

**SIEMENS**



# Industry Sector Drive Technologies SD IC

Lean 2011

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# **Lean Manufacturing: Raising The Awareness....**

## What Do We Mean By Lean...?

“Lean” is a term to describe a system that produces what the customer wants, when they want it, with minimum waste.

Based on TPS the Toyota Production System



“Lean principles” started in manufacturing but are now applied in all areas of business.

A lean system defines what the customer sees as value and classifies everything else as waste.

To become lean, a business must change its processes to remove waste (Non Value Add Work)

: this is not the same as traditional “cost cutting”!

## The Best Example - Toyota

### *A way to make money!*

The most valuable car maker in the world

- Volume Toyota 7.2 Million, Ford 4.6 Million

Equity (Worth)

- Toyota \$128.3billion. Ford -642 Million

Results

- Net profit rose 55% in 2004 to £6bn
- Greater profit than the top US three combined
- Operating margin 5 times the average of the US three

## How have Toyota achieved this?

Simultaneously,  
Increasing throughput/sales

- Adapting to volatile markets faster
- Investing profits back into new products and technology

Implementing cost prevention and waste reduction measures

- Applying Lean tools
- Kaizen – Continuous Improvement

## The Cost Subtraction Principle

### Conventional Model

$$\text{Cost} + \text{Profit} = \text{Selling Price}$$

### Market-in Model

$$\text{Selling Price} - \text{Cost} = \text{Profit}$$

*The only way to maintain or increase profit is to reduce cost!*

# Lean is about **Flow**

James P. Womack, President, Lean Enterprise Institute Outlines how to achieve flow:

- Line up all of the steps that truly create value so they occur in a rapid sequence
- Requires that every step in the process be:
  - Capable
  - Available
  - Adequate
- Each of these flows are called Value Streams

## Identifying Types Of Work

### Value Adding:

Any process that changes the nature, shape or characteristics of the product, in line with customer requirements



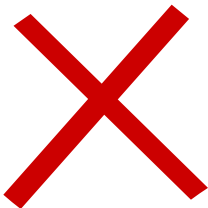
### Non-Value Adding, but unavoidable with current technology or methods.

Any work carried out that does not increase product value



### Waste

All other meaningless, non-essential activities that do not add value to the product you can eliminate immediately



# What Is Value ..?

Through the eyes of the CUSTOMER!

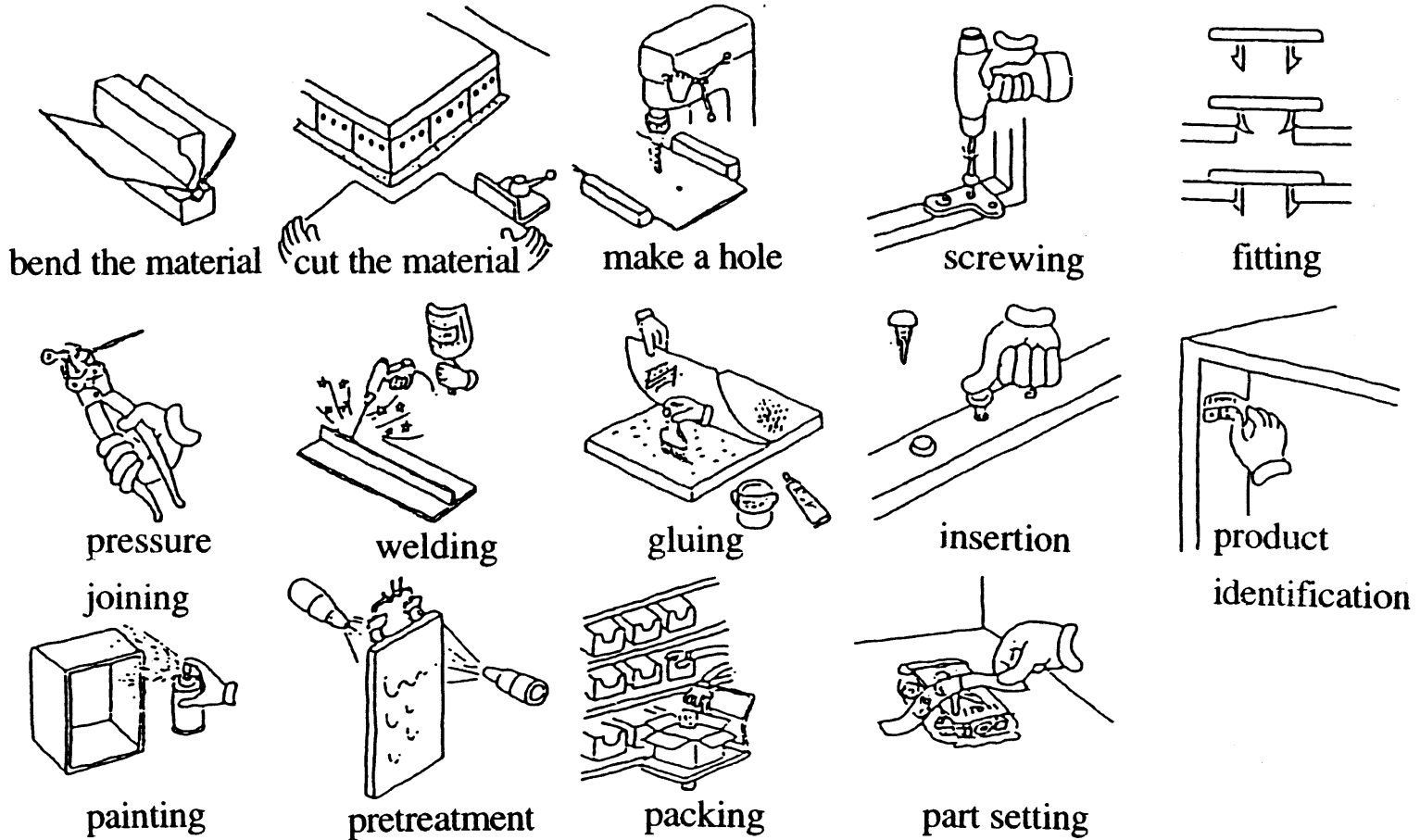
What the Customer is willing to pay for and only that

Too often our internal activities demand effort, resource and material that the Customer will not pay for

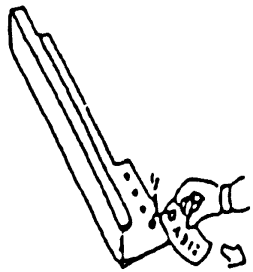
This is known as WASTE and just adds cost!



# Value Adding Activities!



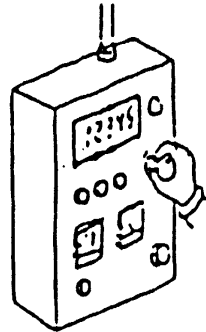
# Non-Value Adding Activities! = Waste



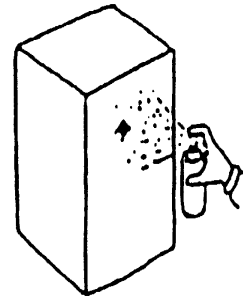
unfastening



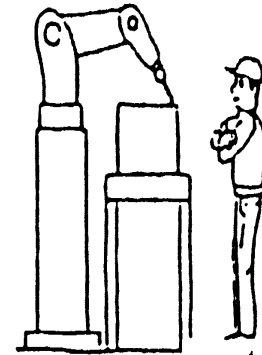
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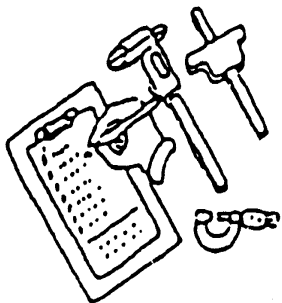
adjusting



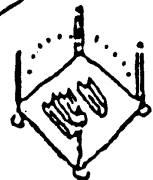
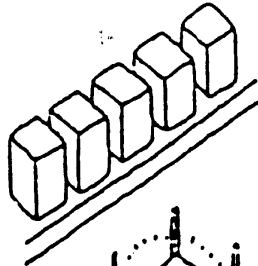
connecting



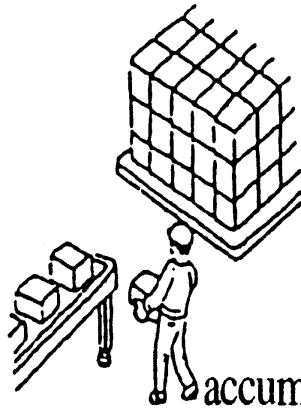
watching



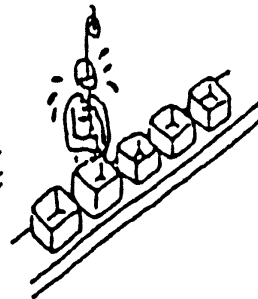
inspecting



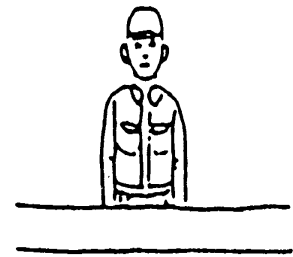
being left over



accumulating



delaying



stopping

# Lean Approach vs. The Traditional Approach

## LEAN APPROACH

*Focus on the 95%  
Non-Value Added  
Through  
the removal of waste. . .*

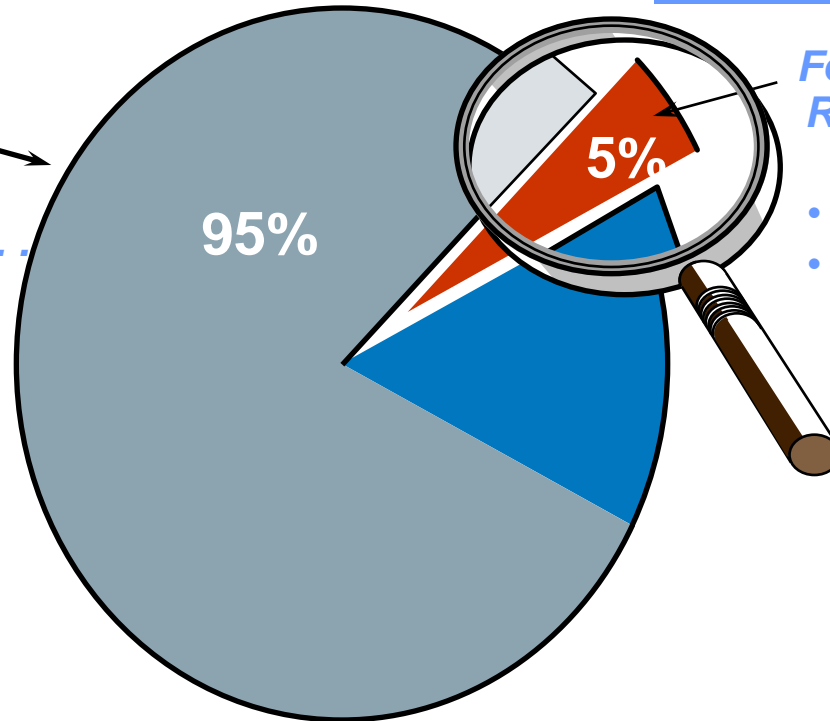
**Non-Value Added...**

- Queuing
- Set-up/Changeover
- Inspection
- Movement
- Storage

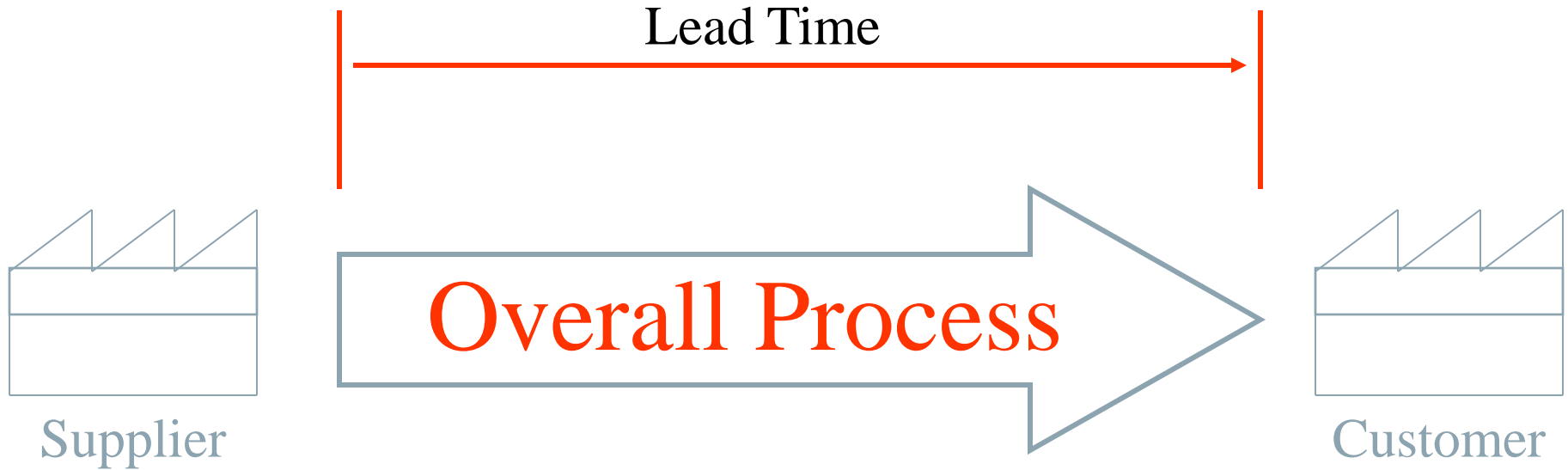
## TRADITIONAL APPROACH

*Focus on Value Added  
Resources through . . .*

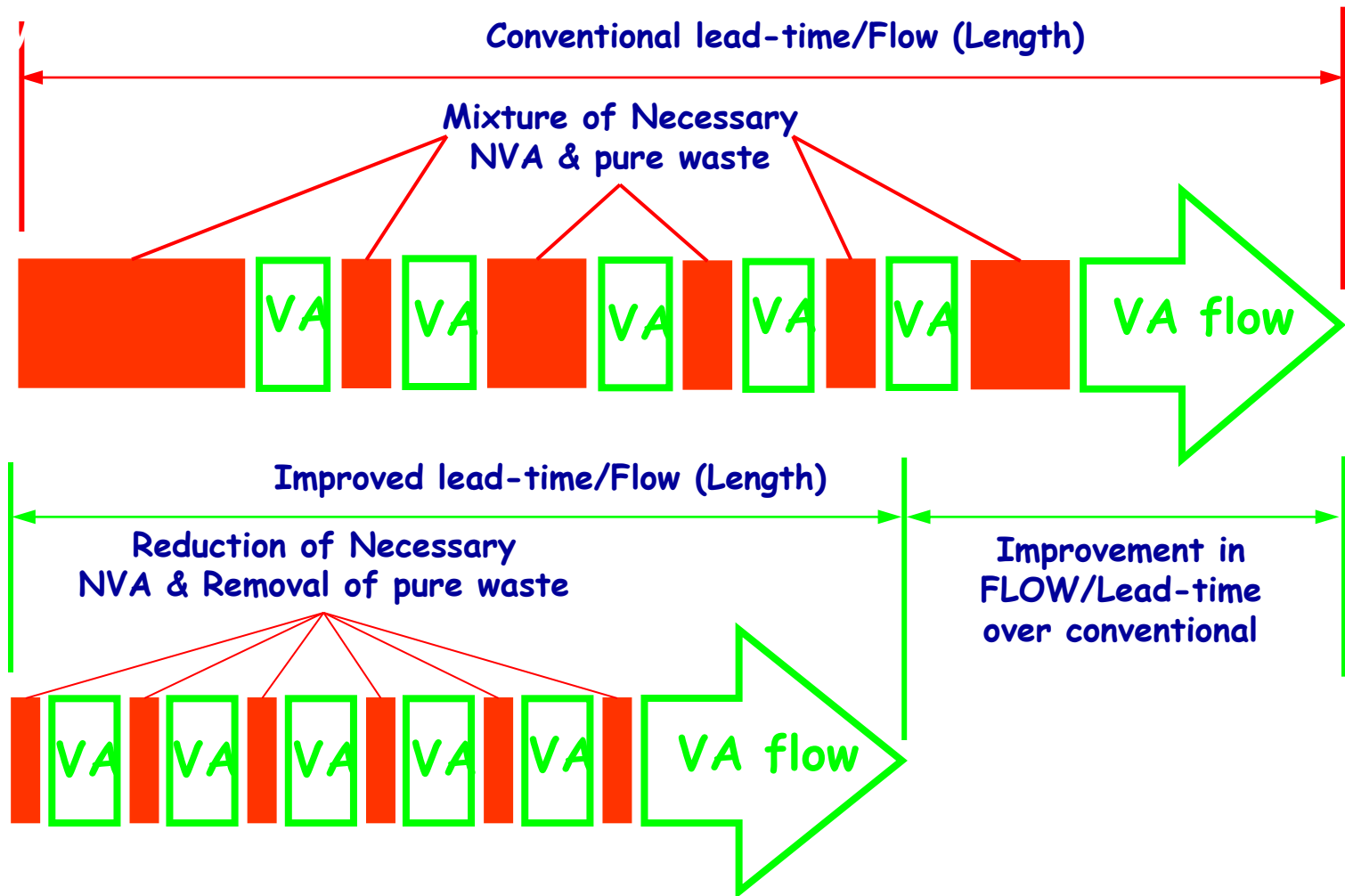
- Automation
- Utilisation



# Adding Value



# Analysis of Elements



# KAIZEN REQUIRES A CHANGE OF PARADIGM

## OLD PARADIGM

- Improvement is the job of specialists
- Improvement is an occasional activity which we plan for
- Opportunity for improvement where we have problems

## KAIZEN APPROACH

- Improvement is part of everyone's job
- Improvement is going on every day as part of the way everyone works
- Opportunity for improvement everywhere we have non-value-adding activity