

Applying Lean and Reducing Waste Inventory

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This article is the second in a series of seven, with the aim of helping to answer the question:

“How do we deliver the most effective service for the very best cost to the taxpayer?”

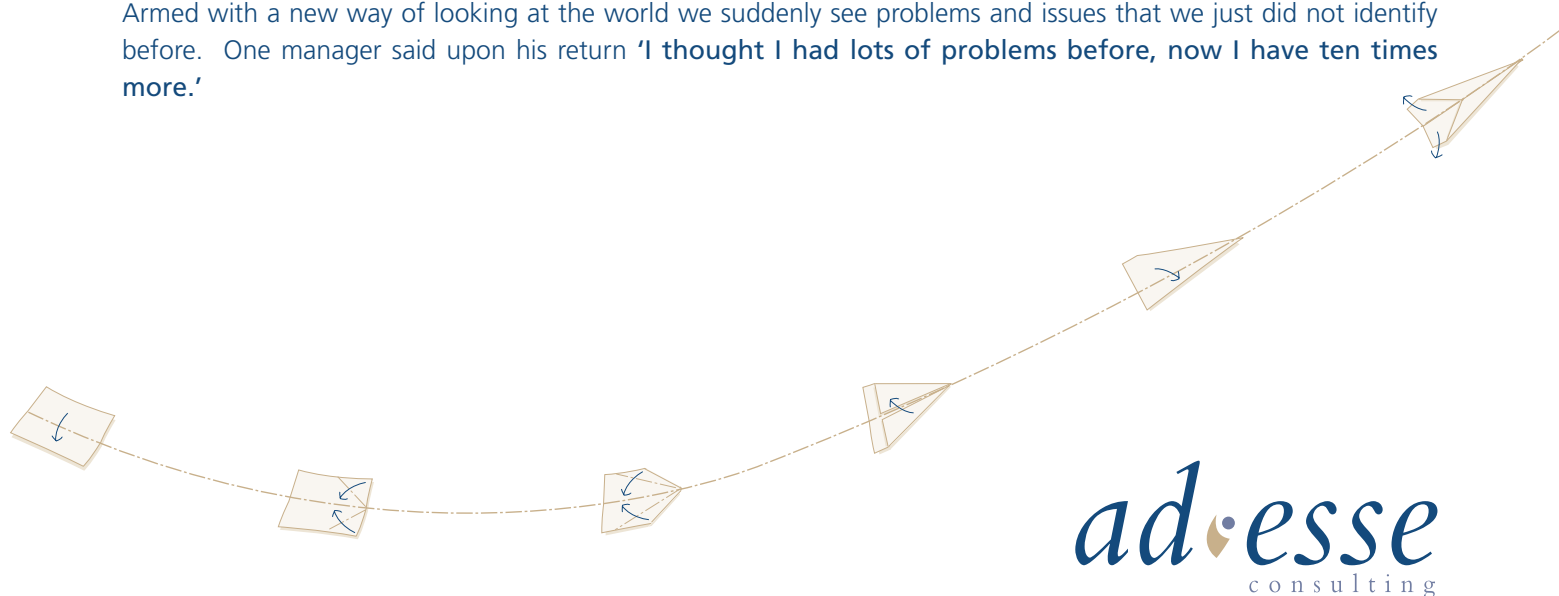
The full set of seven wastes are:

- Waiting
- Inventory
- Transport
- Motion – people, materials and paperwork moving
- Excess Processing
- Over-Production
- Rework.

BACKGROUND


Waste is all around us. In our collective decades here at Ad Esse we have never seen a perfect process. There may be individual steps in a process that appear virtually impossible to improve, but if we look at any end-to-end process that goes from the inkling of a need in a customer's head (internal or external) to the satisfaction of that need, there is always waste somewhere (and usually everywhere). These seven wastes are always present, but until we are aware of them, we do not recognise their existence, and so do nothing to reduce them.

When working on a Lean programme, or supporting other similar improvement initiatives, we often train people in the seven wastes and then send them out into their area of work to find them. It can be a chastening experience. Armed with a new way of looking at the world we suddenly see problems and issues that we just did not identify before. One manager said upon his return **‘I thought I had lots of problems before, now I have ten times more.’**



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A marvellously titled book on Value Stream Mapping (identifying where value is added in a Lean diagnostic) by Mike Rother is called "Learning to See" (Rother M, (1999) Learning to See: Value Stream Mapping to Add Value and Eliminate Muda, Lean Enterprise Institute). Much of the application of Lean thinking is about learning to see everyday situations in a new light. Using the concept of these wastes will not enable us to eliminate them from any process, but it will allow us to choose which waste we will live with that has the least impact on the effectiveness of our process. The diagram below illustrates which Lean tools and techniques are best suited to help combat each of the 7 Wastes.



		Lean Model Elements								
		Ss & Vis W/Place	Equip Rel. & QCO	Std Work	Error Proofing	Stop-Call-Wait	Managed Buffers	Takt Time	Pull System	One Piece Flow
7 W A S T E S	Waiting	●	●	●			●	●		
	Over-production	●				●	●	●		
	Rework	●	●	●	●	●				
	Motion	●		●					●	
	Processing (Excess)			●	●					
	Inventory	●	●				●	●	●	●
	Transportation								●	

Lean Model Elements v Waste reduction

THE WASTE OF INVENTORY

Firstly, what do we mean by Inventory?

When talking about Inventory as a waste within a service environment it can mean a number of things – Let's look at a couple of examples. It can mean work in progress, i.e. work – paperwork in many cases – building up in between process steps. Or it can mean stocks of "raw materials" i.e. stationery, forms etc that support the delivery of the service in question.

This is not to say that having **any** inventory is a waste, but it is Excess Inventory that's the problem. The challenge is to understand when and where there is excess inventory, the implications of it and the best way of eradicating it.

STOCK

In a service environment it could mean excess stocks of data in a file and not being able to find what you need.

On the flip side, having no inventory of support materials at all also leads to waste – Waiting for new items, reorganising the order of processing, time spent chasing to obtain the relevant items – all being passed on to the customer in terms of a slower service

WORK IN PROGRESS (WIP)

WIP is a direct result of two other wastes “over-production” and “waiting” and can have huge impacts on organisations, but more importantly passes poor service down the line, to both internal customers and the external end user

How can excess WIP build up?

If you process more than the next process step can handle, and if you are compounding the problem by pushing work through the process faster than the customer requires, then the system will just not cope. Well intentioned hard work by staff, just leads to people being busy (or busier) due to extra time spent allocating work, dealing with errors within the work in progress and trying to progress cases or files from “urgent” customers

Another factor that exacerbates the problem of WIP building up is imbalanced process steps along the value stream. An imbalance will lead to the very wastes we identified at the start “over-production” and “waiting” showing as a build up of inventory.

A large government agency was processing applications and new starter information through one of its HR functions. The work was split across 3 teams and then work was allocated to each team member. Volumes were high, as were backlogs – everyone just kept their heads down and did what they could. What soon became apparent however was that because everyone was just “getting on with their work,” nobody was seeing the bigger picture.

When information centres were introduced it gave the whole department chance to see how the push of batches of work to teams and individuals was just not providing a good service and that when looking more closely workloads were hugely imbalanced. By teams pulling the work through they weren't swamped by piles of work and all concerned were able to focus on the expected throughput of workload and early identification of problems. This shared expectation improved morale and increased productivity dramatically.

THE EFFECT OF EXCESS INVENTORY

One of the implications of excess WIP building up is the elongated cycle time to provide the final service to the customer. A further problem is the proliferation of errors that can find their way to the customer. Errors that do make it to the customer are the most costly to put right. However if the aim is to identify errors at source, it is difficult if work is being pushed through very rapidly.

Lots of visible WIP can also, in some cases, provide the comfort blanket of feeling busy – and worse still, the illusion that the work is adding value.

In addition to the obvious cost of excess stock what are the other by-products?

Patchy (at best) Customer Service

The work builds up in the process and the large “choice” of what to work on means that often the easiest work is “cherry picked”; leading to inconsistent customer service – the trickier work languishes in a seemingly never-ending backlog. On the face of it some customers may even be receiving decent service, but we know from experience these inconsistent approaches to prioritising work are always to the detriment of the customer

Batching the work

Another well-meaning, but inefficient scenario is that work is allocated in huge bundles to individuals to help “motivate” them - frankly this has the opposite effect - people feel as though they are drowning under piles of work and often, due to the work being imbalanced, some people end up working harder than others just to keep afloat. This again can create huge inefficiencies due to under-utilised staff and at the same time builds up resentment within teams as those “more efficient” workers are given more to do.

Errors & Rework

Pushing work through an imbalanced process and creating WIP is serious enough, but when errors are occurring at one point in the process, for example upstream of a slower process, the work builds up and it will eventually be discovered that the same error has been made in all the WIP. All of that is now rework and the amount of processing has doubled, again impacting on the service to the customer.

Tackling the symptom, not the cause

So whilst everyone is trying to cope with mounds of work, what is really happening under the surface?

The truth probably is that nobody at the time actually knows.

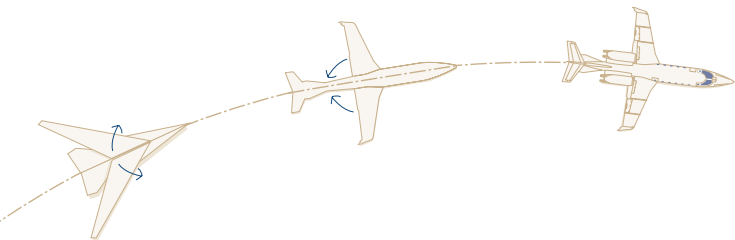
They will feel they have neither the time nor the inclination to get to the root cause of any processing problems; they are too busy to cope. What you will find is that excess WIP more often than not hides a number of other issues and problems such as errors, equipment reliability, the right training etc., and that it has been allowed to build up rather than get to the root cause of all the other issues. As long as this improvement journey is managed effectively then the whole process becomes easier to operate, resulting in a greater sense of control at operator level.

POSSIBLE SOLUTIONS

There are a number of Lean tools and techniques that can help to tackle the waste of excess Inventory, but like any Lean programme it is the correct implementation of these whilst tackling the cultural aspects of change management that will give the maximum long term benefit:

- Use of Kanbans to effectively manage stocks (Kanbans: Visual indicators for re-order point and order quantity)
- A "Pull" process rather than "Push" to remove excess WIP
- Work Balancing to improve the flow of a process, therefore reducing the lead time
- Information Centres to establish improved communications within and across teams. Visual measures to aid performance management and root cause problem solve reasons for problems causing excess inventory.

If you would like to know more about the seven wastes and potential solutions to reduce waste and improve your customers experience then contact us directly or look on our website for our programme of free seminars. We're more than happy to find out about and discuss any issues you may have.



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