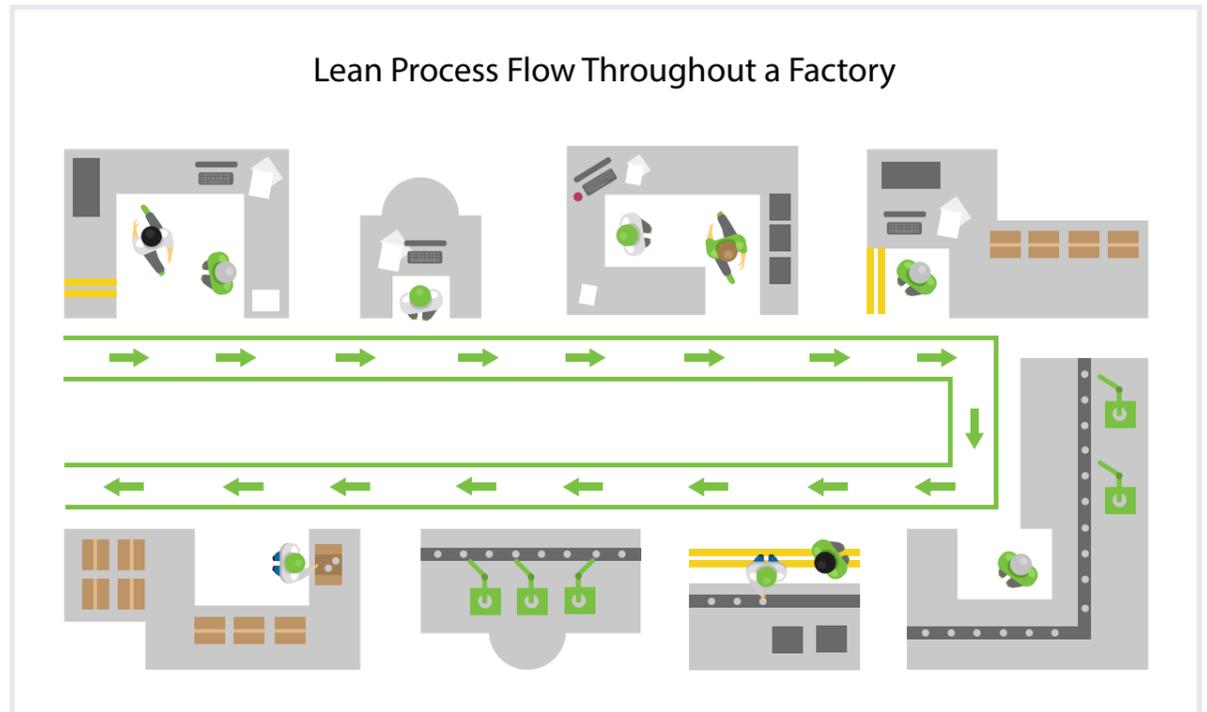


Lean Manufacturing is the overall term for an approach which has been proven to enable organisations to achieve production efficiencies, increase capacity and reduce costs. This fact sheet gives an overview of the key concepts, which link to many of the other resources provided by the Business Growth Hub.

To get the full benefit of lean requires a long-term commitment, tenacity and a willingness to embrace new ways of working.



## You would use this factsheet when you need to

- Stabilise and standardise processes
- Eliminate waste
- Develop flow
- Increase responsiveness to customers
- Engage people in continuous improvement and problem solving

## Projected Performance Gain



**Reduced**

Cost, Waste, Inventory, Lead-time



**Increased**

Throughput, Productivity, Quality, Morale

## What investment is needed to understand the concept?

### DIFFICULTY



**Simple**

The basic concepts are simple and it's not difficult to make a start

### ACTIVITY



**Team and Individual**

This process can be conducted either as an individual or in a team

### EQUIPMENT



**None**

Concepts of Lean Manufacturing should not require any equipment

## What is Lean?

The key concepts of Lean were described by Womack and Jones in 'Lean Thinking' as the following five Lean principles.

### 1. Define Value

- Have an uncompromising view of Value as being **that which the customer is prepared to pay for**
- Identify everything else as non-value adding Waste, and seek to eliminate or minimise

### 2. Understand the Value Stream

- From Goods in to Despatch
- Map out the steps required for you to meet customer orders
- See “the good, the bad and the ugly” in the 'Current State'
- Develop a 'Future State' plan

### 3. Make Value Flow

- The lean ideal is “one-piece flow”, where parts are produced one at a time, often using “cells” to balance machine and people time.
- In order to make value flow, there will typically be a need to address constraints which are currently driving “big batch” production, including:

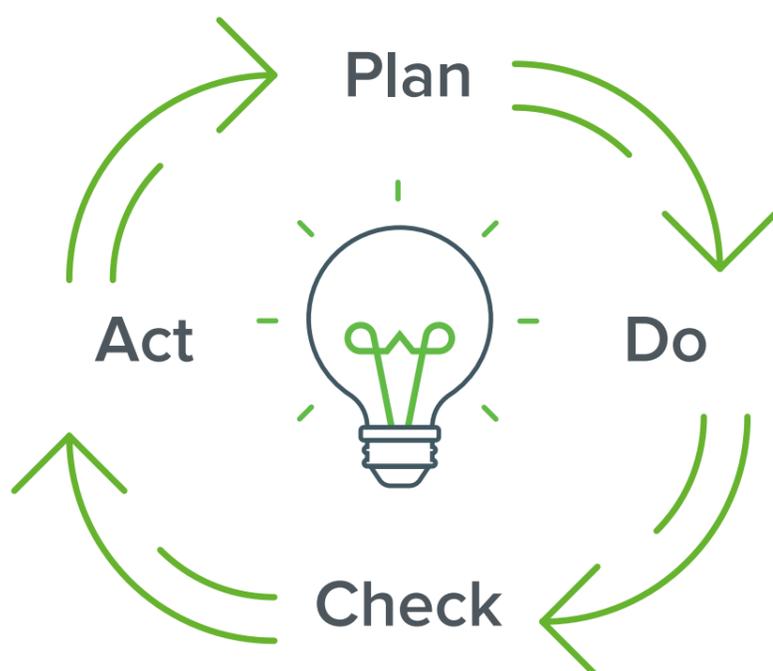
- i. Replacing disconnected batch processes with manufacturing cells
- ii. Eliminating time-consuming machine changeovers
- iii. Addressing reliability issues
- iv. Scheduling differently

### 4. So that you can respond to the Pull of the Customer

In a lean system, each process step only produces what the next process is asking for or ready for. This can be a “Kanban” system, for example a finishing process is scheduled every day to replenish the parts which have been removed from the warehouse stock to fulfil customer orders.

### 5. Seek Perfection

- Once significant initial steps have been taken, this is never the end.



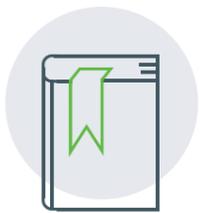
**Cell Manufacturing** - An approach whereby a number of machines or process steps are grouped together, often in a “horseshoe” shape, so that an operator can produce parts one at a time in “single-piece flow”. This replaces the “non-lean” idea of producing on individual machines in larger batches, and introducing large amounts of work in progress (WIP) and long lead-times to complete the process.

**PDCA** - A cycle of problem solving improvement. Plan an improvement, Do something, Check to see what effect it has had and then Act to either Adopt/Adpat or Abandon the change.

## How to make an improvement

- Identify the main value stream(s) in your business
- Select a priority value stream for improvement
- Define Value and Waste in the value stream:
  - Carry out a waste walk
  - Take action to stabilise the process where necessary (it is difficult to improve an unstable process)
  - Standardise Work
  - Addressing Machinery Reliability issues
  - Use Visual Management to support this
- Put together a Value Stream Map:
  - Current State, Future State (Ideal and “Next”)
- Develop an achievable action plan to achieve the “Next” Future State in 6-12 months:
  - Implement the plan
  - Learn and improve, using the “Plan Do Check Act” (PDCA) approach.

## Recommended reading



“The Toyota Way” – by Jeffrey K Liker.

Liker, J. K. (2004) *The Toyota Way: 14 Management Principles from the World's Greatest Manufacturer*. New York: McGraw-Hill. [ISBN: 9780071435635]

“The Lean Toolbox, 5th Edition” - by John Bicheno & Matthias Holweg.

Bicheno, J. & Holweg, M. (2009) *The Lean Toolbox: The Essential Guide to Lean Transformation*. PICSIE Books. [ISBN: 9780954124458]

“Lean Thinking - Banish Waste & Create Wealth in your Corporation” - by James Womack & Daniel Jones

Womack, J.P & Jones, D.T. (2003) *Lean Thinking*. New York: Free Press [ISBN: 9780743231640] [ISBN: 9780954124458]

## Glossary

**Value Stream** - The entire series of events, value-adding and non-value-adding, which lead from incoming materials being transformed into what the customer wants.

**Cell Manufacturing** - An approach whereby a number of machines or process steps are grouped together, often in a “horseshoe” shape, so that an operator can produce parts one at a time in “single-piece flow”. This replaces the “non-lean” idea of producing on individual machines in larger batches, and introducing large amounts of work in progress (WIP) and long lead-times to complete the process.

**Kanban** - A visual signal to replenish materials. For example, a signal which says “Part XYZ has just been taken from stock – please make another”.

**Strategy Deployment** - A system by which each team and individual in an organisation is engaged in developing and executing goals which meet the business needs.

For more advice, case studies and additional factsheets, visit:  
[www.businessgrowthhub.com/manufacturing](http://www.businessgrowthhub.com/manufacturing)