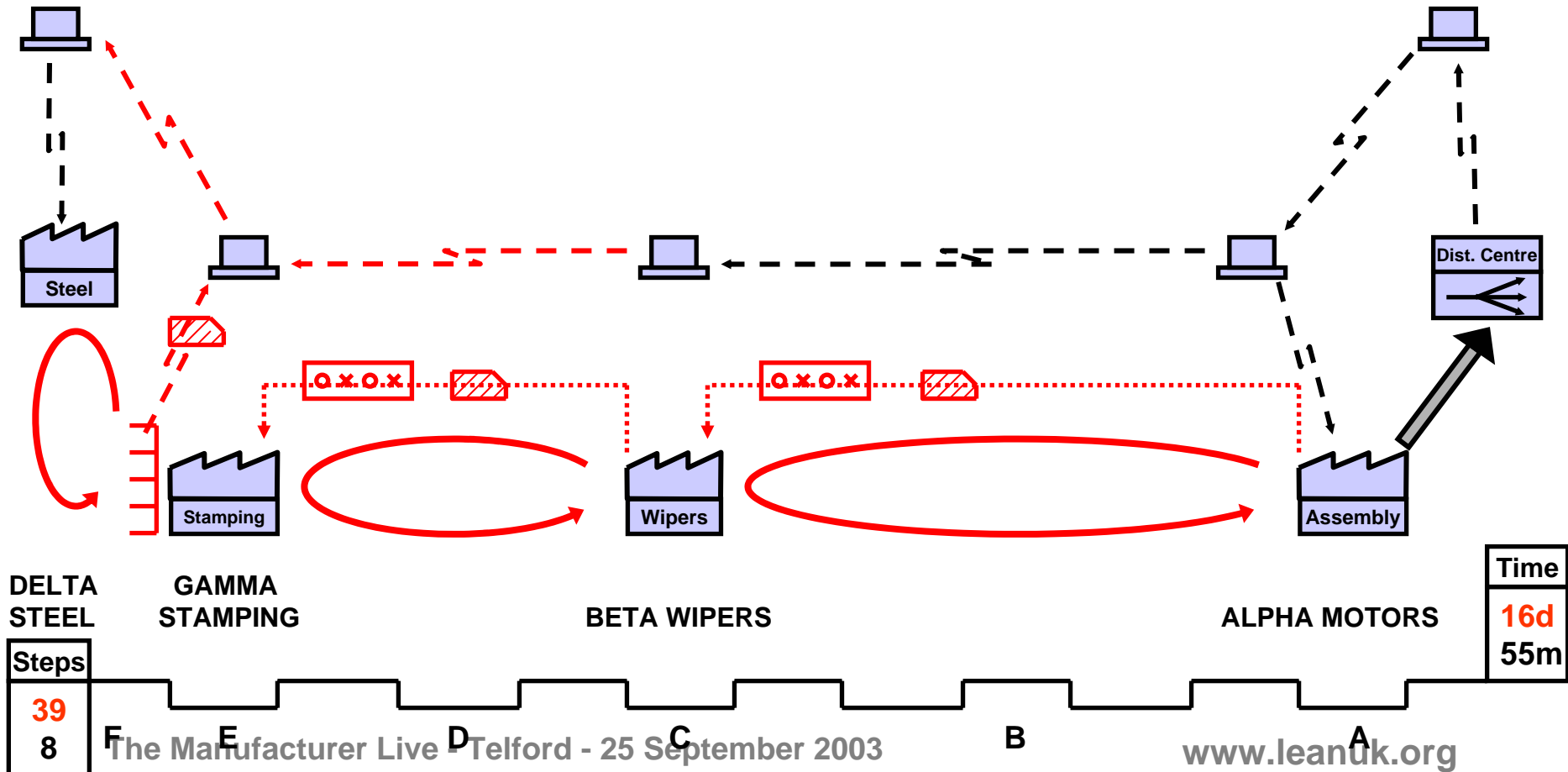
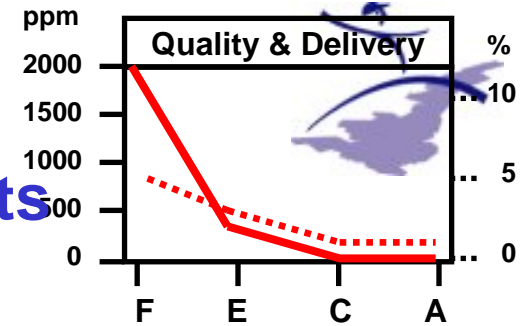
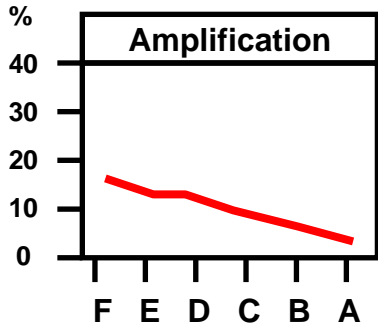


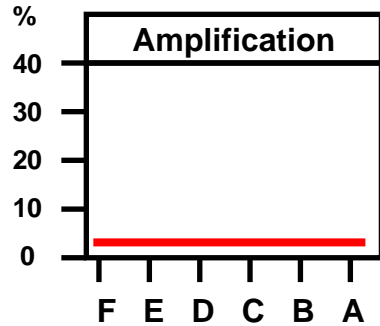
|             |
|-------------|
| DELTA STEEL |
| Steps       |
| 73          |
| 8           |

|      |
|------|
| Time |
| 44d  |
| 55m  |

# Future State 2

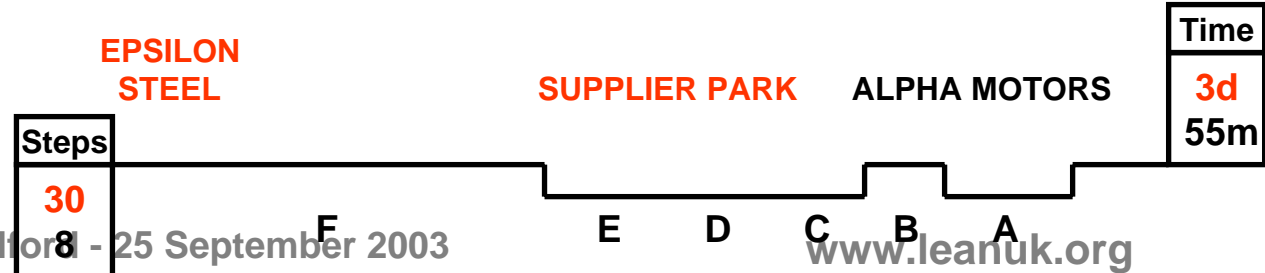
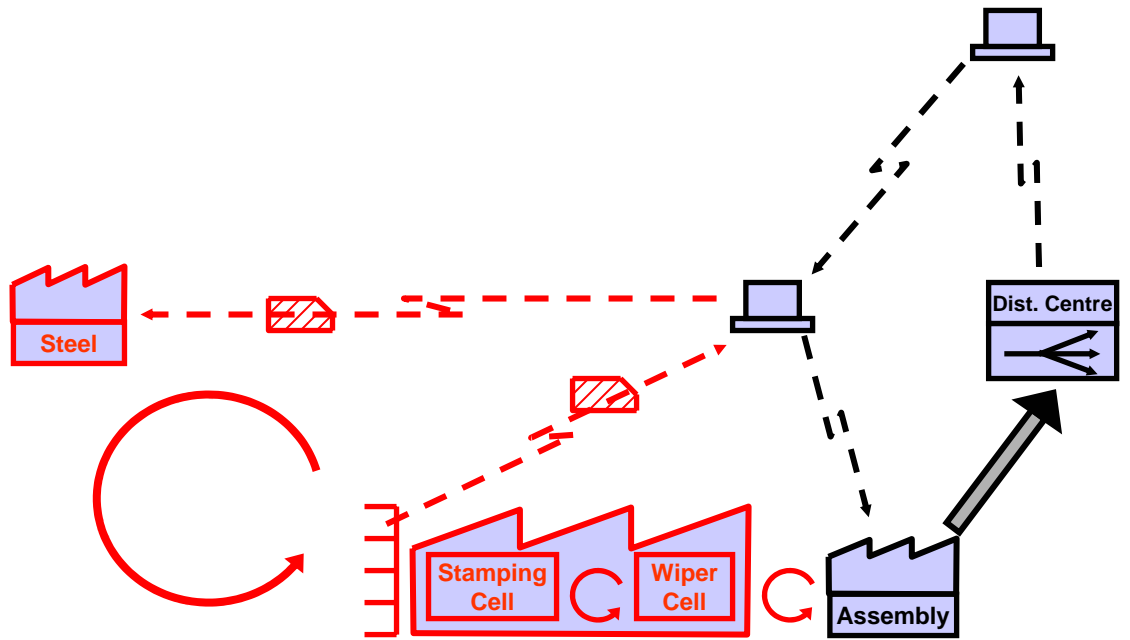
## Flow and Pull between Plants





# Ideal State

## Value Stream Compression



# Current to Ideal State Box Score



|                                      | <b>Current State</b> | <b>Future State 1</b> | <b>Future State 2</b> | <b>Ideal State</b> |
|--------------------------------------|----------------------|-----------------------|-----------------------|--------------------|
| <b>Total Lead Time</b>               | <b>44.3 days</b>     | <b>23.9 days</b>      | <b>15.8 days</b>      | <b>2.8 days</b>    |
| <b>Value Creating to Total Time</b>  | <b>0.08%</b>         | <b>0.16%</b>          | <b>0.6%</b>           | <b>1.5%</b>        |
| <b>Value Creating to Total Steps</b> | <b>11%</b>           | <b>15%</b>            | <b>21%</b>            | <b>27%</b>         |
| <b>Inventory Turns</b>               | <b>5</b>             | <b>9</b>              | <b>14</b>             | <b>79</b>          |
| <b>Quality Screen*</b>               | <b>400</b>           | <b>200</b>            | <b>50</b>             | <b>2.5</b>         |
| <b>Delivery Screen*</b>              | <b>8</b>             | <b>8</b>              | <b>3</b>              | <b>1</b>           |
| <b>Demand Amplification*</b>         | <b>7</b>             | <b>7</b>              | <b>5</b>              | <b>1</b>           |
| <b>Travel Distance</b>               | <b>5,300 miles</b>   | <b>5,300 miles</b>    | <b>4,300 miles</b>    | <b>525 miles</b>   |

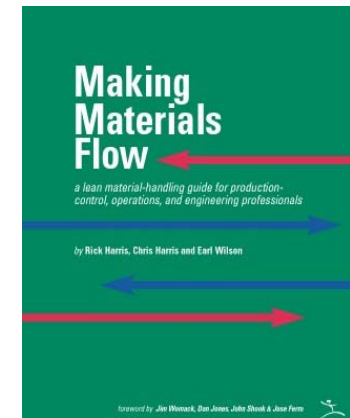
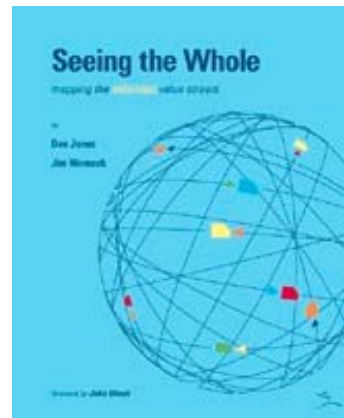
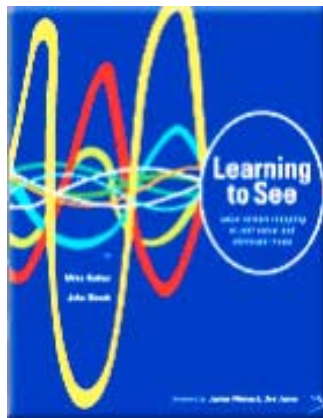
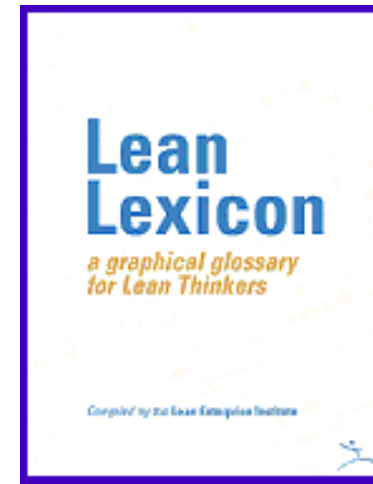
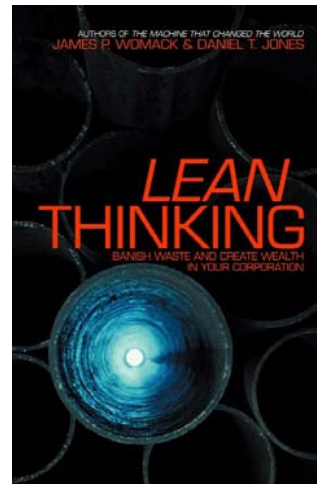
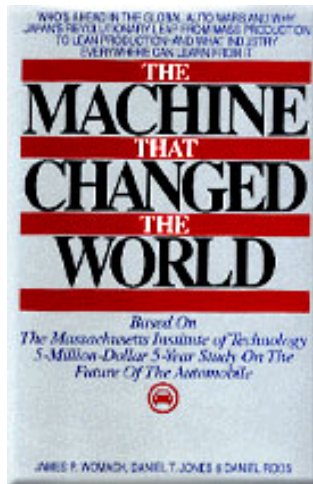
\* Ratios of upstream over downstream scores



# Where are the gains?

- Much improved quality and on time delivery
  - which customers expect today!
- Lower inventories
  - but watch the balance sheet!
- Freed up people, machines and space
  - which you are still paying for?
- Lean is a great opportunity to grow your business without extra resources!
- Learning by doing it is the only way!

# Lean Enterprise Academy



The Manufacturer Live - Telford - 25 September 2003

[www.leanuk.org](http://www.leanuk.org)



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