

WHAT IS LEAN THINKING?

Lean Thinking is a philosophy that seeks to maximise value to customers and eliminate **waste**.

So What is Lean Construction?

Simply Lean Thinking applied to construction activities

Value and Waste from a Lean Perspective

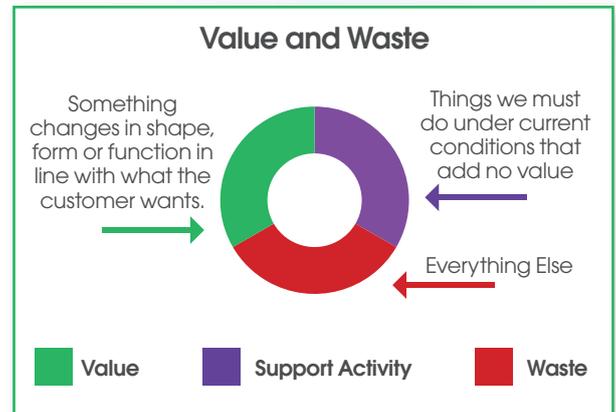
A good starting point with lean is to understand what matters to the customer. What would the customer be prepared to pay for if they could see the end to end delivery process?

One way of thinking about this is to realise that when we see work being done on site or in the office, we are not actually seeing work at all we are seeing ACTIVITY.

And this ACTIVITY = some work + some **waste**

Sure everyone looks busy so that's ok right? Wrong! On closer investigation it is possible to see that a significant amount of the activity witnessed adds no **value** to the customer and therefore can be classed as **waste**.

Lean Thinking provides a framework to breakdown our processes in line with this philosophy of **value** and **waste**. There are several definitions of **value** depending on which school is followed, but the lean definition of **value** is pretty specific.



Lean Definition of Value

Something *changes* in shape, form or function in line with what the customer wants. i.e A brick being laid, window fitted, pipes clipped in place, a drawing progressing, etc.

Waste

There are 2 main categories of **waste**:-

Type 1 Waste

This is sometimes referred to as **support activity** or non-value added time.

This includes things that must be done *under current conditions* that add no **value** such as measuring and marking, statutory compliance etc. When these activities take place no **value** is added according to our definition of **value**, however they must be done anyway. We should seek to minimise these activities. E.g. using a template to mark out for repetitive tasks reduces the time taken for measuring and marking, we still need to do it, (under current conditions) but now it has been minimised.

Type 2 Waste

Classically there are 7 types of Waste that fall into this category. These wastes are unnecessary and can be eliminated.

1. **Unnecessary Transport** - Moving things twice, bad logistics routes, walking around unnecessary
2. **Inventory**
 - **Materials** - Too many materials getting in the way, have had to be paid for so bad for cash flow, they get damaged when moved.
 - **Tools** - Lots of tools incorrectly sorted making it hard to find what is needed quickly.
 - **Work in Progress** - Any task started but not yet finished is WIP. High levels of WIP hide defects and slow down delivery.
3. **Worker Motion** - Bad ergonomics, not only tiring and a H&S risk but also not the most efficient way of working
4. **Waiting** - People, materials, information not on time.
5. **Over Production** - Linked to high levels of WIP, making more than the next process needs.
6. **Over Processing** - Multiple attempts to fit something together, using unnecessary equipment etc.
7. **Defects** - This means anytime we need to do anything twice or more.

Other Wastes

- **Making Do** – Attempting to start a task before all the process inputs are in place.
- **Under utilisation of Knowledge** – Failure to harness the knowledge of the process experts.

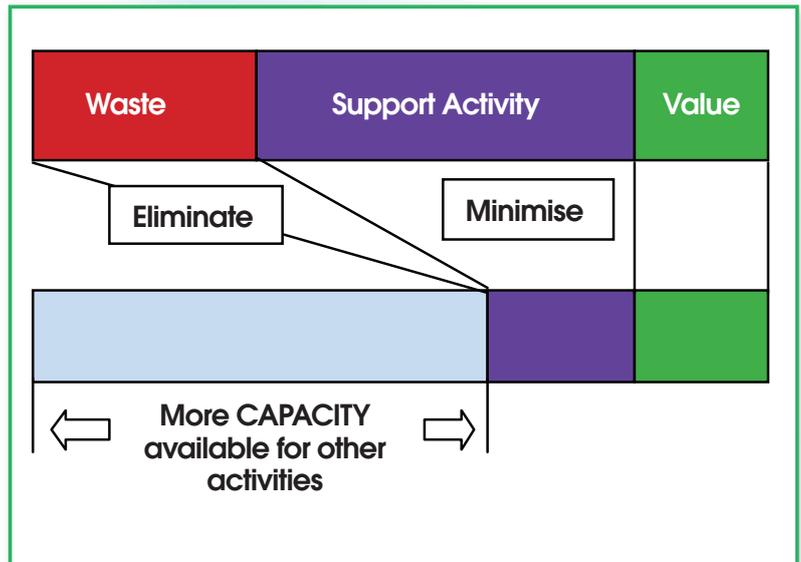
Why is this so important?

When a process is examined this way, it is possible to calculate the overall proportions of the process that actually adds value.

It is often found that well over two thirds of most processes are waste when looked at this way. If we can reduce the proportions of waste in a process, CAPACITY is created, i.e. we are able to achieve more for the same or more for less. See right:

The Importance of Reducing Waste

Raise the Ratio of Value Added operations to Support Activity and Waste.



Lean Tools and Techniques

Below are some common lean tools and techniques that are useful in construction or indeed any other business environment.

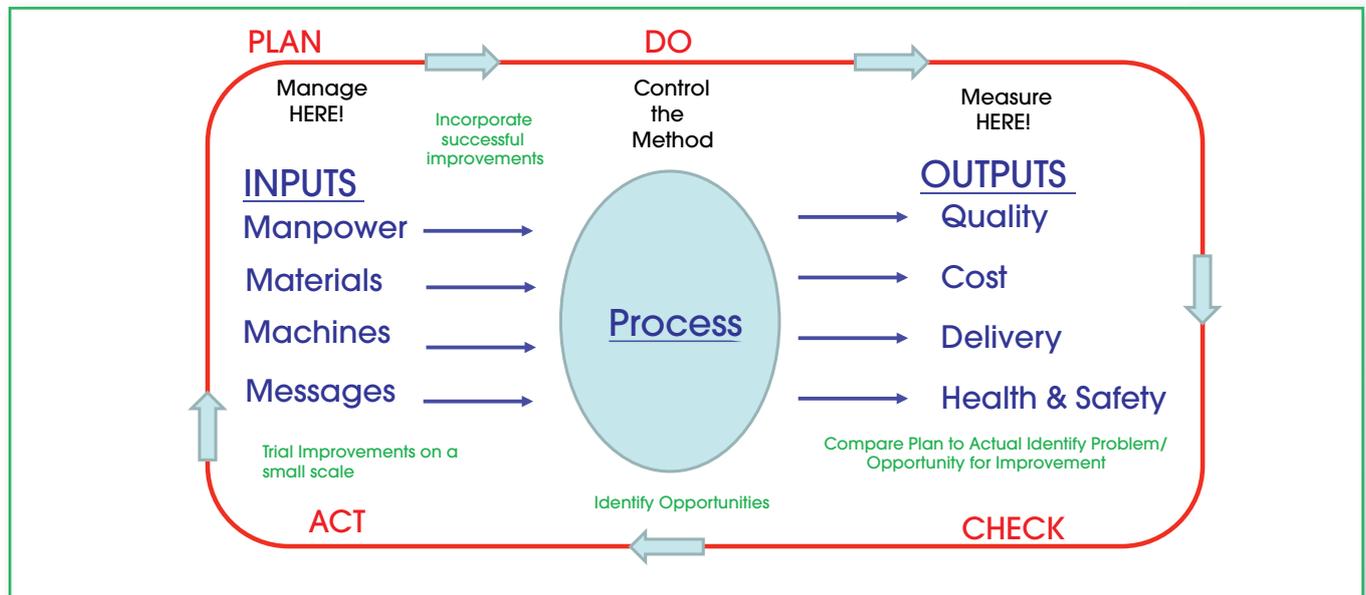
A word of caution though, Lean can quickly fall into disrepute when inexperienced practitioners go "straight for the toolkit" without fully understanding the problems they are trying to solve. The philosophy is much more important than any particular tool.

These tools were originally developed as a response to specific problems and should only be used in this way, trying to apply lean just by using lean tools will most likely fail.

- Collaborative Planning
- Workplace Organisation
- Visual Management
- Standardised Work
- Flow Process Analysis
- 7 waste

How do we get started?

Any structured lean activity should follow The Plan, Do Check, Act cycle, or "Deming cycle", shown below.



This can be used as a generic process model for improvement activity. It is essential in any activity to begin with "Check" i.e. find out by data where we are now in terms of QCD performance.

In our experience the majority of main contractors and sub-contractors do not know the answers to the following questions:-

- What % of our projects finish on time?
- What % of our projects adhere to budget?
- How many snags per £1k spent do we experience or snags per plot/m2?
- What is the greatest cause of delays and disruptions that affects our sites?

After an initial "Check", it will be necessary to drill down by means of further analysis in order to form a coherent action plan for improvement.

Pareto analysis is a useful and simple approach as shown below:

This diagram shows that by going down from Level 1, we can focus on an issue, but not lose sight of the original big picture. It is important to know what relative affect each issue has (Pareto Chart), and also what affect it has on the overall picture (Pie Chart).

This is an essential part of problem solving.

