

The background is a black and white photograph of an industrial facility, showing complex metal structures, pipes, and scaffolding. A thick, bright red wavy line runs horizontally across the lower half of the image, starting from the left edge and ending on the right edge. The text is overlaid on this background.

# LEAN SIGMA INFORMATION SESSION

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in **this presentation...**

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# 1. What is Lean Sigma

- Lean Sigma (also known as Lean Six Sigma) is a structured approach to process improvement
- It combines quality and statistical tools to better gain process knowledge to make required outputs
  - Safer
  - Better
  - Faster
  - Lower Cost



## Lean:

- **History:** Ford / Toyota
- **Focus:** The Process
- **Emphasis:** Efficiency
- **Eliminate Waste**
- **Simplify the Process**

## Six Sigma:

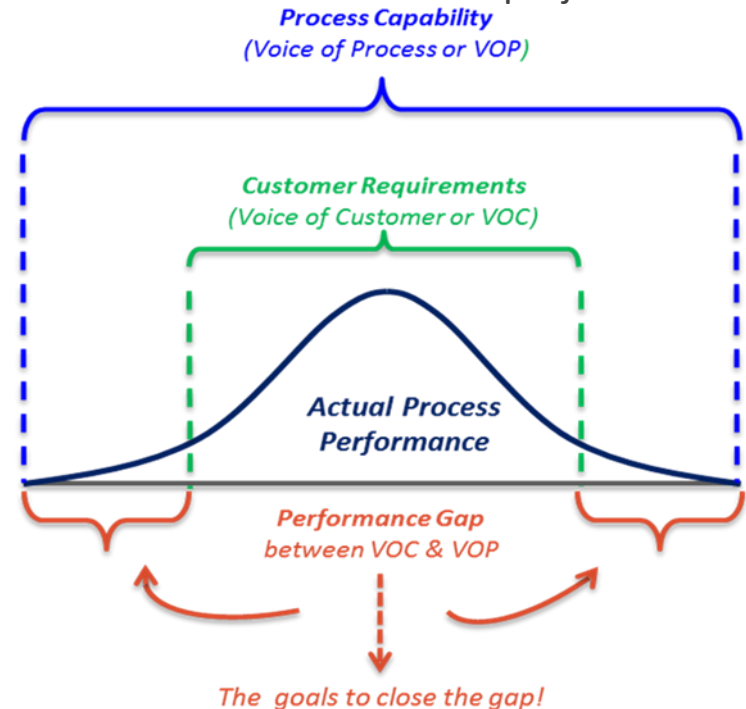
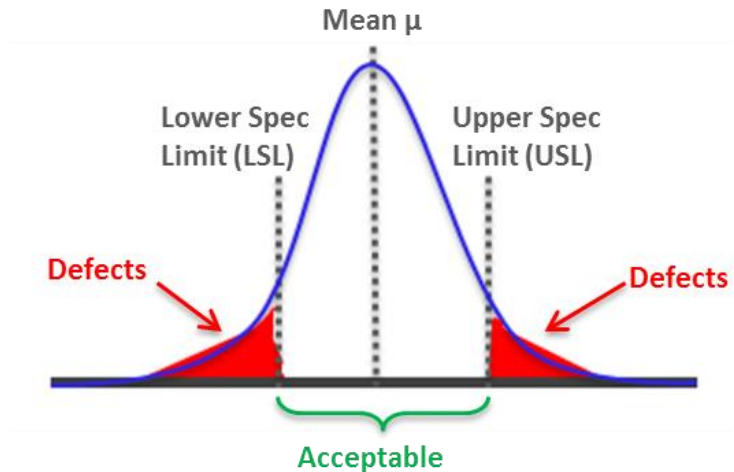
- **History:** Motorola / GE
- **Focus:** The Output
- **Emphasis:** Consistency
- **Goal:** Remove defects
- **Reduce Variation**
- **Remove Defects**

**Do the Right Things, First Time, Every Time**

## 2. Six Sigma and the D.M.A.I.C Framework

### What is Six Sigma?

- Technically speaking “Six Sigma” refers to a process that has a FPY of 99.9996% (3.4 rejects per 1 million opportunities) or a process with a mean that is six standard deviations from the nearest spec limit.
- In the 1980’s Motorola set a goal of Six Sigma and this goal became their term for the project methodology used for statistical improvements.



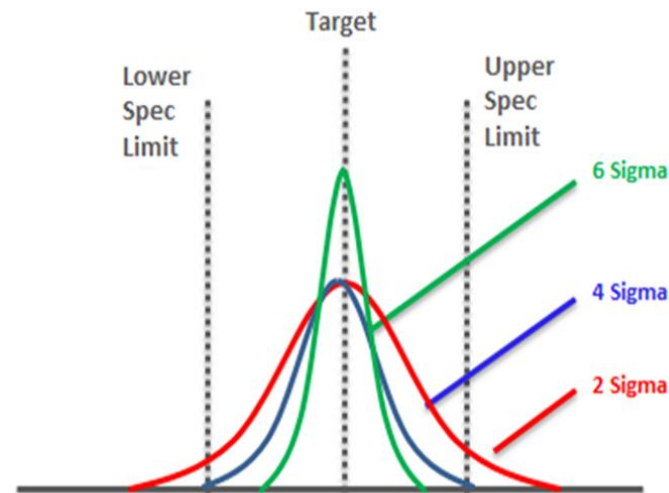
Each company is different and sets the appropriate Six Sigma level for their processes.

## 2. Six Sigma and the D.M.A.I.C Framework

### What is a Sigma Level?

A sigma level measures the number of standard deviations between the mean and the Spec Limits

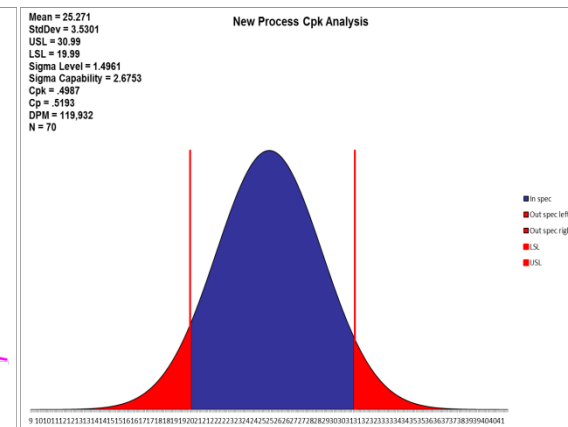
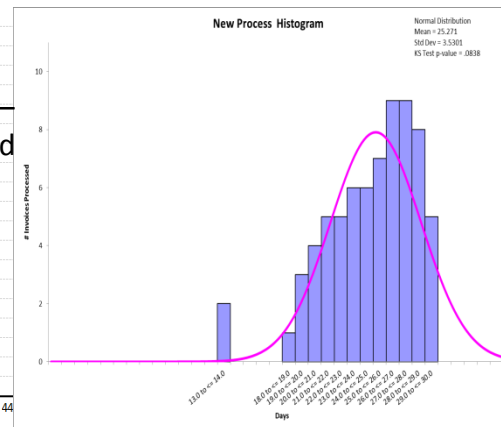
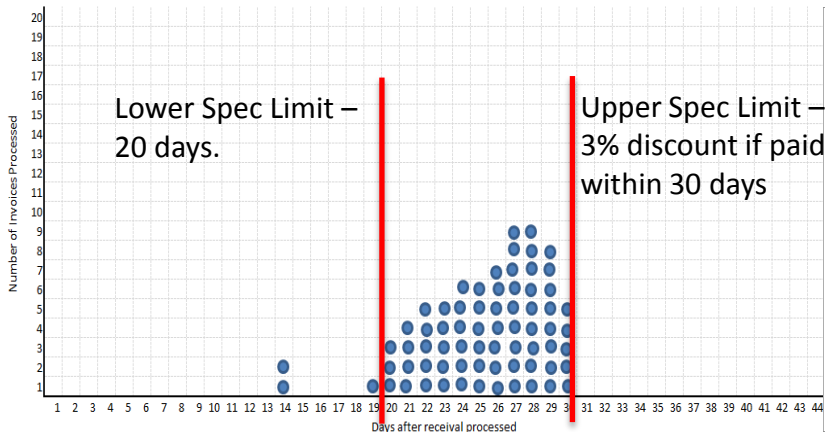
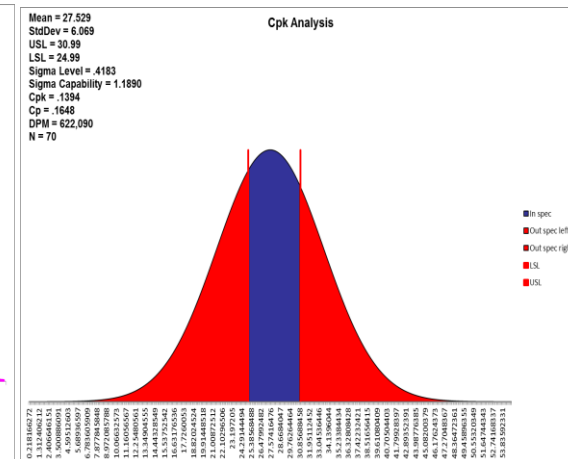
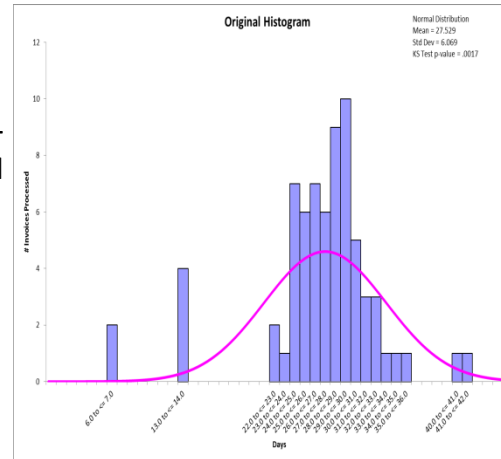
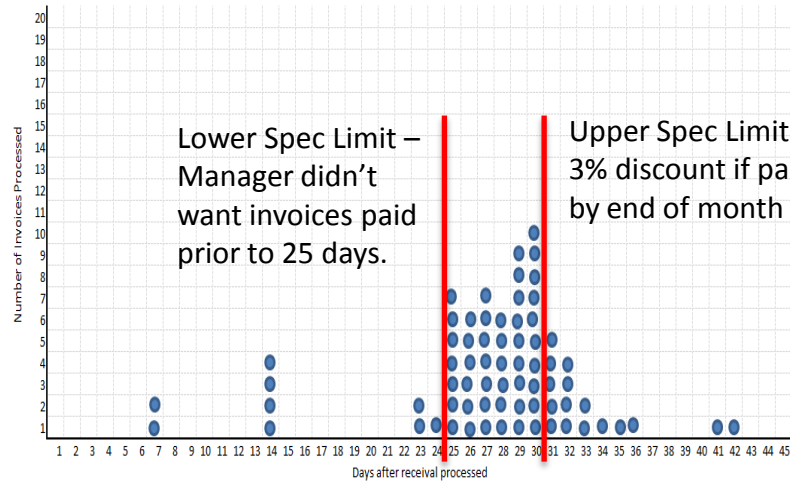
- Sigma level also measures quality/accuracy as the defects per million opportunities (DPMO)
  - One sigma = 690,000 defects per 1 million opportunities (or 31% accurate)
  - Two sigma = 308,537 defects per 1 million opportunities (or 69.2% accurate)
  - Three sigma = 66,807 defects per 1 million opportunities (or 93.3% accurate)
  - Four sigma = 6,210 defects per 1 million opportunities (or 99.38% accurate)
  - Five sigma = 233 defects per 1 million opportunities (or 99.98% accurate)
  - Six sigma = 3.4 defects per 1 million opportunities (or 99.9997% accurate)



3 Sigma	6 Sigma
20,000 mistaken drug prescriptions per year	25 mistaken drug prescriptions per year
500 wrong surgical operations	One wrong surgical operation every 2 weeks

## 2. Six Sigma and the D.M.A.I.C Framework

### Using Sigma Levels to analyse data



## 2. Six Sigma and the D.M.A.I.C Framework

The DMAIC framework has 5 phases and there are many tools that can be used.

### DEFINE

#### Defining the Problem / Opportunity

It all starts with understanding the problem and articulating it in a way that all key stakeholders know what needs to be solved..



- Project Charter
- SIPOC
- Process Mapping
- Voice of the Customer

### MEASURE

#### Collect Reliable Data

You can't change what you can't measure ; similarly you can't understand the problem fully or the causes to the problem without having knowledge of the 'proportions' of the problem



- Data Collection Plan
- Process Flow
- Measurement System Analysis
- Chart Construction

### ANALYSE

#### Identify Root Causes

A step to graphically display the data and to use the data to test hypotheses and decide on the true root causes.



- 5S
- Root Cause Analysis
- Pareto
- T-Test
- F-Test
- Run Charts
- Box Plots
- Dot Plots
- Histograms

### IMPROVE

#### Selecting the right solution

Getting a solution may be easy – BUT getting the 'right' one may be a whole other task. Using the right team, the collected data and true root causes, and the right tools - the right solution will emerge.



- Mistake Proofing
- Standard Work
- Scatter Plots
- Pugh Matrix
- Process Capability
- FMEA

### CONTROL

#### Sustain the change

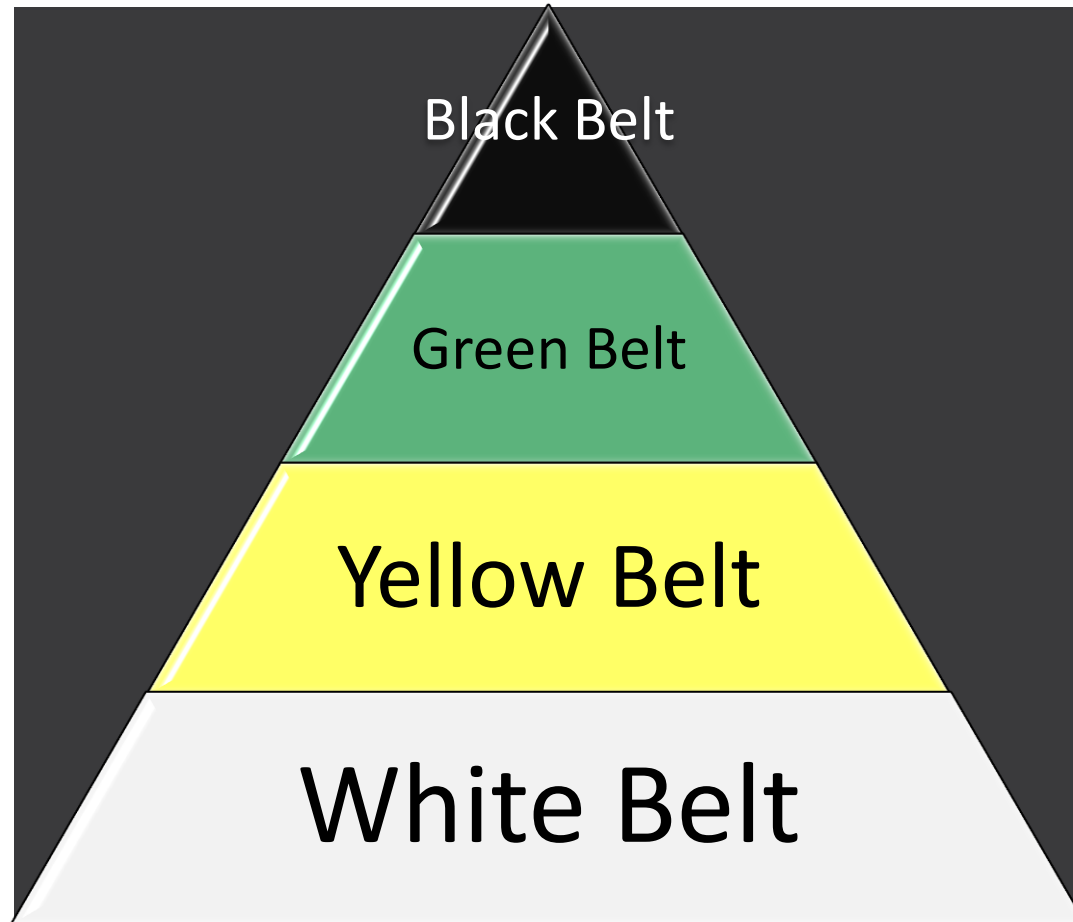
Control measures to monitor the change and ensure that it is real and sustainable for the long term.



- Control Plan
- KPI's
- Financial Verification
- Handover
- Final Presentation

### 3. Training

Lean Sigma signifies it's different levels of knowledge using a belted system.



10 – 15 days training and completion of 2 projects  
Ability to mentor other belts, in depth knowledge of tools and techniques required. Facilitate cross functional projects.

6 – 10 days training and completion of 1 project  
Ability to facilitate projects with an understanding of tools and techniques required

2 day training course  
Provides an awareness of Lean Sigma and tools used

4 – 8 hours training  
Provides an awareness of Lean Sigma



## 4. Can Lean Sigma be used in my Industry?

**Yes, If you have a process and data, it can be measured and improved**

- Mining
  - Production, Services, Planning, Site Readiness, Maintenance, Accommodation
- Oil & Gas
  - Construction, Production, Maintenance, Procurement, Accommodation
- Health
  - Fleet Reduction, Maintenance Services, Accounts Payable/Receivable, Inpatient/Outpatient Services
- Manufacturing
  - Dairy Production, Steel, Food & Beverage
- Services
  - Procurement, Billing
- Utilities
  - Water, Gas

## 4. Benefits of Lean Sigma

### Employee:

- Ownership of Work Area – Employers will look to you for solutions rather than tell you what to do
- Confidence – When facilitating projects you learn to deal with different levels of organisations
- Data Analysis / presenting – Being able to provide data and tell it's story holds more weight than opinions.
- Lean Sigma Certification – Whether green or black belt future employers recognise the significance of holding Lean Sigma certification.



# 4. Benefits of Lean Sigma

## Employer:

- Standardised Approach – The same way lean standardises work process Lean Sigma standardises improvement methodology.
- Strategic – Using Lean Sigma methodology a green or black belt can get to the root cause of problems rather than just fire fighting.
- People Development – Having a workforce that can identify issues, speak with data and solve problems
- Customer – Better service, better delivery potentially better quality
- Financial – Typical project savings for a small to medium sized business is \$15 - \$25,000 per project over a 12 month period.



Companies Improvement Resources has engaged with.

# Thank you

want **more information?**

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