

# **Changing the logic from Batch to Flow**

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# **Conventional wisdom**

**is often shown to be wrong**

- Low cost airlines won't take off**
- Diesel engines are slow**
- Millennium bug will cause chaos**

**Is there another example of  
existing systems where  
conventional thinking  
could be wrong?**

# **Current Supply Chain Logic Issues**

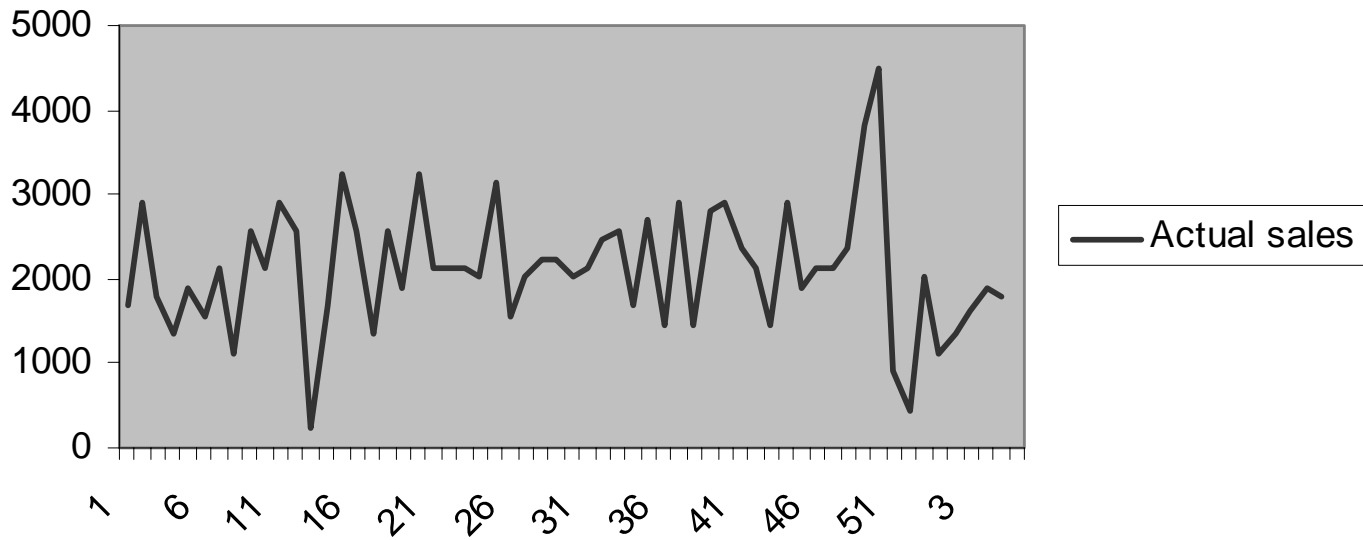
**Batches (EOQ's) cause**

**peaks & troughs**

**= bull whip effect**

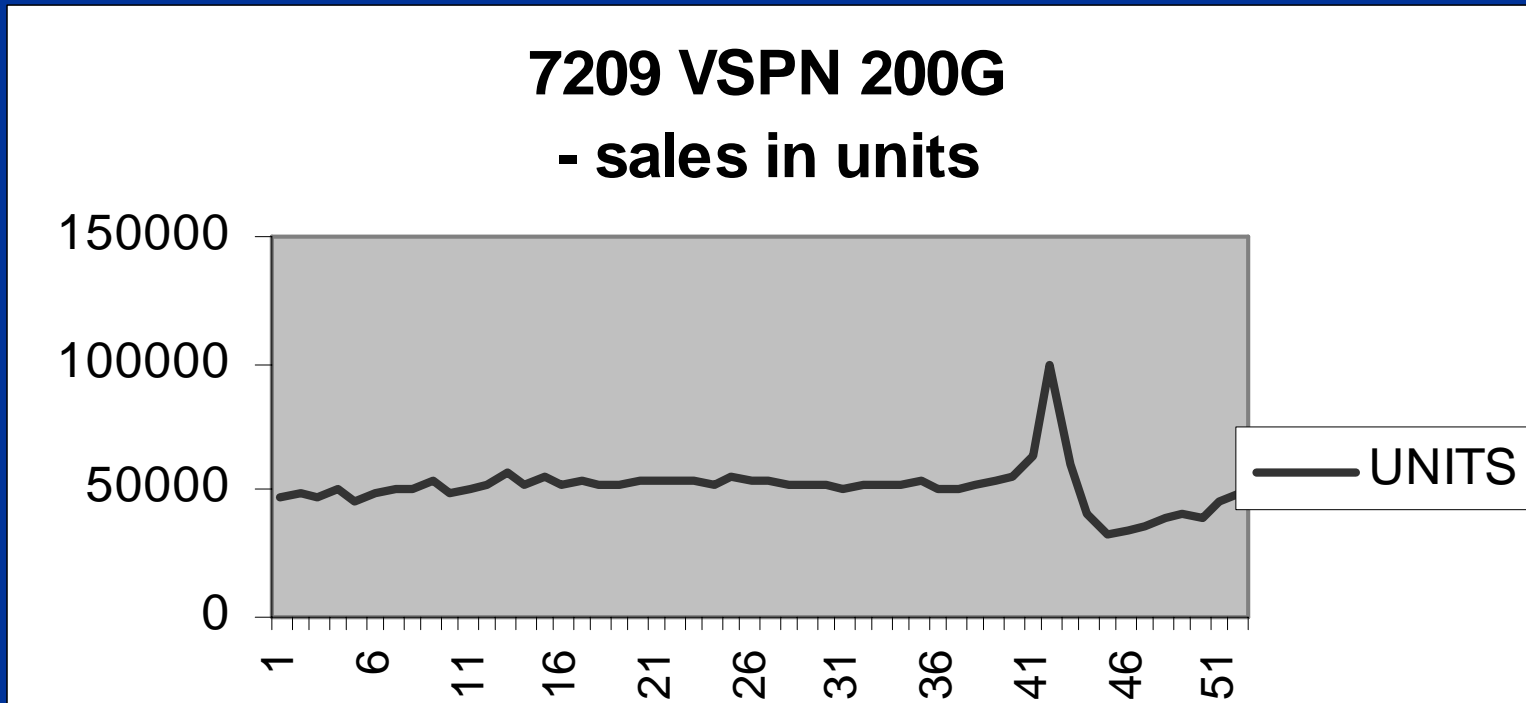
# Retailer's orders to manufacturer

7209 VSPN 24x200g  
-orders in cases

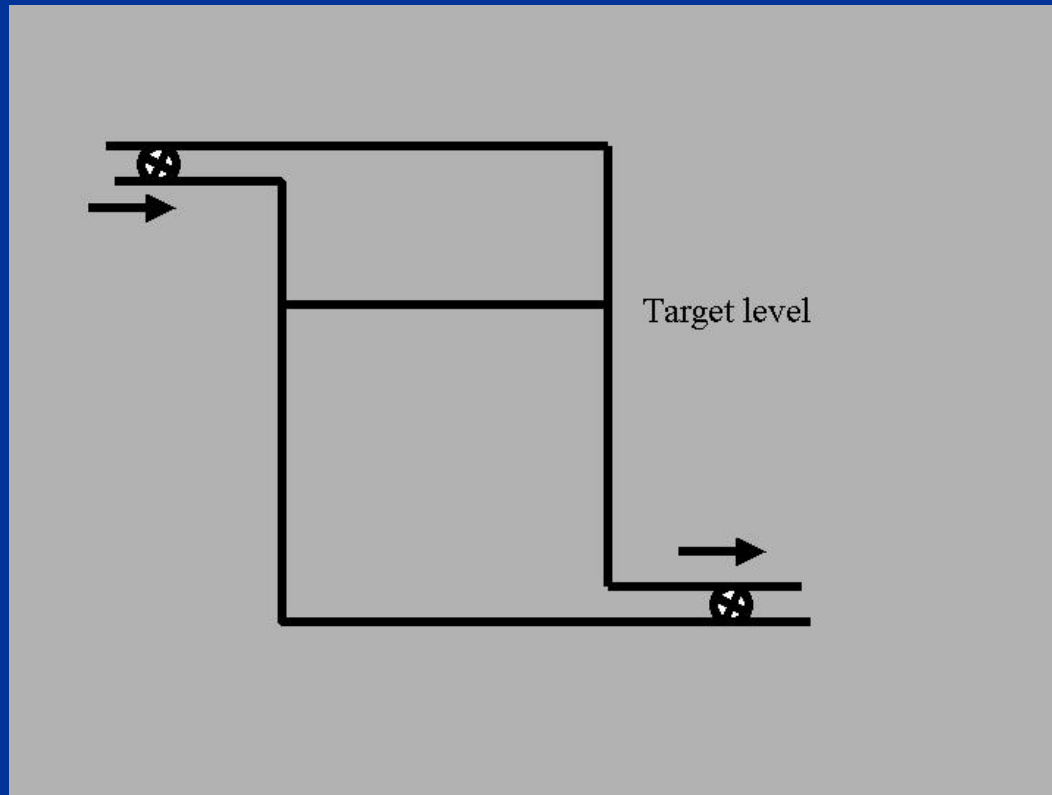


# EPOS data for same item

- actual consumer demand



# Current Supply Chain Logic Issues



# Current Supply Chain Logic Issues

**Result:**

- A *different* plan every time

# Current Supply Chain Logic Issues

## Consequences:

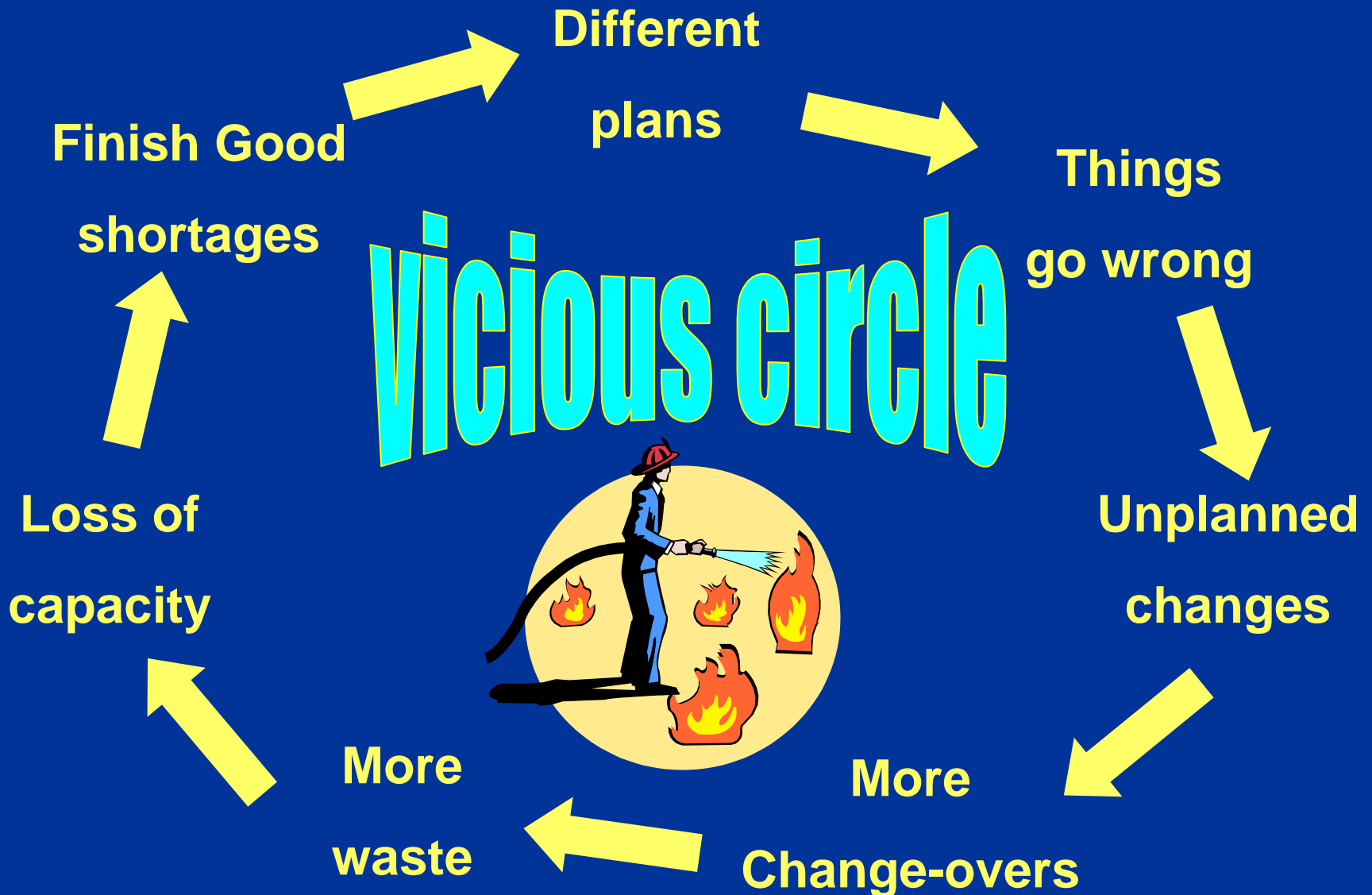
- Increased fixed costs
- Increased communication
- Increased risk

High chance something  
will go wrong resulting in:

# Supply Chain Logic Issue

**Do your business ever  
make short term plan changes?**

# Supply Chain Logic Issue



## Current supply chain logic of EOQ:

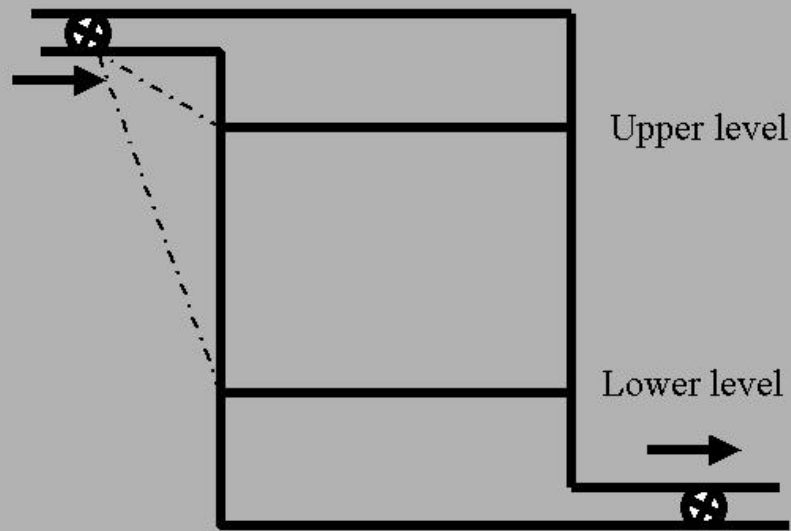
- Creates peaks & troughs

## But also responsible for creating:

- *Different plans*
- *Short term plan changes*

Yet still the fundamental supply chain logic used by most retailers and manufacturers

# Alternative logic Buffer Tank



# PARADIGM SHIFT

What today seems impossible to do

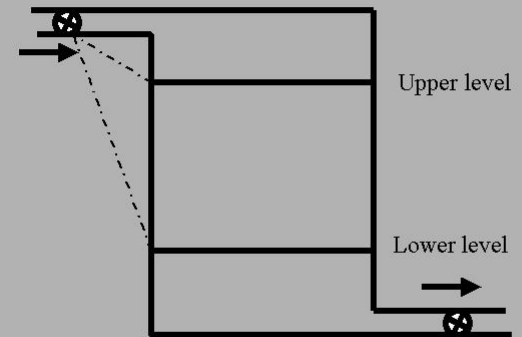
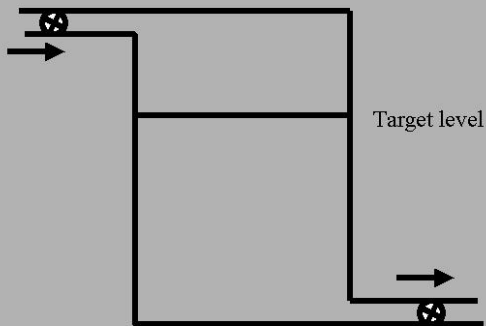
*but*

if it *could* be done

would *fundamentally* change what you do.

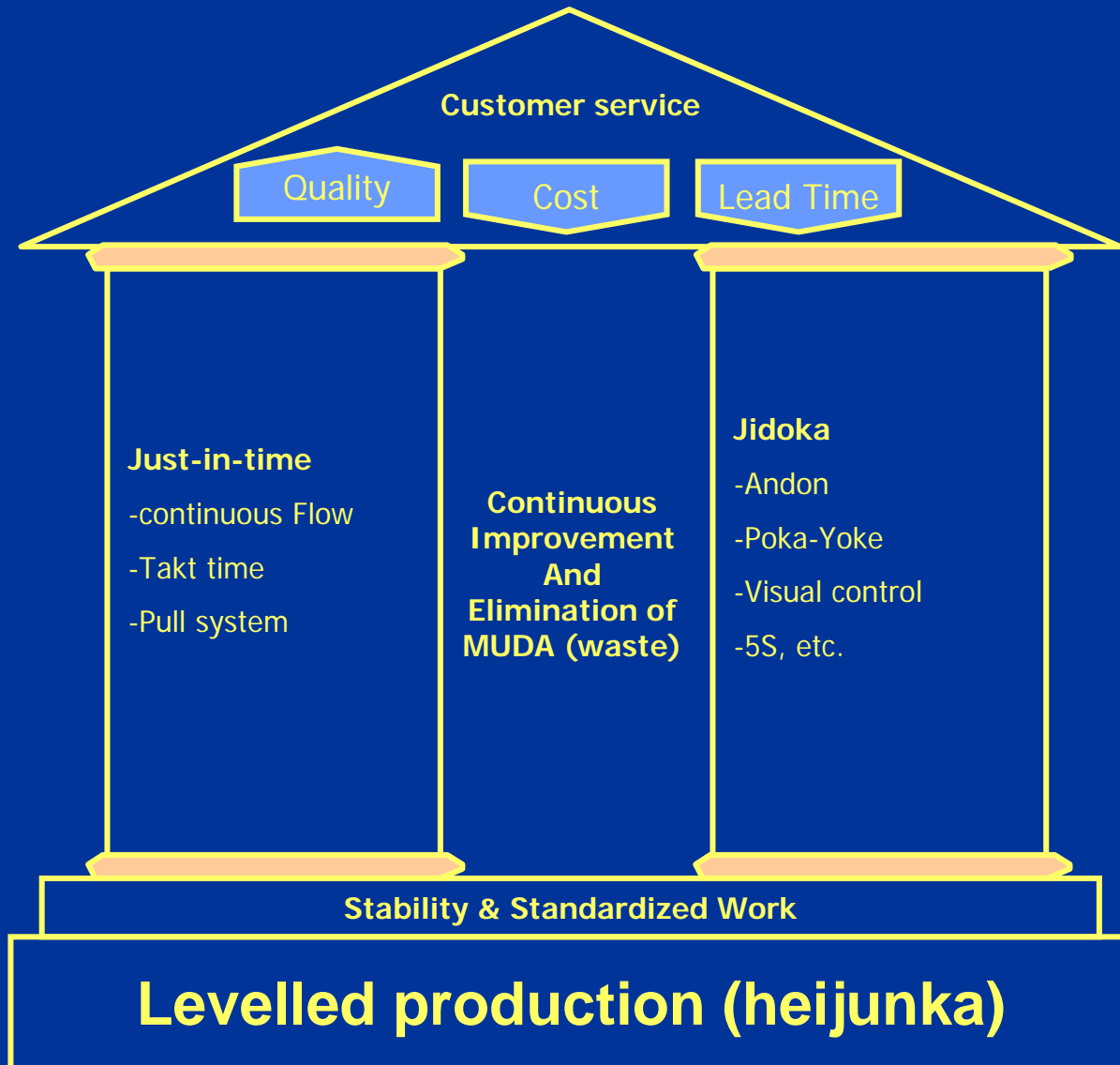
# PARADIGM SHIFT

BATCH TO FLOW



**What is LEAN ?**

# Toyota Production System



# Levelled Production - Heijunka

mixed sequence  
one piece flow  
matched to  
market pull  
through  
TAKT time

= perfect flow




**mixed sequence  
one piece flow  
matched to  
market pull  
through  
TAKT time**

- **Final step in the process, not how Toyota started**
- **What you see is different to how it was achieved**
- **Need to know the “secret” of how it was done**

- **Understanding levelled production**
  - **Steps of levelling**

# Steps for implementing levelling




- starting point  
batch Production

Product	Demand	← ONE MONTH →
<b>A</b>	<b>100</b>	
<b>B</b>	<b>200</b>	
<b>C</b>	<b>300</b>	

- One batch per month per product
- Min. change overs
- Max. batch sizes

# Steps for implementing levelling

## - step 1 Twice Monthly Production




Product	Demand	← ONE MONTH →
<b>A</b>	<b>100</b>	
<b>B</b>	<b>200</b>	
<b>C</b>	<b>300</b>	

- Halve batch sizes
- Identical sequence
- Two cycles

**Every Product Every Cycle**

# Steps for implementing levelling

## - step 2 Weekly Production



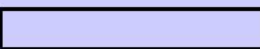
Product	Demand	← ONE MONTH →
<b>A</b>	<b>100</b>	
<b>B</b>	<b>200</b>	
<b>C</b>	<b>300</b>	

- Halve batch sizes
- Identical sequence
- Same ratios

**Every Product Every week**

# Steps for implementing levelling

## - step 3 Daily Production

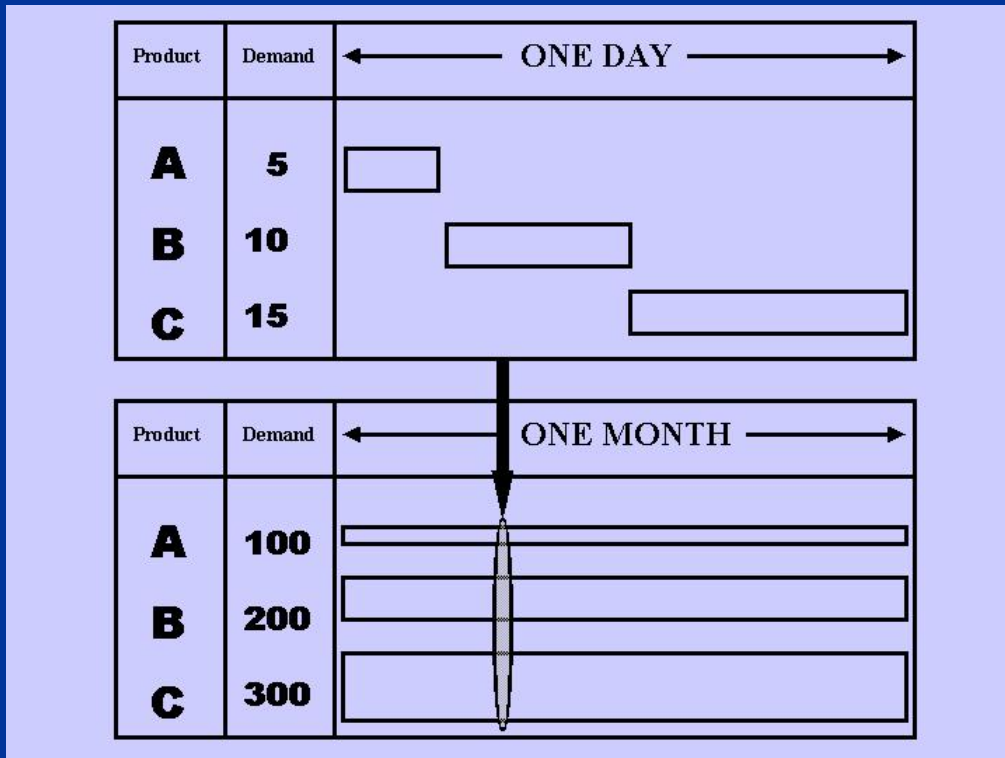
Product	Demand	← ONE DAY →
<b>A</b>	<b>5</b>	
<b>B</b>	<b>10</b>	
<b>C</b>	<b>15</b>	

- One batch per day
- Identical sequence
- Same ratios

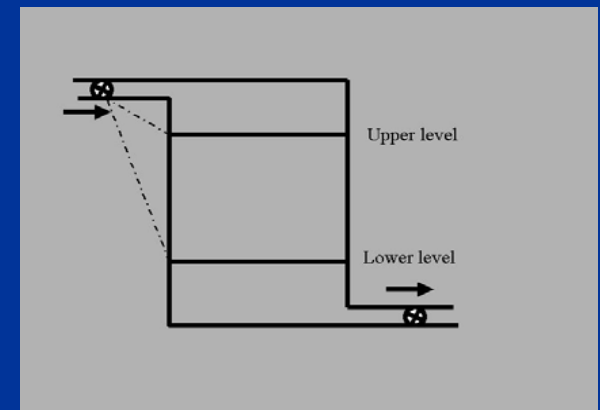
**Every Product Every day**

# Steps for implementing Heijunka

## - step 3 Daily Production



- One batch per day
- Identical sequence
- Every product every day



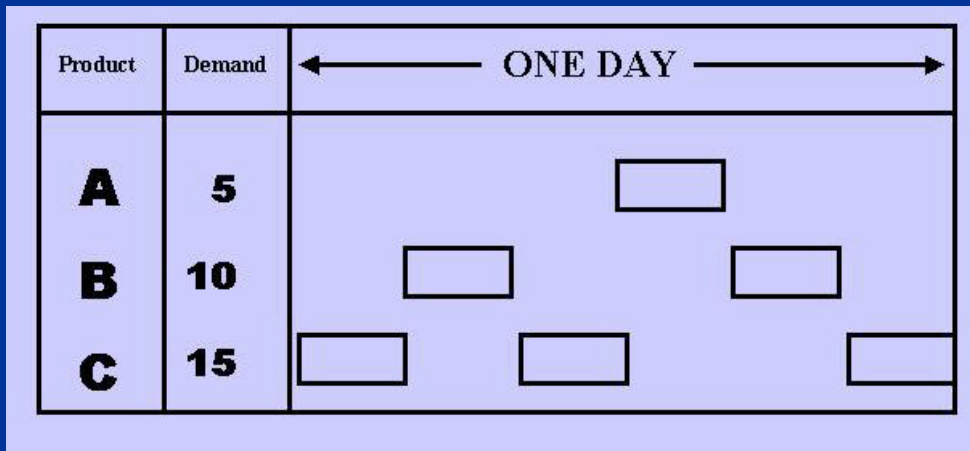
Continuous production of all products

# **Steps for implementing levelling**

**Remaining  
steps of levelling**

# Steps for implementing levelling

## - step 4 Fixed Volume Production

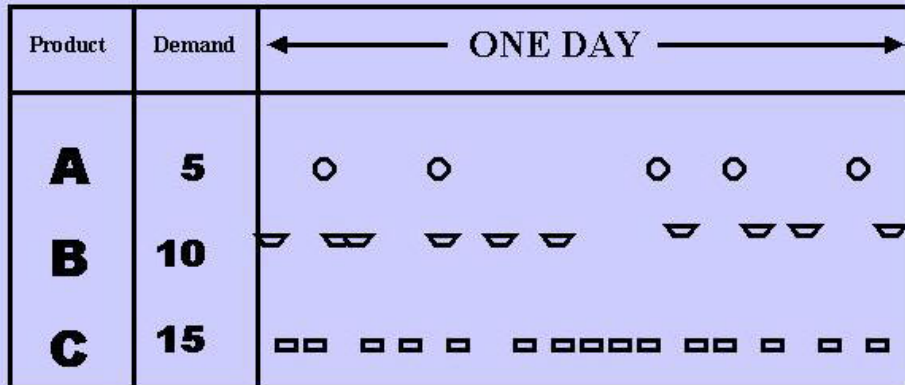


- Daily multiple batches of same product at a fixed size
- Fixed sequence broken

Every product every cycle = means to reach the real goal

# Steps for implementing levelling

## - step 5 Synchronised Production



- Batch sizes of one = One piece flow
- Mixed stream
- Synchronised to market pull through takt time

**Final result**

**not how it was achieved**

# **Flow Logic**

## **- false bridge steps**

- **Objective is a fixed “drumbeat” leading to stability & standardised work**
- **Counter-intuitive as demand seen as variable**
- **A rigid disciplined PUSH process**
- **Opposite of the final objective = flexible responsive PULL process**

# Flow Logic

But why do it?

**ECONOMIES**

**OF**

**REPETITION**

*Making the apparently impossible*

**POSSIBLE !**

# Economies of Repetition

- Repetitive *Flexible* Supply game
- Happens in actual implementation
- Reason why EPEC has to be EVERY
- Three separate aspects

# Economies of Repetition

- Learning Curve
- Routines
- **Stability**
  - Foundation for continuous improvement
  - Helps root cause identification & resolution
  - Encourages standardisation

# Economies of Repetition



# Economies of Repetition

fine in theory, but.....

can't do Every Product Every Cycle  
with current systems & equipment,  
therefore.....

won't get Economies of Repetition !

**Flow Logic**

**and**

**Every Product Every Cycle**

**How to start**