Lean Six Sigma Simplified

Recession Proofing
Your Business

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Webinar starts at 1pm MST

Staircase to Profits

Parts Per Million

World Class Six Sigma 3.4 PPM

Three Sigma 6,200 PPM

Five Sigma 308 PPM

At the Basics

You Are Here

Recession Proofing
Your Cash Flow

Sales

Delay
Defects
Deviation

25%
33%
67%

25%
68%
67%

People

Expenses
Lean Six Sigma Simplified

Lean
- Simplify
- Streamline

Six Sigma
- Optimize

Value Added vs Non-Value Added

WASTE
- Delay
- Defects & Deviation

Lean and Six Sigma Work Together

<table>
<thead>
<tr>
<th>LEAD TIME</th>
<th>Value Added</th>
<th>Non-Value Added</th>
<th>Defects and Deviation</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Company</td>
<td></td>
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<tr>
<td>Six Sigma</td>
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<tr>
<td>Lean and Six Sigma</td>
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<td></td>
<td>VQA</td>
</tr>
</tbody>
</table>
Lean - The Fast Eat the Slow

The Economies of Speed
Rule #1: To accelerate your speed, eliminate delay.
• The 3-57 Rule – Employees only work on the product for 3 minutes out of every hour. The other 57 minutes are delay.
• The 15-2-20 Rule – 15 minute/hr reduction in delay will double productivity and increase profits 20%
• The 3X2 Rule - grow three times faster than average and double your profit margins

Source: Competing Against Time

Simplify Your Business with 5S

Sort
Organizing, separating the needed from the unneeded

Straighten
A place for everything and everything in its place. Make it visual and self-explanatory.

Shine
Cleaning and looking for ways to keep it clean

Standardize
Maintain and monitor the first 3 S’s

Sustain
Discipline, stick to the rules / continuous improvement of all principles

Lab Before
5S Team removed two dumpsters of clutter
Other items were red tagged and moved out of the lab.

Lab After
Streamline Your Business

The Speed Bumps of Lean
1. Overproduction (Inventory is EVIL!)
2. Waiting (Delay)
3. Unnecessary Movement
   • People
   • Inventory
4. Unnecessary or Incorrect Processing
5. Rework

Redesigning the Work Flow

What is the current flow?
• Value Stream Mapping
• Spaghetti Diagrams
What flow would reduce the speed bumps?
Tools for Lean:

Define the Value Stream

Hint: Most of the delay is in the arrows
Most of the defects and deviation are in the boxes
Hint: Make Your Product Faster, Not Your People.
Eliminate the Delays

Hint: Most of the Delay is in the arrows
Most of the Defects and Deviation are in the boxes
Hint: Make Your Product Faster, Not Your People.

Lean Kitchen Design

Rule #2: Walking is Waste!

Spaghetti Diagram

Purpose: To understand the current process.
1. Layout the existing processing stations
2. Become the product
3. Show the flow of the product through the process.
Lab Redesign

Lab Before

Lab In Process

Spaghetti Diagram of too much travel

Lean Lab Results

Reduced

- Floor Space 17% (Goal 10%)
- Staff Movement 54% (Goal 30%)
- Phlebotomist Travel 55% (4 miles ~ 1.5 FTE)
- Tech Travel 40% (2,304 feet 0.15 FTE)
- Sample Travel 55% 23,400 feet
  7 hours of delay per 24 hours

Lean Simplified

- Simplify with 5S
  - Sort, Straighten, Shine, Standardize, Sustain
- Streamline with Lean
  - Value Stream Mapping
  - Spaghetti Diagramming
  - Inventory Reduction
What is Six Sigma?

- 2 Sigma: 30% defects, 300,000 PPM
- 3-4 Sigma: 3% defects, 30,000 PPM
- 5 Sigma: .03 defects, 300 PPM
- 6 Sigma: .00003 defects, 3 PPM

The Fix-It Factory

Your Factory — Your Customers

Your Fix-It Factory

Defects - The 4-50 Rule

Myth: The wider you spread it, the greater the returns
- To increase returns, narrow your focus
- 4:50 rule - (20/80)^2
- 4% of business causes over 50% of waste and rework

Rule #3:
To increase returns, narrow your focus.
Focus (Define and Measure)
Focus on efforts in ways that achieve breakthrough improvements in speed, quality and cost.

Improve (Analyze and Improve)
Use data to identify and eliminate root causes of problems involving time, defects and cost. 4% of your business causes 50% of the waste, rework and lost profit.

Focus on Performance
Start with a line graph or control chart of defects, time or cost:
Narrow Your Focus

Use a series of Pareto charts to narrow your focus:

Jan Service Affecting Fallout

Focus on the Big Bars!

0 1000 2000 3000 4000 5000 6000 7000

Can't Remove 54
No Cust Code 596
Same Number 558
Can't Remove No Feature 259 54

Initiate Root Cause Teams

- Identify subject experts to analyze the problem
- Schedule half or one day root cause analysis sessions for each “big bar” of the pareto chart.
- Analyze the root causes, validate they really are the root causes, and identify solutions.
- Develop action plan to implement the solutions.
- Measure and validate the results as you implement solutions.

Rule #4:
Use SWAT teams of experts.

Identify Root Causes

Use the fishbone diagram to perform root cause analysis:

Out Orders
Wireless works with Number
WR Misc
Wireless Link
Order already issued in another system
Wireline link # mismatch
Non Integrated USOCs
New Orders in Error
Order already issued in another system
Duplicate Order
Price Plan Changes
Pending Order Check
Not needed for Price
Price Plan Changes
In Orders
Customer Service Affecting fallout
60% of others

Rule #5:
Use a fishbone diagram for root cause analysis.
Countermeasures (Mistake Proofing)

<table>
<thead>
<tr>
<th>Root Cause</th>
<th>Counter Measure</th>
<th>Specific Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone Number Mismatch</td>
<td>Add Edit</td>
<td>Edit requirements written and scheduled for April release</td>
</tr>
<tr>
<td>Customer Code Mismatch</td>
<td>Add Edit</td>
<td>Requirements written and scheduled for June release</td>
</tr>
</tbody>
</table>

Verify Results

Service Order Errors

<table>
<thead>
<tr>
<th>Time</th>
<th>Service Order Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>CM1</td>
<td></td>
</tr>
<tr>
<td>CM2</td>
<td></td>
</tr>
</tbody>
</table>

Verify Results

Eliminated Top Two Service Affecting Errors and Saved $250,000 per month

<table>
<thead>
<tr>
<th>Error Type</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can't Remove</td>
<td>258</td>
<td>94%</td>
</tr>
<tr>
<td>No Cust. Code</td>
<td>259</td>
<td>80%</td>
</tr>
<tr>
<td>Same Number</td>
<td>54</td>
<td>10%</td>
</tr>
<tr>
<td>Can't Remove Voice Mail</td>
<td>10</td>
<td>0%</td>
</tr>
<tr>
<td>No Feature</td>
<td></td>
<td>5%</td>
</tr>
</tbody>
</table>
Reduce Deviation

Bad

Good

Bad

Reduce Deviation

Off Target

Too Much Variation

Centered on Target

Reduce Spread

Sustain (Control)

Statistical Process Control (SPC)

Tools

- Control Charts
  - Analyze your data to determine process stability. Is your process consistent and predictable? Identify and research unstable points and conditions.
- Histograms
  - Determine the distribution of measurable data and the capability of your process to meet customer requirements.
- Flowcharts
  - Show the improved process including all activities, decisions and measurement points.
Implementing Lean Six Sigma

The Seven Deadly Mistakes:
- Committing to widespread implementation
- Focus on training and teams, not results
- Wide focus, not laser focus
- Training Black Belts to train everyone else
- Classroom training, not JIT training
- Improvement teams, not SWAT teams
- Letting teams pick their own problems

Secret to Lean Six Sigma

- Focus on "mission and profit critical" problems
- Set BHAGs - Big Hairy Audacious Goals to reduce defects, delay, deviation or cost by 50% or more in six months or less.
- Simplify and Streamline:
  - Focus on removing NVA—Non-value added
  - Optimize—Eliminate Defects and Deviation
  - Implement solutions and verify results

Implementing Lean Six Sigma

Crawl-Walk-Run to Success

- Start small for big results
- Engage informal leaders
- Use the 4-50 rule

Power Laws (4-50 rule)
Lean Six Sigma = Profits

- To accelerate your speed...
  - Eliminate delay and movement (3-57 Rule)
- To increase your returns...
  - Narrow your focus (4-50 rule)
- To engage your people...
  - Reduce the number of people involved
  - Engage informal not formal network

Lean Six Sigma Resources

QI Macros SPC Software for Excel.
Double Your Profits

Lean Six Sigma Systems
Training and Consulting

Free Resources and Contact Info

30 Day Eval Copy of the QI Macros: qimacros.com/free-resources
Six Sigma Quick Reference Card: www.qimacros.com/6s.pdf
Lean Quick Reference Card: www.qimacros.com/JobAid.pdf

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