Are Delays, Defects and Deviation Devouring Your Profits?

Agile Lean Six Sigma Million Dollar Money Belt Action Plan

Plug the Leaks in Your Cash Flow!

Jay Arthur - The KnowWare® Man

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Lean Six Sigma

Targets

	Defects/Million
1	690,000
2	308,733
3	66,803
4	6,210
5	233
6	3.4

What Is the Lean Six Sigma Mindset?

Lean Six Sigma is a results-oriented, project-focused approach to improving productivity and profitability. Reducing delays, defects and deviation translate into bottom-line cost savings, profit improvements, customer satisfaction and competitive advantage.
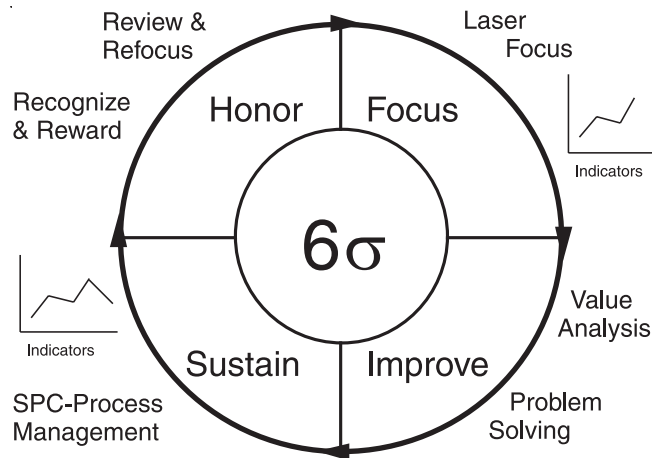
In Built To Last, (Collins 1997), the authors mention the need for a BHAG or Big Hairy Audacious Goal. Using Lean Six Sigma as a guide, you can measure your current performance in defects per million and set a BHAG of reaching the next level sigma. Set a goal to reach level 5, estimating 18-24 months per step.

The Improvement Journey

In the long run, the only sustainable source of competitive advantage is your organization's ability to learn faster than its competition.
  Peter Senge

When you start to improve your speed and quality, you become Sherlock Holmes. You let the evidence (your data) lead you step-by-step to the true culprit – the root cause. When you do, you'll stop using trial-and-error or gut feel to fix things. You start using some common science. Lean Six Sigma offers a proven, systematic method to continuously improve every aspect of your business. Lean Six Sigma begins with **focusing** effort for maximum benefit, then **improving** the processes, **sustaining** the improvement and **honoring** your progress.

Review & Refocus — Laser Focus — Recognize & Reward — Honor — Focus — 6σ — Indicators — Value Analysis — Sustain — Improve — Indicators — SPC-Process Management — Problem Solving

Lean Six Sigma Demystified

FISH	Step	Activity
Focus	1	Focus the improvement effort using data
Improve	2	Reduce delay, defects and deviation
Sustain	3	Stabilize and sustain the improvement
Honor	4	Recognize, review and refocus efforts

The Power Laws of Speed

Lean

Eliminate Delay!

If you can't quickly take throughput times down by half in product development, 75 percent in order processing, and 90 percent in physical production, you are doing something wrong.

James P. Womack and Daniel T. Jones Authors of Lean Thinking

When you eliminate delays and focus on speed, you actually get higher quality, faster response times, better productivity, and better use of equipment and space.

At the end of 2003, Toyota's annual profit, at $8.3 Billion, was larger than GM, Chrysler, and Ford combined.

Typical results from implementing Lean thinking:

- 90% reduction in lead times
- 90% reduction in all inventories
- 100% increase in productivity
- 50% reduction in errors
- Fewer injuries

The 3-57 Rule

Employees are only working on the product or service for 3 minutes out of every 60. The product or service lounges around for the other 57 minutes.

Make your product faster, not your people.

The 15-2-20 Rule

Every 15 minute per hour reduction in elapsed time will **double productivity and reduce unnecessary costs by 20 percent.**

The 3X2 Rule

On average, Lean companies **grow three times faster and double their profit margins.**

Customers will pay a premium for speed.

Inshoring Oddly enough, when you go Lean, you no longer need to offshore work which, by design, requires large inventories be shipped over oceans and then transported from ports on the coast.

Economic Bounce: About half of any economic downswing is caused by companies and customers working from finished inventories that were built up by mass production. In a Lean economy, there are no inventories.
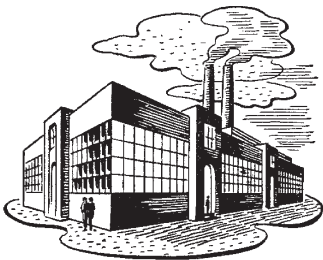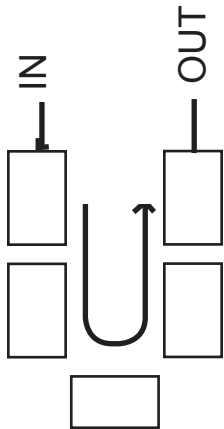
Hacking Lean - Redesign for Speed

Case Study

Hospital labs reduced unnecessary movement of people and samples by 57% in a 2,400 sq. ft. lab and freed up 400 sq. ft. for other purposes.

Labs used STAT centrifuges instead of slower bucket centrifuges saving 7 minutes per test.

This reduced turnaround times by a third and reduced errors and rework.

The trick is eliminating all of the delay between value-adding steps and lining up all of the machines, people and processes so that the product or service flows without interruption. The mental shift required to move from mass production to speed production is to focus on continuous flow of small lots. In healthcare this might be a patient, in manufacturing, an auto part.

The Redesign Process

1. Focus on the part, product or service itself. Follow the product, patient or whatever through its entire production cycle.

In a hospital you would follow a patient from admission to discharge. In a printing company, you'd follow a job from start to delivery. In a manufacturing plant, you'd follow the product from order to delivery.

2. Eliminate the delay between steps using value stream mapping:

Value Stream Map

qimacros.com/quality-tools/value-stream-map/

3. Evalulate and realign the work flow into production "cells" to eliminate unnecessary movement using spaghetti diagramming:

Spaghetti Diagram
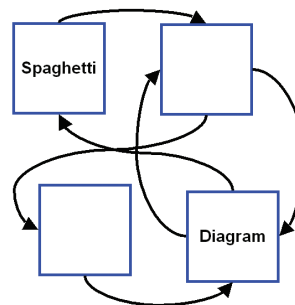
4. "Right size" the machines and technology to support smaller lots, quick changeover and one-piece flow.
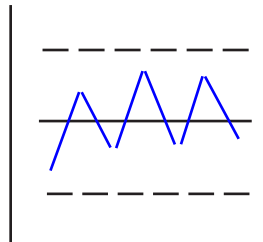
The goal of flow is to eliminate all delays, interruptions and stoppages, and not to rest until you succeed.

Common measures of flow:

- Lead (or cycle) time: how long product stays in the system
- Travel distance of the product or people doing the work

Develop Compelling Improvement Projects!

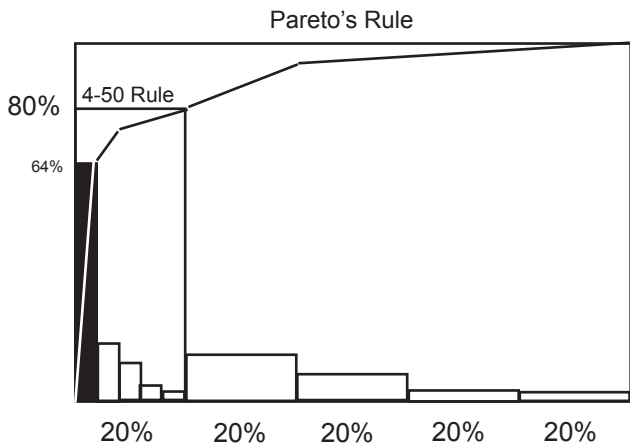## 1. Count Your Defects, Errors or Mistakes

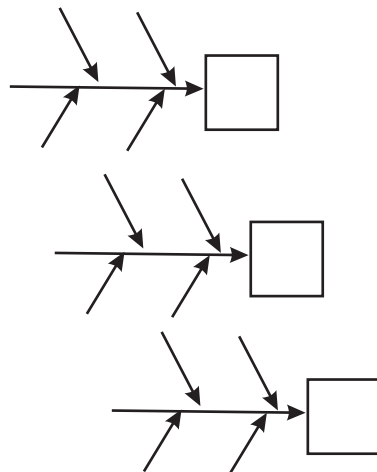Control Chart
qimacros.com/control-chart

4-50 Rule

Less than 4% of any business creates over 50% of the waste, rework and lost profit. Like a crime scene investigator reviewing forensic evidence, you can use data you already have to find and fix these root causes, and save money.

2. Categorize by Type

Pareto's Rule

80%

4-50 Rule

64%

20%   20%   20%   20%   20%

qimacros.com/quality-tools/pareto-chart

3. Analyze Parts of the Problem Simultaneously

qimacros.com/quality-tools/ishikawa-fishbone-diagram

4. Prevent The Problem

COUNTERMEASURE

qimacros.com/quality-tools/countermeasures

Hacking Six Sigma
Step 1 - Define The Problem

Purpose

Define a specific problem area and set a target for improvement

Problems are only opportunities in work clothes.
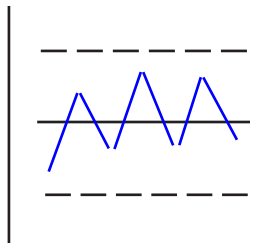 -Henry J. Kaiser

There are two ways of looking at problems:

<u>Increase</u>   (you want more of a "good" thing)
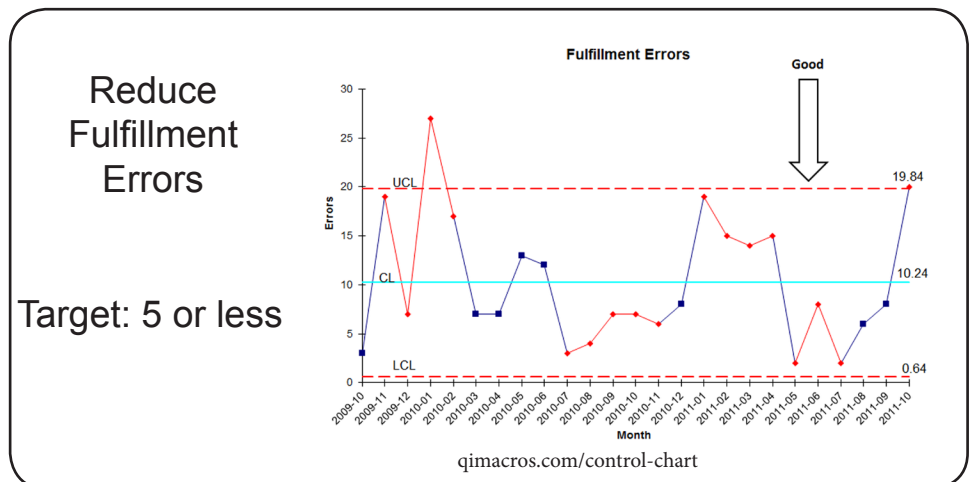<u>Decrease</u>   (you want less of a "bad" thing)
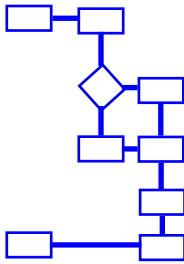
These are often two sides of the same coin:

an increase in ...	is equal to a decrease in . . .
quality	number or percent defective
speed	cycle time – to deliver a product or service
	idle time – people, materials, machines
profitability	cost of waste and rework

Measurement

Solving problems is usually easiest when you focus on decreasing the "bad" rather than increasing the "good," because most good things are *effects* of fixing the bad. Most problems can be easily expressed as a control chart showing the current trend and desired reduction in either cycle time, defects or cost. Begin by graphing the current problem:
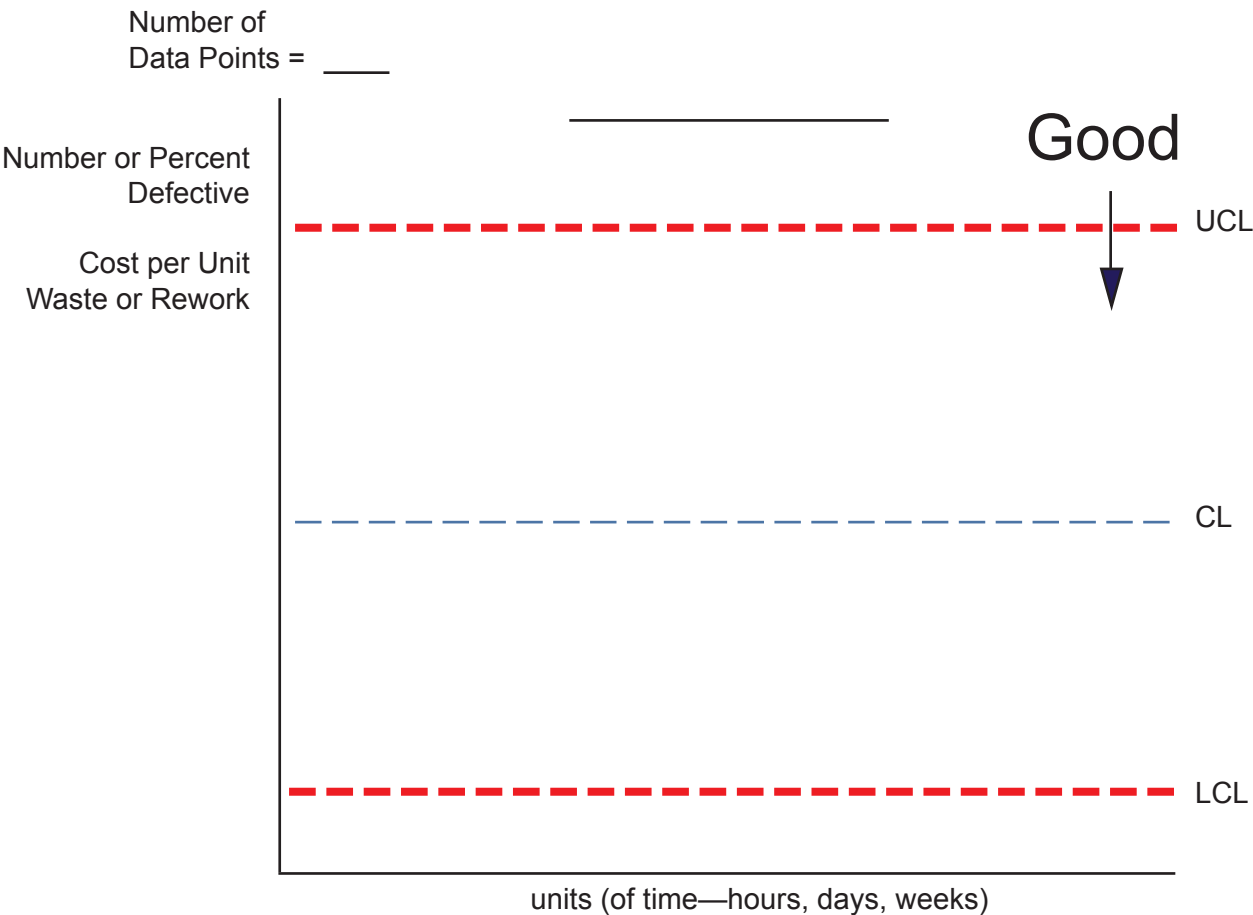
Example:

Reduce Fulfillment Errors

Target: 5 or less

Fulfillment Errors

Good

UCL 19.84
CL —————————————— 10.24
LCL 0.64

Errors

qimacros.com/control-chart

Hacking Six Sigma
Step 1 - Define The Problem

Problem:

Reduce *Defects, Deviation* or *Cost* to deliver _____
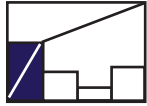   (circle one)   product or service

Number of
Data Points = _____

Number or Percent
Defective

Good

Cost per Unit
Waste or Rework

⟍ UCL
(arrow pointing down)

CL

LCL

units (of time—hours, days, weeks)

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Hacking Six Sigma
Step 1 - Define The Problem

Pareto Chart

We only admit to minor faults to persuade ourselves that we have no major ones.
  - La Rochefoucauld

Pareto's Rule

80%
64%
4-50 Rule
4%
20% 20% 20% 20% 20%

4-50 Rule
64%
4%
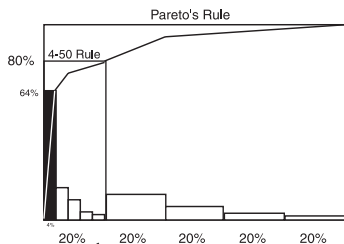
A problem well stated is a problem half solved.

Problem areas are usually too big and complex to be solved with one project, but when you whittle them down, we can fix each one easily and effectively.

This step uses the Pareto chart (a bar chart and a cumulative line graph) to identify the most important problem to improve first.

Often, two or more Pareto charts are needed to get to a problem specific enough to analyze easily. The left axis shows the number of occurrences for each bar. The right axis shows the cumulative percentage for the line graph.

Fulfillment Errors by Error Type

qimacros.com/quality-tools/pareto-chart

Source of Error

Begin by identifying the components of the problem:
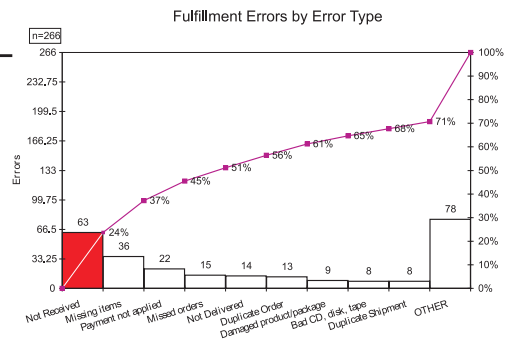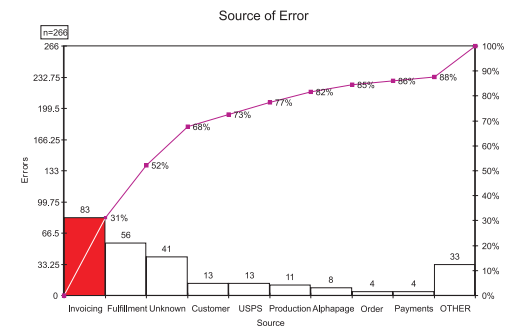
Indicator	Pareto Components
Defects	- types of defects
Time	- steps or delays in a process
Cost	- types of costs--rework, waste

Once you have whittled the problem down to a small enough piece, You can then write a problem statement about the major contributor. This will serve as the basis for identifying root causes. You also need to set a target for improvement.
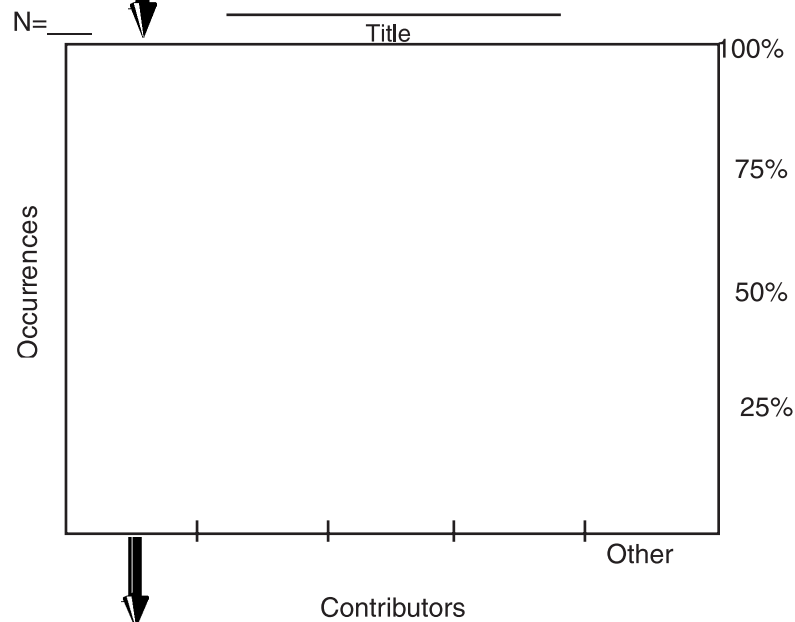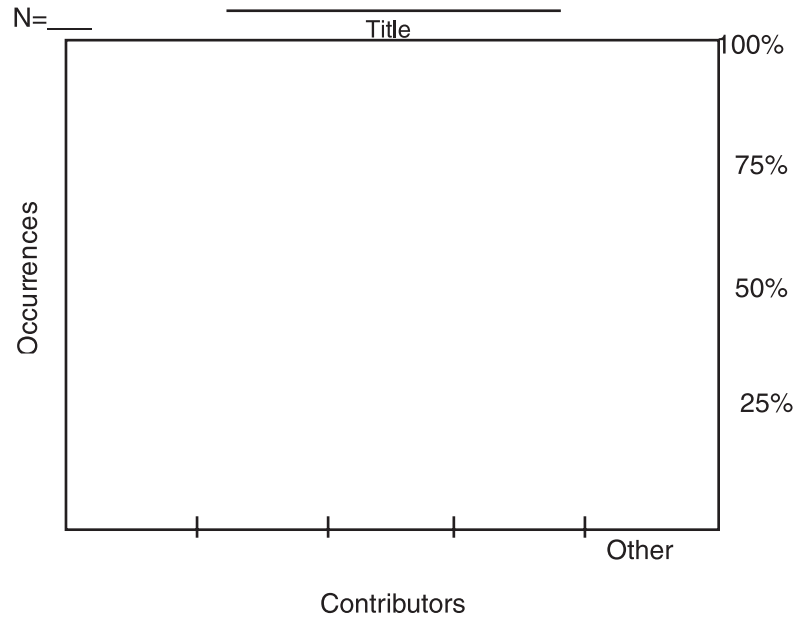
Problem Statement

Problem Statement: During 2009-2011, invoicing accounted for 31% of all shipments not received, which was 2X higher than desired and resulted in 83 resent packages. **Target:** 50% reduction in shipments not received.
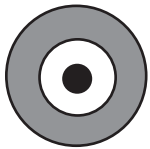
Hacking Six Sigma
Step 1 - Define The Problem

N=___ _____
Title

Occurrences

100%

75%

50%

25%

Other

Contributors

Target = _____

N=___ _____
Title

Occurrences

100%

75%

50%

25%

Other

Contributors

Problem Statement

During _____, ____, _____accounted for ___% of _____,
(Months) (Year) (Big Bar)   (time, defects, cost)

which was _____ Higher than desired and resulted in _____.
(Gap)   (Pain)

Hacking Six Sigma
Step 2 - Analyze the Problem

Purpose

For every thousand hacking at the leaves of evil, there is one striking at the root.
-Thoreau

Identify and verify the root causes of the problem

Like weeds, all problems have various root causes. Remove the roots and, like magic, the weeds disappear.

Cause-Effect Analysis
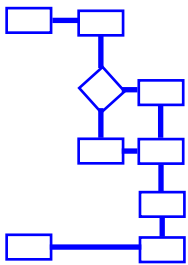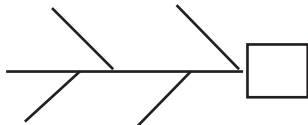
1. To identify root causes, use the fishbone or Ishikawa diagram. Put the problem statement from step 1 in the head of the fish and the major causes at the end of the major bones. Major causes include:

   • Processes, machines, materials, measurement, people, environment
   • Steps of a process (step 1, step 2, etc.)
   • Whatever makes sense

2. Begin with the most likely main cause.

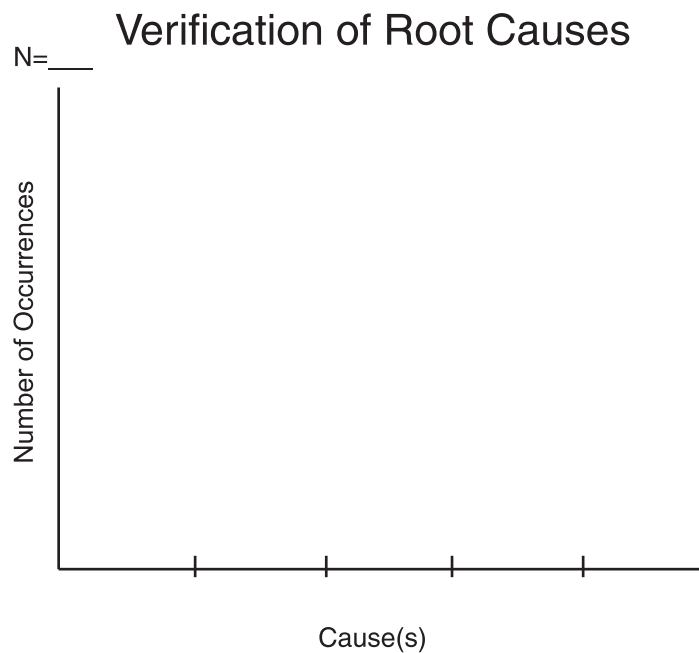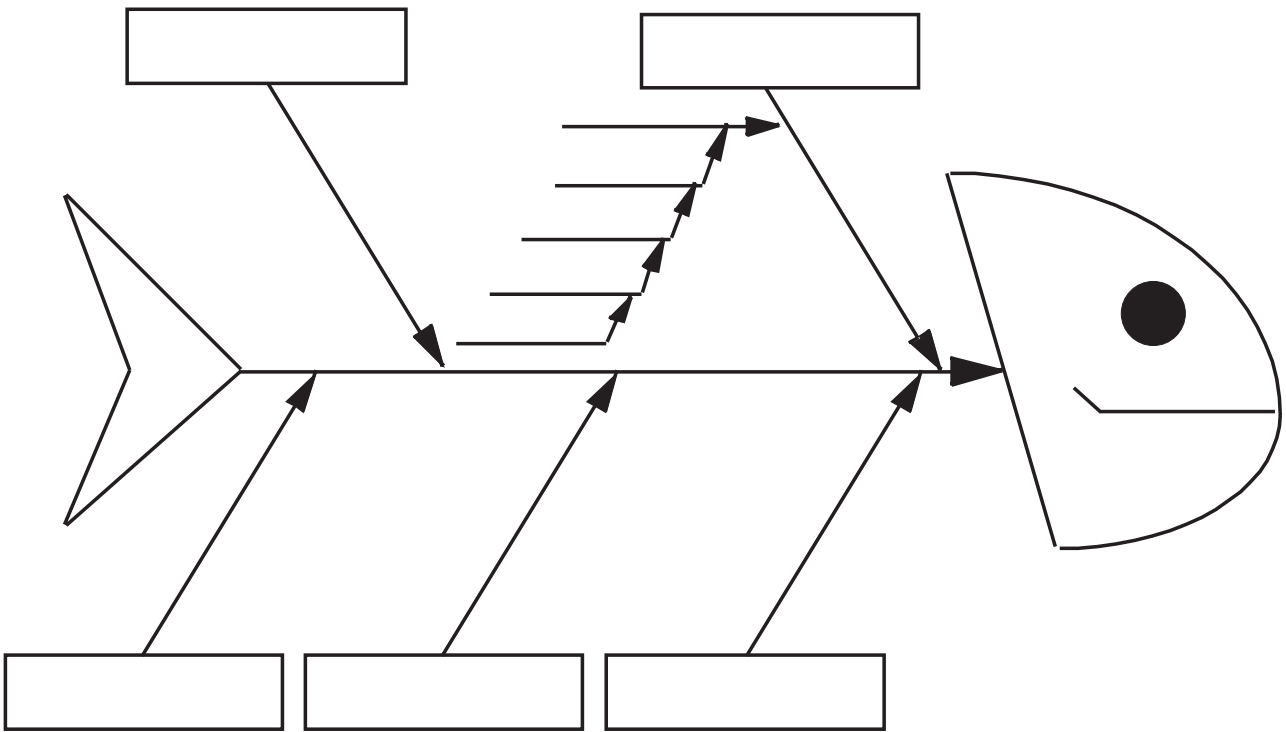3. For each cause, ask "Why?" up to five times.

4. Circle one-to-five <u>root</u> causes (end of "why" chain)

5. Verify the root causes with data (Pareto, Scatter)

qimacros.com/quality-tools/ishikawa-fishbone-diagram

Fulfillment Errors chart with Implemented Process Changes, UCL 19.84, CL 10.24, LCL 0.64, 7.05, 2.40, 75% Reduction

Verification of Root Causes

N=___

Number of Occurrences

Cause(s)

Hacking Six Sigma
Step 3 - Prevent the Problem

Purpose *Take away the cause, and the effect ceases.* - Cervantes	**Identify the countermeasures required to reduce or eliminate the root causes** Like ecological weed prevention, a countermeasure prevents problems from ever taking root in a process. A good countermeasure not only eliminates the root cause, but also prevents other weeds from growing.

Defining Counter-measures

COUNTERMEASURE

1. Transfer the problem statement from step 2 and the root causes from step 3.
2. For each root cause, identify one to three broad countermeasures (what to do).
3. Rank the effectiveness of each countermeasure (Low, Medium, or High).
4. Identify the specific actions (how to do it) for implementing each countermeasure.
5. Rank the feasibility (time, cost) of each specific action (Low, Medium, or High).
6. Decide which specific actions to implement.

Problem Statement _____

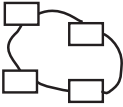| Root Cause	Countermeasure	Effective?	Specific Actions	Feasible?

Low
Medium
High

Low
Medium
High

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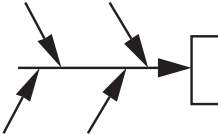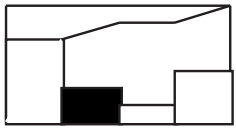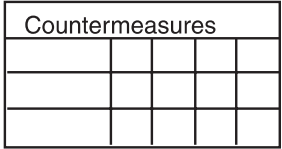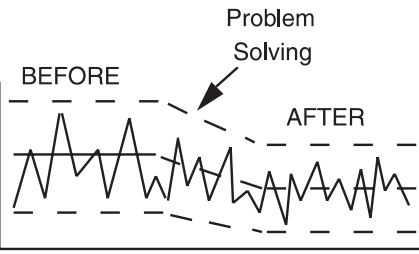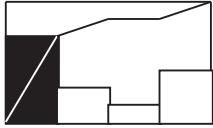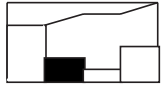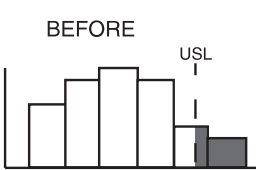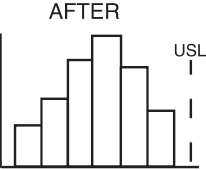
Your "Million Dollar Money Belt" Improvement Strategy

Simplify and Streamline

FOCUS	
	5S - Sort = Straighten - Shine - Standardize - Sustain Map the Value Stream Spaghetti Diagram

Optimize

FOCUS	Leadership	PivotTable Define Problem To Be Solved Control Chart Pareto Chart
IMPROVE	Root Cause Teams	Root Cause Analysis Verify Root Cause Countermeasures
SUSTAIN	Implement and Sustain the Process	Map the Value Stream Problem Solving BEFORE AFTER Pareto Chart BEFORE USL AFTER USL
HONOR	Leadership	Recognize, Review, and Refocus Six Sigma 6 5 4 3 2 1 GOOD

Lean Six Sigma
Cut costs up to 40% and add them to your bottom line!

It happened again. I was talking to someone that went on and on about how they'd tried Lean Six Sigma. They trained lots of black belts and green belts. Several years and millions of dollars later they still have next to nothing to show for it. Don't let this happen to you!

Become a Lean Six Sigma "Yellow Belt" at lssyb.com

Instead of black or green belt, you want to be a "money belt"! I want you to learn the actual methods, strategies, and techniques I've used to generate millions of dollars in savings for my clients. I'll teach you how to systematically save big bucks and add it to your profits.

If you are serious about starting or remaking your process improvement program into one that achieves breakthrough reductions in cycle time, defects, and costs while maximizing bottom-line benefits and minimizing your investment, this is the strategy for you. Quite frankly, it doesn't matter what industry you're in, or what product or service you have. If you're a $10 million company or larger and have problems with speed, quality and value, you can start using these Lean Six Sigma tools right now to routinely add big profits to your bottom line.

The Bad News (The Fix-It Factory)

Your Factory	Your Customer
Your Fix-it Factory	
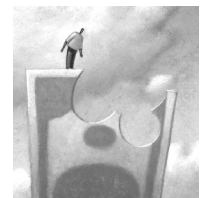
In your business there are two factories: one that delivers products or services, and the "Fix It" factory that repairs all of the mistakes created by the first factory. If you're a "3-sigma" business (3% error or 30,000 defects/million), that's 3% in orders, 3% in fulfillment, 3% in billing...your real error rate is 6%, 12%, 18% or worse. And each error costs more to fix than it did to create it. Between $25-$40 of every $100 you spend is wasted on fixing defective products or services. That's a big bite out of your profits. OUCH!

What Most Consultants Don't Want You To Know!

If you're a 3-sigma company, then you can solve 90% of your current problems using the "Magnificent Seven" tools: process mapping, PivotTable, control chart, pareto chart, histogram, fishbone and matrix diagram. Focused application of these tools can take you from 3 to 5 sigma (233 defects/millions) in 18-24 months. Then you'll be ready for some black belt training, but until then you're just wasting your money.

A Model That Works

After decades of working with improvement teams, I've found a consistent, foolproof method to achieve breakthrough improvements:
1. **Focus** the improvement effort to minimize the cost and maximize the gain.
2. **Improve** dramatically your speed, quality, and cost.
3. **Sustain** the improvement to maximize your productivity and profitability.
4. **Honor** your progress by recognizing your team's efforts.
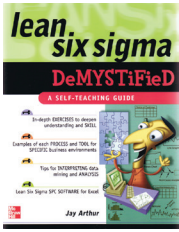
Shave Months Off
Your Six Sigma Project!
Struggling to Get Results from Six Sigma?

Have You Been Struggling to Turn Data into Actionable Improvement Projects? Is the boss wondering when he or she will see some results? If you want someone to hold your hand through your first Six Sigma project, we can help.

If you are neck deep in Excel data about defects, mistakes, errors, lost profit, missed opportunities, but:

- You've tried, but can't figure out what to do with it or

- You don't have time to analyze it, but someone's breathing down your neck to find and fix the operational problems that are squeezing profit margins or

- You're struggling with daily fire fighting and crisis management caused by defects, mistakes, or errors

Jay Arthur can analyze your data and quickly tell if there's an improvement project lurking in your data. He uses Lean Six Sigma to find fresh solutions to seemingly unsolvable problems and generates ideas that surprise people with a new perspective.

Jay has been analylzing data for decades; he can spot problem patterns in your data easily and quickly turn them into actionable improvement stories. This process doesn't take him weeks or months like it might take a novice improvement team. He can do it in a matter of minutes. And he's done it consistently, dependably over time.

Here's How It Works

If your data is in a financial system, SAP, medical records or other big system, export the data about defects or deviation into an Excel workbook.

Then send us your Excel workbook (one worksheet) with a description of the issue you're trying to resolve. We won't share your data with anyone and we're happy to sign a non-disclosure agreement. Your Excel data can be numbers or text:

We will analyze the data using the QI Macros Data Mining, Chart or Stat Wizard. The cost for this service is $97-$297 per worksheet.

There may be one or more projects in your data. Most improvement projects have three main deliverables:

- A control chart of performance over time
- One or more Pareto charts to focus the improvement
- An Ishikawa (fishbone) diagram with problem statement ready for root cause analysis

Jay will analyze your results and create recommendations for action: Add $400.

If you want Jay to walk you through his analysis online so that you can see every step: Add $500.

Then you convene a team to analyze the root causes of each problem and initiate improvements. (Tip: Jay has found that it's impossible to choose the ideal members for a team until you have a control chart, Pareto chart and fishbone diagram.)

qimacros.com/services/shortcut-to-results

Working with Jay Arthur

This workbook is an outline of the improvement areas that I explore with my results-oriented clients. My goal is to help you understand how to make dramatic improvements in your business performance by simplifying the approach and narrowing the focus to ensure success.

Haven't you waited long enough to start getting the results you want? Order our QI Macros Software and Lean Six Sigma training materials and get started now.

Draw Control Charts, Histograms, Paretos and more in Excel 2010-2019, PC or Mac!
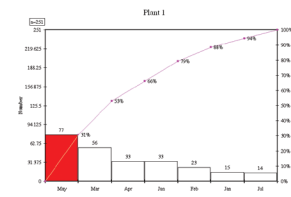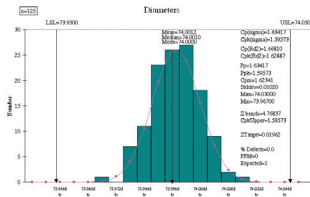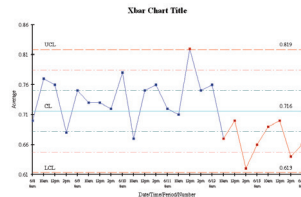
QI Macros Starter Kit (Item #275)

For those who would like a little guidance, we created a starter package:

- QI Macros for Excel (1 license)
- QI Macros Computer-based Training on CD
- QI Macros Example Book

SPC Simplified System (Item #285)

You'll learn how to use Statistical Process Control through the use of:

- QI Macros for Excel (1 license)
- QI Macros Computer-based Training on CD
- QI Macros Example Book
- SPC Simplified Book
- SPC Simplified DVD with Participant Guide - 1 hr
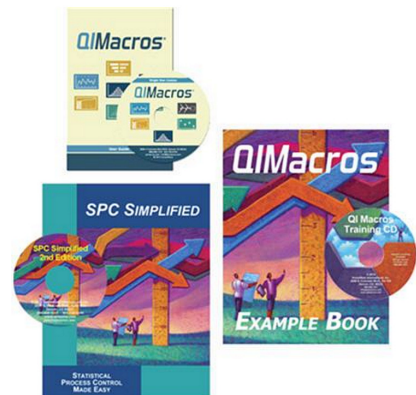
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