



The Leanest Lean There's Ever Been

99% Fat Free Manufacturing

Are Lean and APS Mutually Exclusive?



The Leanest Lean

What do we mean by Lean Manufacturing?

- High Level
 - Eliminate waste (Muda)
 - Excess production/inventory
 - Unnecessary movement of people/materials
 - Excess queue time
 - *Over processing & scrap, not relevant to Preactor*
- The Aim
 - Deliver on time, with minimum inventory, shortest lead time and highest possible utilisation



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How Do We Implement Lean?

- Major characteristics of a lean project:
 - Value Stream Mapping
 - Lean Thinking
 - Takt time (Production rate)
 - Heijunka (Load levelling)
 - Process redesign
 - Typical Implementation
 - Visual Production Control (VPC)
 - Pull system
 - Kanbans



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How Do We Implement Lean?

- Is Visual Production Control (VPC) the best way to implement Lean?
 - Many consultants see Lean and VPC as synonymous
- Let's test this by asking The Ultimate Lean Question



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The Ultimate Lean Question

If you stopped accepting orders tomorrow and then waited until your factory stopped, how much inventory would you have left?



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The Ultimate Lean Question

- The Leanest Answer is None
- If you use VPC:-
 - There will be no finished goods, but...
 - All Kanbans will be full
 - Raw material stocks will be full
- Why?



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The Ultimate Lean Question

- Because with VPC only the final assembly and dispatch are Make to Order
- All upstream processes are Make to Stock
- Kanbans are simply inventory

Brian called me a heretic for saying this!



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How Did We Get To This State?

- Before MRP we had Economic Batch Quantities (EBQ)
- MRP gave us aggregated dependent demand, but it is still an EBQ and creates inventory
- VPC reduces inventory by process change so the EBQ is one Kanban full
- But even if the Kanban quantity is one, we are still making to stock



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The Ultimate Lean Answer

- Make (Build) To Order (MTO) is the real answer
- Ideally we should have no items in the factory which have not been ordered by a client
- VPC cannot achieve this state
- We need an IT based solution to take the final Lean step



The Leanest Lean

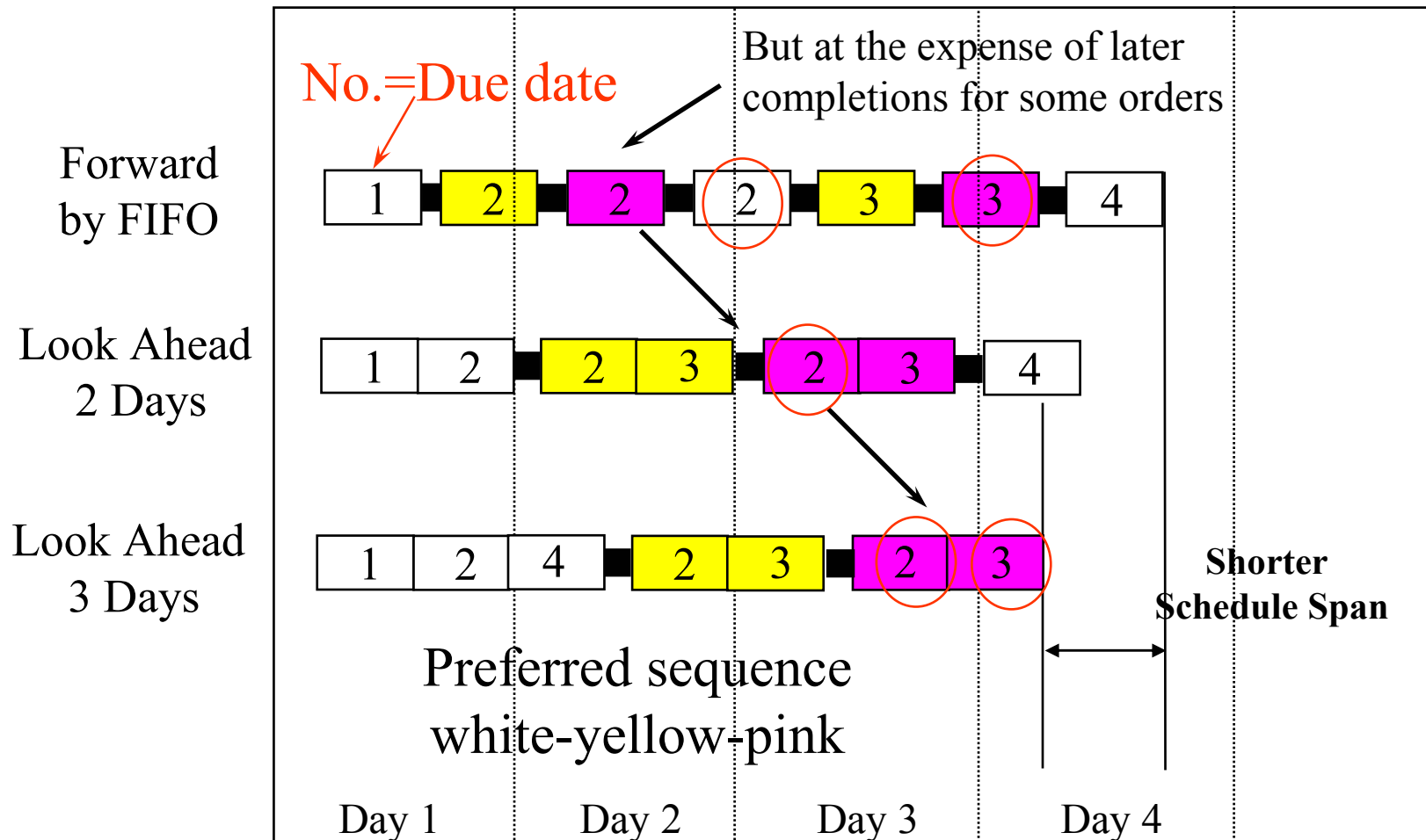
The Ultimate Lean Answer

- Where possible turn off Make to Stock (i.e. minimum batches) in your MRP
 - This will generate many smaller orders giving a changeover frequency problem
- Mostly Make To Order and use APS to perform dynamic aggregation
 - Order or operation based aggregation
- You can now trade off changeover frequency against delivery performance & utilisation



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The Ultimate Lean Answer

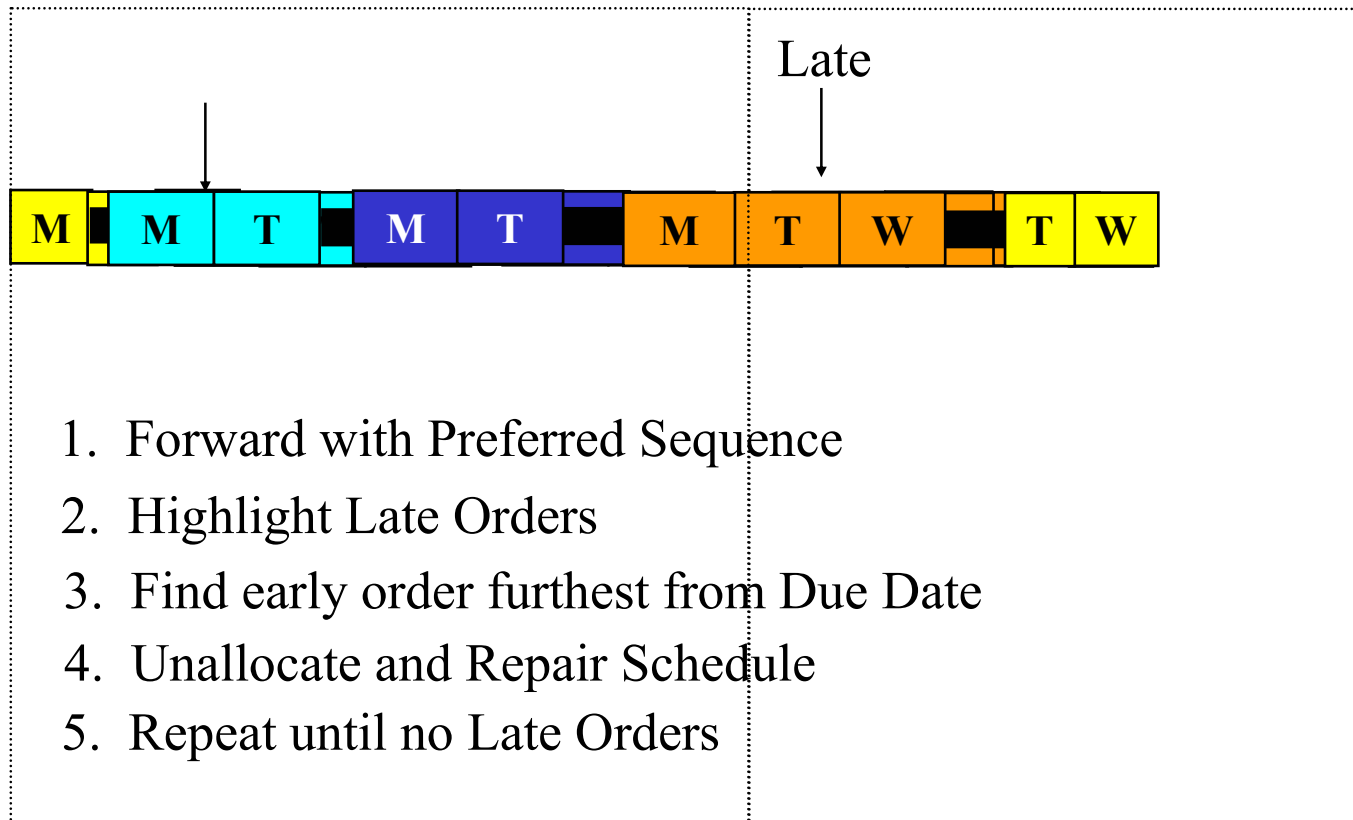




The Leanest Lean

The Ultimate Lean Answer

Packing
Line 1



Mon

Tue



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Summary

- APS and Lean are not mutually exclusive
- Value Stream Mapping (or similar) is required to identify issues
- VPC reduces inventory...
- But to get the leanest lean you **NEED APS**
- Those who haven't gone through the VPC stage can leapfrog it by using APS
- However...



The Leanest Lean

Empowering The Planner

- VPC devolves scheduling decisions to the shop floor
- APS empowers the planner to make scheduling decisions
- Is this a good move?



Empowering The Planner

VPC Vs APS

- VPC
 - Scheduling decisions are based on empty Kanbans
 - Working in isolation
 - No visibility of company wide KPIs (delivery performance, cost, etc.)
 - Variations in demand cause problems
- APS
 - Scheduling decisions are based on company wide KPIs
 - The planner has the whole picture
 - Allows tradeoffs between KPIs
 - Variations in demand are handled easily
 - Production has one KPI – schedule adherence



Empowering The Planner

VPC Vs APS

We are getting back to optimising:

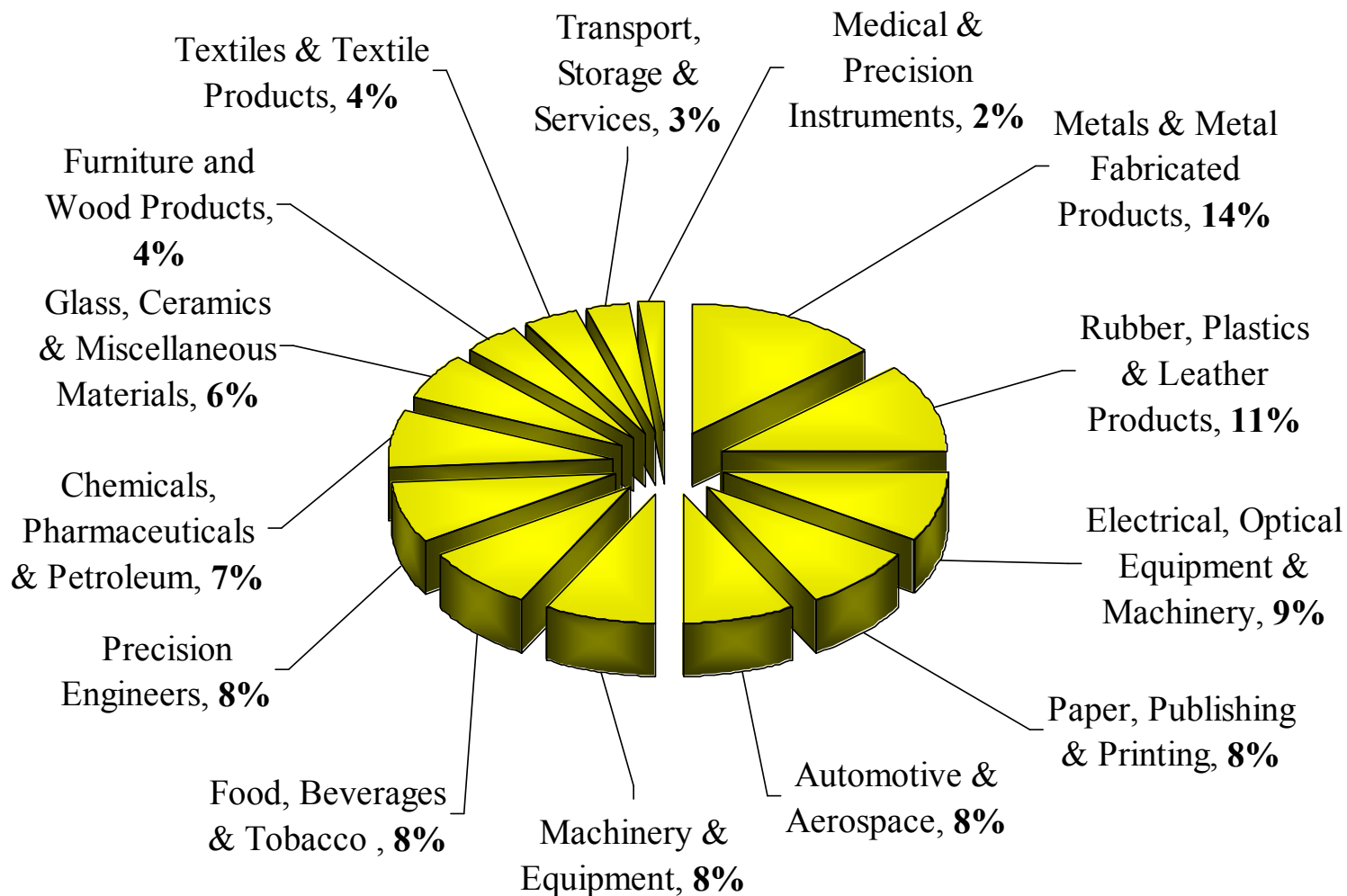
Door to Door not Floor to Floor!

But is this really happening?



Empowering The Planner

Preactor is Used in a Vast Range of Industries





Empowering The Planner

Preactor is Used in a Vast Range of Industries

- This puts PI in a unique position to compare the production control techniques across sectors
- Some of these sectors (e.g. fresh food) have always had very low inventory, because of shelf life issues
- They are in the forefront of planner empowerment
- Can other sectors learn from their experience?



Empowering The Planner

Some Food Users

- Geest
- Northern Foods
- Hazelwood Foods
- Hitchin Foods
- Nestle
- Nature's Way Foods
- Plus many others around the world



Empowering The Planner

Fresh Food Process Characteristics

- Short shelf life products
- Short shelf life materials (inc packaging)
- Delivery lead time < manufacturing lead time
- Very variable demand (promotions)
- Hygiene
- Alternative BoMs
- Tough clients (shorting is a huge issue)
- Flexible labour



Empowering The Planner

Fresh Food has Complex Scheduling Issues

- VPC almost unknown
- In some companies the status of the planner has been raised
- APS has become ‘endemic’ in the company culture
- Manufacturing truly have one KPI, schedule adherence