

LEAN INTRODUCTION

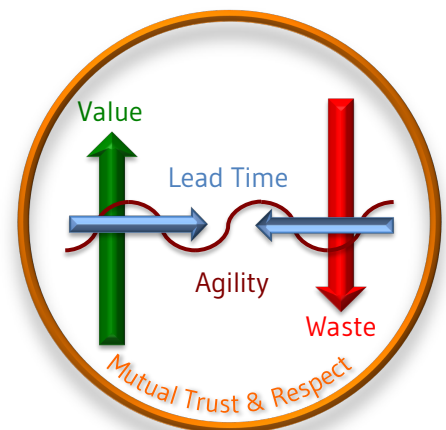
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WHAT IS “LEAN”?

A set of principles and techniques that eliminate waste , and deliver to our customers...

- exactly what they need
- when they need it
- in the quantity they need
- in the right sequence
- without defects
- and at the lowest possible cost



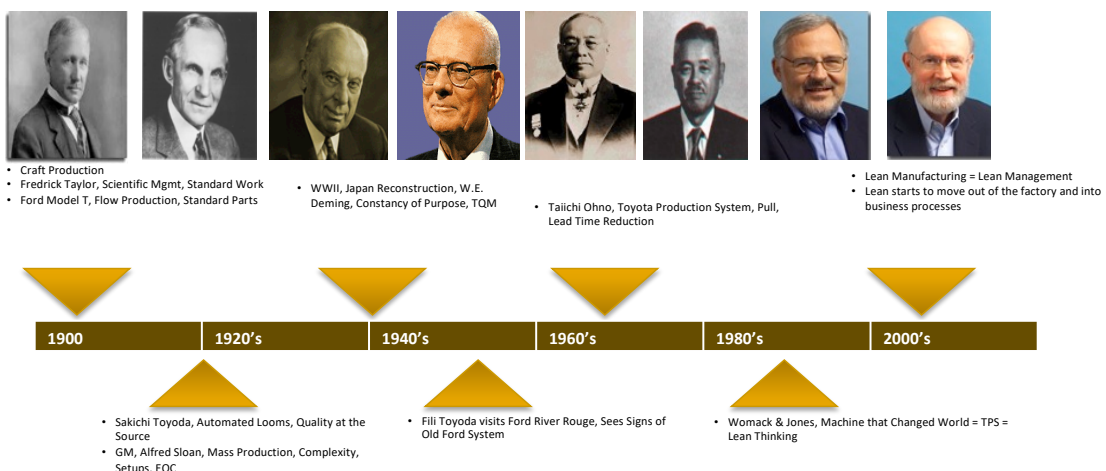
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WHY LEAN MANUFACTURING

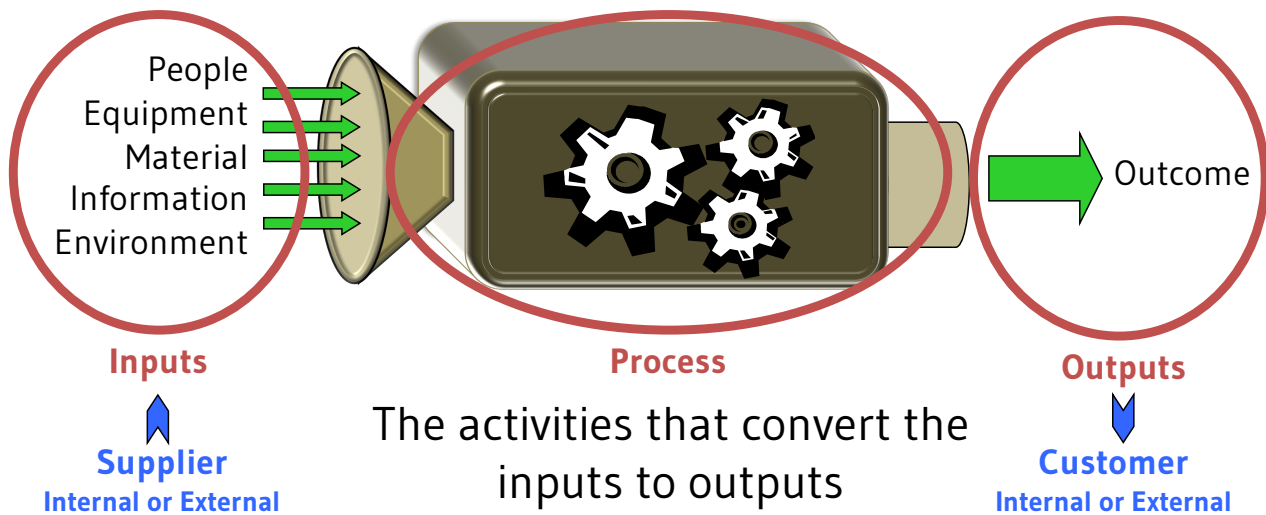
- **Increased product quality:** Improved efficiency frees up employees and resources for innovation and quality control that would have previously been wasted.
- **Improved lead times:** As manufacturing processes are streamlined, businesses can better respond to fluctuations in demand and other market variables, resulting in fewer delays and better lead times.
- **Sustainability:** Less waste and better adaptability makes for a business that's better equipped to thrive well into the future.
- **Employee satisfaction:** Workers know when their daily routine is bloated or packed with unnecessary work, and it negatively affects morale. Lean manufacturing boosts not only productivity, but employee satisfaction.
- **Increased profits:** And, of course, more productivity with less waste and better quality ultimately makes for a more profitable company.

THE ROAD TO LEAN: A BRIEF HISTORY



Origins in **Quality** - focus is on what the customer **values** and continuously **improving** the offering
 Its just a collection of **proven best practice** - it has evolved over a long time – lean of 1990's is not the lean of today

FOCUS ON PROCESSES



WHO IS YOUR CUSTOMER?

INTERNAL CUSTOMER

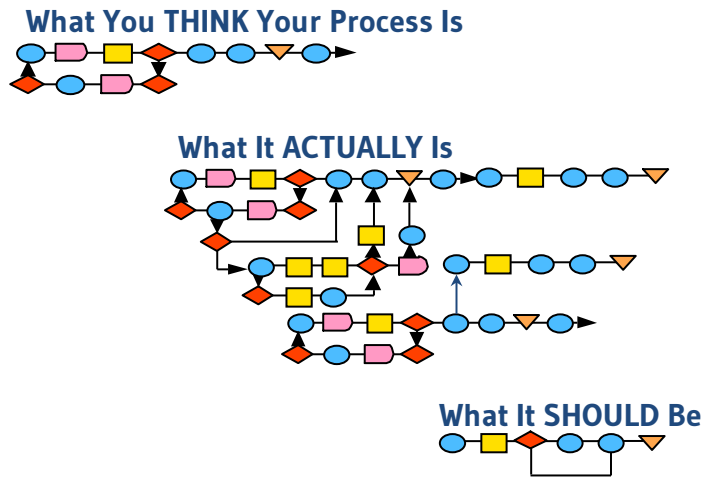
- The person who receives the information or product you produce.
- The person who uses the information or product you produce.

EXTERNAL CUSTOMER

- The person who receives the information or product the business produces.
- The person who uses the information or product the business produces.

VERSIONS OF A PROCESS

Most processes have at least three versions:



“Waste is often disguised as useful work.”
Hiroyuki Hirano

HOW DO WE CATEGORISE ACTIVITIES?

VALUE

- An activity that transforms or shapes material or information
- And the customer wants it
- And it's done right the first time

WASTE

- Everything else!

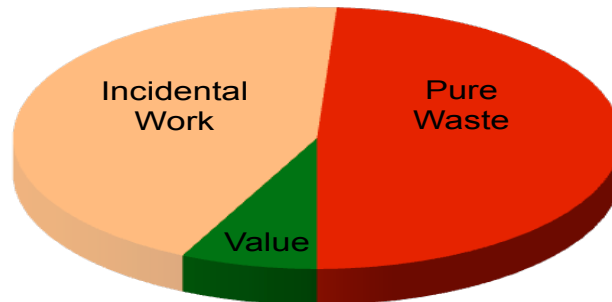


THREE CATEGORIES OF AN ACTIVITY

$$\text{Total Waste} = \text{Incidental Work} + \text{Pure Waste}$$

Incidental Work

Activities causing no value but which cannot be eliminated based on current state of technology or thinking
Required (regulatory, legal compliance)



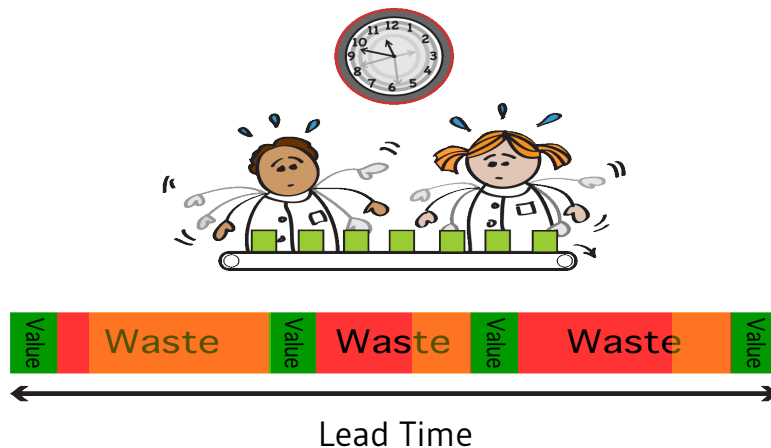
Pure Waste

Any activity the customer is not willing to pay for
Pure waste/loss

Value Added Activities

An activity that transforms or shapes material or information
And the customer wants it
And it's done right the first time

LEAD TIME, VALUE AND WASTE



Assuming that we will not eliminate what little value exists
Lead Time Reduction = Waste Reduction

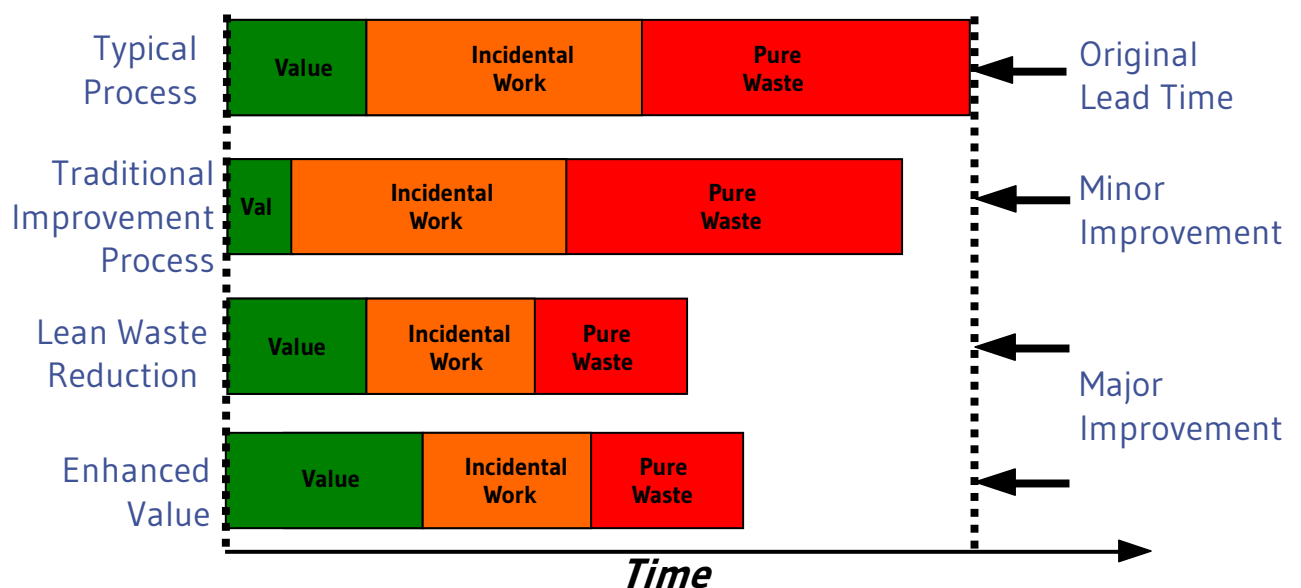
THE LEAN APPROACH

“All we are doing is looking at the time line - from the moment the customer gives us an order to the point where we collect the cash.

And we are reducing that time line by removing the non-value-added wastes”

Taiichi Ohno
Toyota Production System

LEAD TIME REDUCTION AND VALUE ENHANCEMENT



IF FLOW STOPS, WASTE STARTS

- A simple way to eliminate waste is to ensure flow
- Straighten and remove waiting
- Flow directly shortens lead time



WHICH HORSE IS TALLER?

The background might cause you to think that the horses are not the same size.

Your assumptions might cause you to think they are the same size.



IMPROVEMENT PROCESS

1) Customer Value

Know the customer and what they value

2) Value Stream

Understands all actions taken to provide the customer value

3) Flow

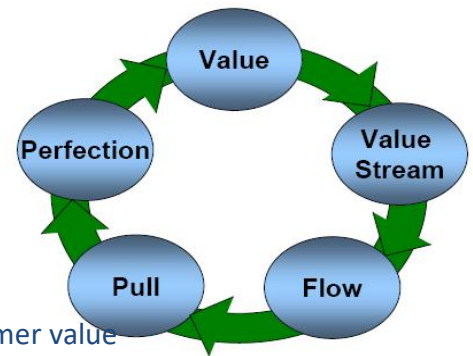
Allows the value add process to flow without interruption

4) Pull

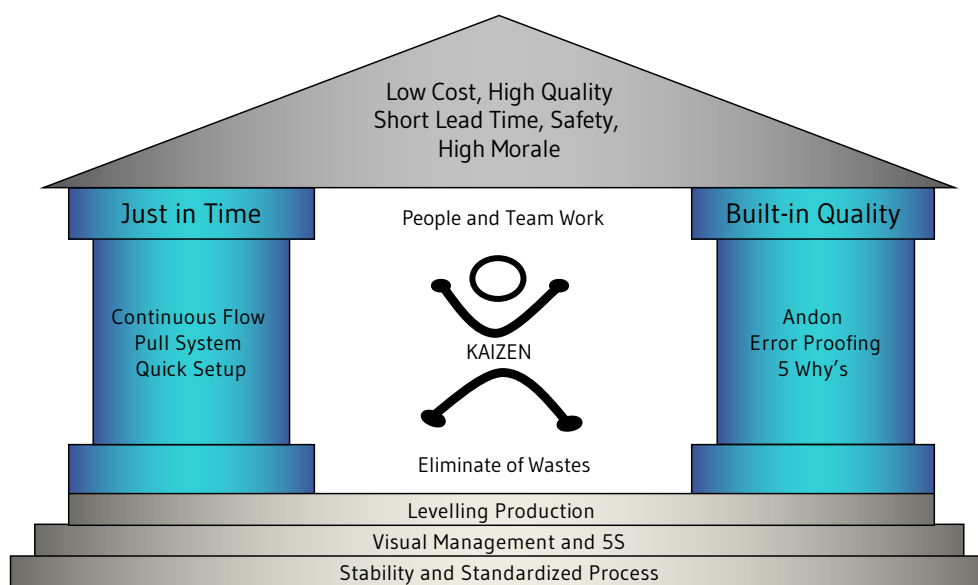
Nothing is produced upstream until the down stream customer wants it

5) Perfection

Relentless and persistent drive to improve the process



LEAN SYSTEM



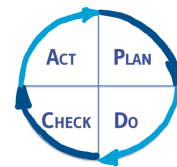
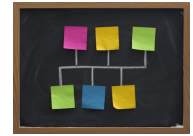
FOUR RULES OF THE TOYOTA PRODUCTION SYSTEM (TPS)

Rule 1 - All work is highly specified in its content, sequence, timing and outcome.

Rule 2 – Each person knows who provides what to him, and when

Rule 3 – Every product and service flows along a simple, specified path.

Rule 4 - Any improvement must be made in accordance with a scientific method, under the guidance of a teacher, at the lowest possible level in the organization



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