

The 4-Hour Lean Six Sigma Black Belt

The shortcut to solving the world's operational problems.

Jay Arthur

I don't care why people try Lean Six Sigma; I'm much more interested in why they give up. Here are the most common reasons and fears:

- **Don't know where to start.**

Too many tools in the Green and Black Belt body of knowledge (BOK).

- **Don't want to look or feel stupid.**

Intimidating math, statistics and technology.

- **Too expensive.**

(\$4,000+ per Belt.)

- **Takes too long to get results.**

(1-4 months in training and 14+ weeks per team.)

Fortunately, very little of the Lean Six Sigma body of knowledge is essential to getting breakthrough bottom-line results!

The “Magnificent Seven Tools” of Lean Six Sigma will reduce or eliminate 99% of delays, defects and deviation facing most businesses—service or manufacturing—in just a few hours or days.

If you don't have the time to read the whole book, here's what it says:

Lean Six Sigma, as it is traditionally implemented, takes too long, costs too much and often fails to deliver the expected results. Instead of 160 hours over four months, *you can learn the core skills of a Black Belt in four hours or less*. You don't need to know everything to do anything; you only need to know how to use the Magnificent Seven Tools of Lean Six Sigma in the proper sequence to start getting results immediately.

The future belongs to companies whose "Money Belts" can use the "Magnificent Seven" tools to maximize productivity and profits while minimizing costs.

Questions the book answers:

1. Why is it foolish to spend two-to-four weeks learning Lean Six Sigma when you can do it in four hours or less?
2. What are the key tools you need to solve 99% of all business problems?
3. What order do you use them in to maximize results?
4. How can every business, large and small, service and manufacturing, use Lean Six Sigma to achieve breakthroughs in speed, quality and profitability?

Choose the highest-yield material and you can be an idiot and enjoy stunning success.

–Timothy Ferriss – Author of the 4-Hour Chef

Yes, this book is short, because if it's short, it's more likely to be used and because I believe that you don't need to know everything about Lean Six Sigma to start getting results. Unless you work on a manufacturing factory floor, there's a limit to how much is *useful* to learn.

My Story

I've been involved with quality since 1990, long before Six Sigma showed up and right at the beginning of awareness of the Toyota Production System (TPS – a.k.a. Lean). My goal has been to spread the 'gospel' of quality and to create 100,000,000 Money Belts worldwide. This is a challenge because many people are afraid of the math and statistics (which can be handled by software like the [QI Macros for Excel](#)).

As the author of the QI Macros, *Lean Six Sigma Demystified*, and *Lean Six Sigma for Hospitals*, I sit at a strange crossroads. I talk with lots of people who have been trained in Six

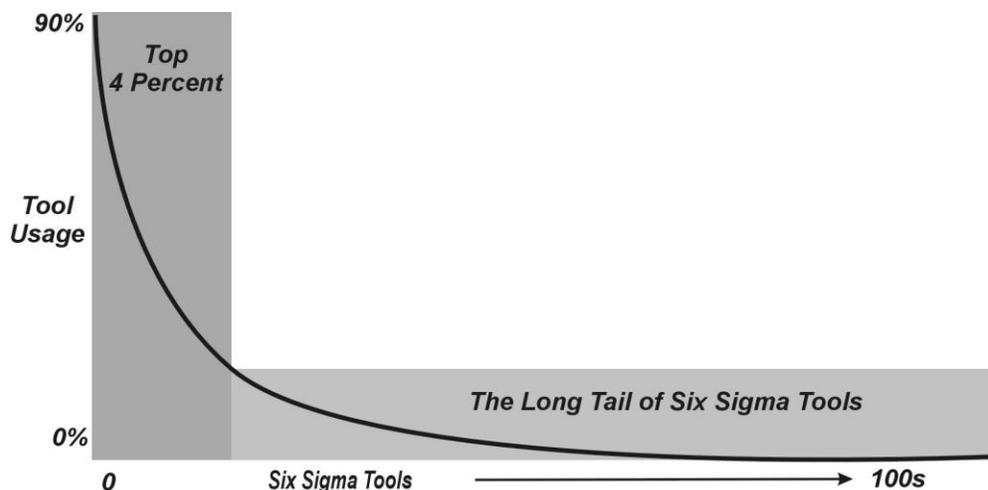
Sigma, *but have never done a project*. I find this wildly disappointing. If someone has been trained, but never done a project, I'd have to consider the training to have been a *waste*; it's a form of *overproduction*—one of the speed bumps of Lean.

I'm equally disappointed that when someone finally tries to apply Lean Six Sigma, they are often confused about where to start. Their training covered so many methods and tools (overproduction) that they aren't sure what to do first. And this confusion stems from Six Sigma's roots in manufacturing.

While the U.S. manufacturing is still a two trillion dollar business, manufacturing employment has been shrinking...shrinking to the point that only one employee out of every 100 needs all of the tools in Lean Six Sigma. The other 99 only need a few tools to solve most of the backroom, service-oriented operational problems.

The Long Tail of Tools

Lean Six Sigma training covers what I call the “long tail” of improvement methods and tools. This includes every tool you might ever need if you work on a manufacturing factory floor. But they are overkill when starting the Six Sigma journey. And Black Belts freely admit that when faced with a more complex problem, they often have to look up what to do because they've forgotten everything from their training



Solution: Go back to the fundamentals. What few key tools does a person need know to solve most operational problems? What are the fundamentals?

“Whenever I read a ‘simple’ recipe, my first question is can I use half the ingredients and half the steps and get something people will not just love, but perhaps even prefer?”

-Timothy Ferriss

In my 20+ years of improvement projects, I have found that a few key tools (the Magnificent Seven) used in the right sequence can help companies save millions of dollars, cut costs, boost

profits, boost productivity and even save lives. I've had months of quality training on everything from TQM to DOE, yet I have found that these seven tools diagnose and treat almost everything. And when I occasionally do need to add another tool, there are plenty of examples and insights that are only a Google away.

In other words, you don't need to know everything to start getting results. You don't need months of training to start solving problems. You just need to know a handful of tools and how to apply them to start getting results immediately.

Tim Ferriss and The 4-Hour Chef

Tim Ferriss is author of *The 4-Hour Workweek*, *The 4-Hour Body* and *The 4-Hour Chef*. He is obsessed with accelerated learning and, as far as I can tell, wants to learn *everything*. The first chapter of *The 4-Hour Chef* is about "meta learning" – learning how to learn fast, because, he says, "speed of learning determines value." And this is one of the problems with Lean Six Sigma training—it's too slow.

Two skills—fast learning and clear thinking are the key 21st-century personal skills.

- Colin Rose and Malcolm J. Nichol- Accelerated Learning for the 21st Century.

Reading Ferriss' book lead me to examine my own approach to helping people grasp Lean Six Sigma.

My Journey

In the early 1990s, I attended a four-day workshop with W. Edwards Deming. While it was great to see the grand master in action, my "trainer" mind was thinking that if he'd used some accelerated learning techniques, we could have covered the same ground in *one day with greater comprehension*.

In 1990, when our five-day training classes with big 3-ring binders failed to produce successful teams and results, I started applying Six Sigma to itself. I applied everything I know about accelerated learning to Six Sigma and later Lean. I quickly reduced my classes to a one-day workshop with a 24-page "coloring book" for problem solving.

I used to spend time teaching participants how to choose the right control chart, but I found that I could build most of these decisions into the QI Macros software. I found that with the QI Macros Wizards—Chart, Control Chart, PivotTable and Statistics—almost anyone could start drawing charts and solving problems immediately.

I found that when I teach the tools in the proper sequence (control chart—Pareto chart—fishbone) and have participants practice immediately using test data provided with the QI Macros, they *skip over their fear of statistics*. Then I have them jump into analyzing their own

data. There's nothing more satisfying than getting participants to analyze their own data and start doing root cause analysis and solving seemingly intractable problems *right in the classroom*.

The tools of learning are not fixed, nor is the amount of time needed to become world-class.

– Timothy Ferriss

I realized that I teach Lean in less than four hours in the morning *complete with value stream maps, spaghetti diagrams and action plans to simplify and streamline key processes immediately*. And I teach Six Sigma in the afternoon in less than four hours *while delivering projects ready for root cause analysis or implementation*. In one day, my students leave the classroom knowing more about Six Sigma than I knew after weeks of excellent training in 1990. And I can do it in under four hours.

So, can you learn to be a Six Sigma Black Belt in four hours? Yes, I believe you can. Will you know everything in the Black Belt body of knowledge (BOK)? Not a chance, but this way you can start solving the most common types of problems immediately and then add methods and tools as needed.

Will you be instantly proficient? No, but what Black Belt is? It can take 1-2 years and \$250,000 to bring a Black Belt fully up to speed. By applying the Magnificent Seven tools for only four hours every week, you'll be able to move your department or company from 3-sigma to 5-sigma in 18-24 months. You'll start solving seemingly *unsolvable* problems in a matter of hours.

4-Hour Lean Six Sigma Training

It is possible to vastly compress most learning. – Timothy Ferriss

To make these 4-hour training sessions easily accessible and affordable, I've put my Lean Six Sigma training on YouTube, *for free*, at www.fourhourblackbelt.com. I call it "Money Belt" training, because it covers using the Magnificent Seven tools to save time and money while boosting productivity and profitability. There are additional Green Belt and Black Belt training videos, but I wouldn't recommend them until you master the Magnificent Seven. Now *anyone* can learn to be a Black Belt.

Certification

People learn from projects, not training. -Ken Norton

Sadly, I have found that many people only want a Green Belt or Black Belt certification to enhance their resume, not their company. Many certification programs do not require an improvement project to demonstrate competency. But I think I have a way to certify Green Belts

and Black Belts *by completing projects*. For complete details go to:
www.qimacros.com/services/six-sigma-certification.

I think that finding ways to make a business faster, better, cheaper and safer is a lot of fun. It's a skill you can use forever, wherever your work. It will spill over into your personal life, leaving you more time for family and friends. And it will leave the world a better place. But hey, it's up to you. Haven't you waited long enough to start learning and applying the Magnificent Seven Tools of Lean Six Sigma?

Jay Arthur
Denver, CO
January 2013

Mistake-Proof Lean Six Sigma

When I first got involved in quality improvement at US West, one of the Baby Bells, I was in the first group trained in Total Quality Management (TQM) as Six Sigma was known at the time. I was trained as a trainer and we started training lots of team leaders. We started hundreds of teams. *A year later, only three teams had delivered any results.* The rest were stuck or had been abandoned.

Even though our training was excellent, it didn't seem to translate to fixing the phone company. I decided to treat each failed team as a *defect*. Then I started to apply the tools of Six Sigma to team failures. I did some Pareto and root cause analysis. Here's what I found:

- The five-day training and big 3-ring binders telegraphed the message that Six Sigma was difficult and time consuming (not true). It made people hesitate to attempt a project.

Solution: I created a 24-page “Coloring book” to simplify learning the key tools and I used Accelerated Learning methods to teach them in four hours while simultaneously solving a business problem or two. Download the current version from www.qimacros.com/pdf/six-sigma-action-plan.pdf.

- Teams were formed *before* we knew what problem they needed to solve. This caused teams to flounder. They usually wanted to fix someone else—their suppliers, customers or management, *not their process*.

Solution: I started using data analysis to *focus the improvement before we picked the team*. I found that if I could create a control chart and Pareto charts of defects, mistakes or errors, I could ensure the team's success. And I could often do this in a few hours, not weeks or months.

- Teams met for only one hour a week, which slowed progress to a halt and violated Lean's principles: *eliminate delays and institute one-piece flow*.

Solution: I switched to four-hour root cause sessions (i.e., SWAT teams) based on the data analysis.

- I developed some rules like:
 - Whalebone diagramming (instead of fishbone) is a sure sign of failure to properly focus the improvement.
 - Never start at team that can't succeed.
 - And others that you'll discover in this book.

Mistake-Proof Six Sigma Recipe

It was midway through my second year as a team leader that I stumbled on a mistake-proof recipe for Six Sigma success. The head of our division thought there were too many false fire alarms in our building. I sat down with the building manager and we reviewed the data and created our first successful improvement story *in an afternoon*.

qimacros.com/Moneybelt/six-sigma-false-fire-alarm-case-study.html

That's when I knew it was possible to use the tools to solve problems quickly, not over weeks, months or years. I began to use the same strategy with every team. We found ways to save \$20 million in postage and \$16 million in adjustments *in a matter of hours*. We found ways to eliminate 8,000 unnecessary repair appointments a month, again in a matter of hours.

Fast, Affordable Lean Six Sigma

I say that Lean Six Sigma can be fast, affordable and flawless, maximizing results while minimizing costs. To do so requires a fresh approach using the Magnificent Seven tools. Training doesn't have to take weeks or months; it can be done in a matter of hours. Projects don't have to take weeks or months to complete; I've done million-dollar projects in five days or less. The actual analysis can be done in under four hours, but sometimes implementation can take longer because it has to go through some sluggish, error-prone process (IT for example).

You can spend a lot of time and money training a lot of multicolored "belts", start teams that flounder and wonder what went wrong. Don't let this happen to you.

No one needs yet another jargon-ridden, statistical recipe book on how to bake Lean Six Sigma into a corporate culture. It doesn't work because cultures aren't cakes. Cultures are more like a herd of bison or a school of fish always moving and shifting, sometimes slowly, sometimes quickly. We need a way to nudge the culture toward excellence that doesn't invite a charge from the bulls or trigger a stampede.

Companies don't need more Green Belts or Black Belts. They need more *Money Belts*—people who can quickly find ways to save time and money to boost productivity and profitability. They have to learn how to eliminate the three silent killers of productivity and profitability: **delay, defects** and **deviation**. When they eliminate the delays, it makes the product or service available *now*. When they eliminate defects and deviation, products and services become *perfect*. Eliminating defects and deviation reduces costs so that products and services become more *affordable, even free*.

The Three Silent Killers of Productivity and Profits

Ask any business owner or executive, they know that something is killing productivity and profits, but that it is hard to put a finger on the culprit. While many people look for *someone* to blame, the problem is rarely a person. Invariably it's the *process*.

In any business, there are three silent killers of productivity and profitability:

- Delay
- Defects
- Deviation.

Delays: Most business processes grow up in an ad-hoc fashion over time. They involve too many workarounds and rework loops. They suffer from too many *unnecessary* delays between steps.

Delays are killing your productivity and profitability.

Defects: Like it or not, every process produces defects. Even a profitable business can suffer from a three-percent error rate across sales, marketing, ordering, fulfillment, invoicing, etc. These defects are costing a typical business *one-third of total revenues*.

Defects are killing your productivity and profitability.

Deviation: Some products are a little too big or too small, too long or short, too wide or narrow. Some customer service processes take too long or cost too much. These are all forms of deviation (i.e., variation from a customer's ideal target value). Deviation results in warranties, recalls, returns, scrap, waste and rework that devour profits.

Deviation is killing your productivity and profitability.

Simple tools like control charts, Pareto charts and histograms can diagnose problems with defects and deviation. SWAT (special weapons and tactics) teams of employees can quickly identify the root causes of these kinds of problems and implement countermeasures.

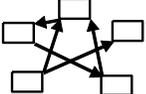
Most people think that problems are spread evenly all over the business. They are wrong. You don't have to fix everything in your business. To maximize results and minimize costs, you only have to focus on the few key places causing most of the delay, defects and deviation which causes lost profit and productivity. This the 4-50 Rule that I'll explain later.

The 4-Hour Black Belt will focus on the Magnificent Seven "Money Belt" Tools necessary to achieve stunning, breakthrough results. Master these and you can then add other methods and tools as required.

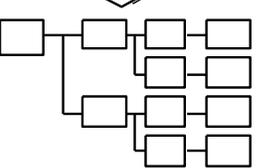
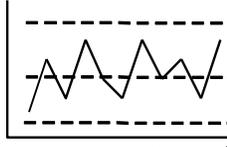
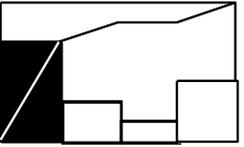
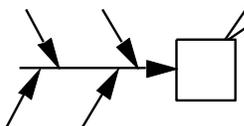
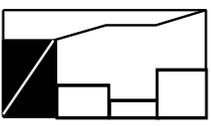
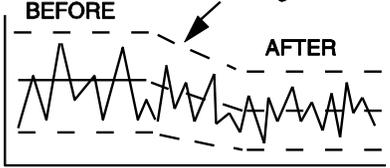
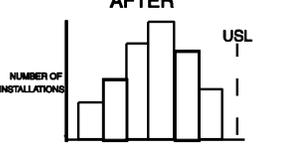
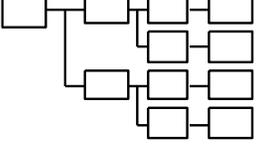
Eliminate the three silent killers and your business will experience a quantum leap toward *free, perfect and now*. To do so you don't need long, expensive training or endless team meetings. You need 4-hour Money Belts focused on the most critical problems to start getting results immediately. And it won't take long for customers to notice the improvement.

Lean Six Sigma 4-Hour Black Belt Cheat Sheet

Simplify and Streamline

LEAN	FOCUS	 Map the Value Stream	 Spaghetti Diagram the Flow	 Redesign for One-Piece Flow
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Optimize

SIX SIGMA	FOCUS	<p style="text-align: center;">Voice of the Customer</p> <table border="1" style="margin: auto;"> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> <p style="text-align: center;">↓</p>  Master Improvement Story																					<p style="text-align: center;">Define Problem To Be Solved</p>  Control Chart	 Pareto Chart
IMPROVE	<p style="text-align: center;">Root Cause Teams</p>  Root Cause Analysis	 Verify Root Cause	<table border="1" style="margin: auto;"> <tr><th colspan="5">Countermeasures</th></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table>	Countermeasures																				
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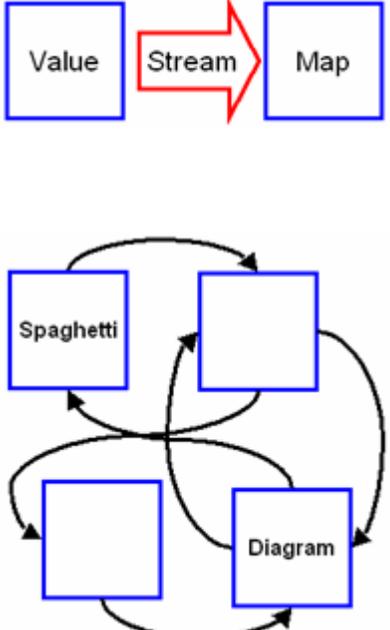
The Magnificent Seven

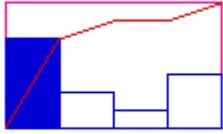
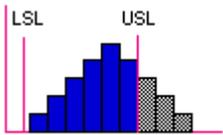
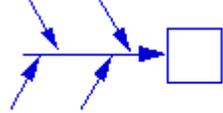
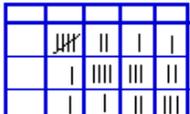
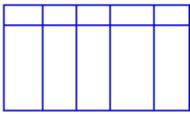
The 1960s film, *The Magnificent Seven*, starred Yul Brenner, Steve McQueen, Charles Bronson, James Coburn, Robert Vaughn, Brad Dexter and Horst Buckholz. These seven hired gunmen protect a Mexican village from the bandit Calvera played by Eli Wallach. The film was an Americanization of the Japanese film *The Seven Samurai*. The film implies that you don't need an army to win the war, just seven top "gun men."

The Magnificent Seven of Lean Six Sigma

Becoming a master of karate was not about learning 4,000 moves but about doing just a handful of moves 4,000 times. – Chet Holmes

Over the years, in project after project, I have found myself returning to the same Magnificent Seven Tools:

The Magnificent Seven	
<p>1</p> 	<p>Value Stream Maps to identify and remove delays in any process.</p> <p>Spaghetti Diagrams to identify and eliminate unnecessary movement of people or materials.</p>
<p>2</p>  <p>PivotTable</p>	<p>Excel PivotTables to summarize defect data. Every million-dollar improvement project I've ever worked on began with PivotTables.</p>

<p>3</p>  <p>Control Chart</p>	<p>Control Charts to measure and monitor the performance of any process.</p>
<p>4</p>  <p>Pareto Chart</p>	<p>Pareto Charts to identify the most common types of defects.</p>
<p>5</p>  <p>Histogram</p>	<p>Histograms to evaluate <i>deviation</i> in process performance.</p>
<p>6</p>  <p>Cause-Effect Diagram</p>	<p>Ishikawa diagrams to document the root causes of each "big bar" on the Pareto chart or out-of-spec products on the histogram.</p>
<p>7</p>  <p>Checksheet</p>  <p>Countermeasures</p>  <p>Action Plan</p>	<p>Matrix diagrams like check sheets, countermeasures and action plans to collect data and prioritize corrective actions.</p>

I have found that these seven tools can help teams solve 99% of the problems facing a typical business. Sure, you will need more exotic tools to solve problems in the last one percent, but you don't need them for a while.

Are you stuck trying to figure out what tools to use in what order? Try the Magnificent Seven to deliver breakthrough improvements. You'll be surprised how far you can go with just these tools.

The 4-Hour Lean Belt

Nike's slogan is "Just Do It!" For businesses, the new slogan is "Just Do It NOW!" Customers no longer want to wait for anything if they know it's possible to get it right now. So every business has two choices: 1) figure out how to deliver the product or service immediately or 2) wait for someone else to figure out how to *just do it now* and put you out of business. It only takes about four hours to start getting results.

Fortunately, the Toyota Production System (TPS a.k.a. Lean) has figured out how to simplify and streamline any business process to make it lightning fast. There's a simple acronym that covers the key elements of *just do it now*—DOWNTIME:

- **Delay** – Unnecessary delays between steps in a process
- **Overproduction** – making stuff that no customer has ordered
- **Waste and Rework** – caused by mistakes, errors, defects and deviation
- **Non-value added processing** (e.g., inspection and rework)
- **Transportation** – unnecessary movement of materials
- **Inventory** – unnecessary raw materials, work in process (WIP) or finished goods
- **Motion** – unnecessary movement of employees
- **Employee creativity** – unused wisdom of the workers

While most manufacturing companies have figured out how to optimize the production line using these tools, the vast majority of service companies are barely aware of how to simplify and streamline business operations. Based on my experience in all kinds of industries from healthcare to telecom to IT to manufacturing, a couple of key tools will slash the time it takes to do anything.

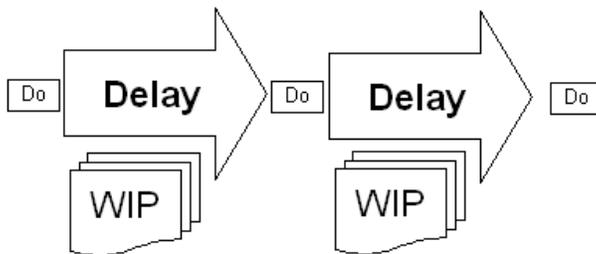
Delay

In most service businesses and the "back room" functions of all businesses (orders, invoicing, purchasing, payments, HR, IT, etc.), *unnecessary delays between steps* are the main cause of sluggish performance. Most business processes grow up in an ad-hoc fashion over time. To deal with inconsistencies, they develop too many workarounds and rework loops. And they suffer from too many *unnecessary* delays between steps.

When most people look at a process flow, they see a flowchart that looks like this:



I see something very different, huge delays and piles of unfinished work products—work in process (i.e., inventory):



There's very little actual “doing” in most processes and a whole lot of delay (i.e., waiting around). And most business processes do things in *big batches* so that there is always *work in process* (WIP) waiting for the next step in its development. Big batches supposedly create economies of scale, but all they do is create opportunities for mistakes, errors and additional delays.

This leads us to a few simple rules:

The 3-57 Rule: In most businesses, employees are only working on the product or service for 3 minutes out of every hour, leaving 57 minutes of delay. To this most managers will say: “But my people are busy!” Yes they are, but the *thing* going through the process isn't. It's idle 95 percent of the time—57 minutes per hour. Don't believe me? Start with any customer's order and follow it around. Bring a novel to pass the time.

The Dark Side of the 3-57 Rule: *Trying to make people faster is a waste of time,* because employees only account for 3 minutes out of every 60. Even if you make your people twice as fast, you'll only save 1.5 minutes per hour. You have to *make your lazy product faster* by eliminating the delays between processing steps.

Trying to make employees faster will only save three minutes out of every hour of elapsed time.

The 15-2-20 Rule: For every 15 minutes per hour you reduce those 57 minutes of delay, you will *double productivity and increase profit margins by 20 percent*. Since it's usually easy to eliminate these delays, it's possible to boost productivity two-four-eight fold and profit margins by 20-40-80-100 percent. With Lean tools it's easy to do this quickly.

The Dark Side of the 15-2-20 Rule: Every *increase* in delay *decreases* productivity and profitability. Example: approvals required before doing anything.

The 3x2 Rule: Reducing delays will enable any business to grow three times faster than their competition and double productivity.

The Dark Side of the 3x2 Rule: If you don't get faster, your competitor's will.

How do we achieve these breakthrough reductions in delay?

*At the heart of every difficult decision lie three tough choices: What to pursue versus what to ignore. What to leave in versus what to leave out. What to do versus what to don't. The key is to remove the stupid stuff: anything obviously excessive, confusing, wasteful, unnatural, hazardous, hard to use or ugly. **This is the art of subtraction.** – Matthew E May*

First, Simplify the Workspace

Any workspace collects clutter. The "5S" process is like spring cleaning. Just get a small team to spend a few hours to:

- **Sort** the needed from the unneeded (e.g., outdated forms, unused machines and materials, etc.). Dispose of the unneeded stuff.
- **Straighten** by making everything *visual and self-explanatory* (e.g., color-code things and label them).

- **Shine** – clean the workspace.
- **Standardize** the ongoing sorting, straightening and shining of the workspace.
- **Sustain** the simplification process by repeating every few months.

Once you've simplified the workspace using 5S, it's easy to redesign the workflow and workspace for optimal performance.

Then, Map the Value Stream to Reduce Delays

It's easy to eliminate delays. Simply flowchart or map the value stream. (Watch my video at www.qimacros.com/Moneybelt/lean-value-stream-map-patient-scheduling.html).

Put times on each *arrow* of the process. You'll quickly discover that most of the cycle time is consumed *between* steps.

There's only two main ways to radically speed up a process:

- Redesign the process to eliminate delays.
- Redesign the process to do some steps in parallel.

You should be able to eliminate 80-90 percent of the overall cycle time which will boost productivity and profits by 50 percent or more.

Four-Hour Kaizen: It only takes a handful of Post-it® Notes, a flipchart, a few workers and a maximum of four hours to diagnose and redesign most processes for improved efficiency and effectiveness.

Then Spaghetti Diagram the Workspace to Reduce Movement

Again, using Post-its and a flipchart, a handful of workers can diagram the workspace and movement of employees, customers and materials through the space. If you're not sure how to do it, just follow a variety of customer orders around the office, factory, hospital or other facility. An aptly named "spaghetti diagram" will rise from this analysis. www.qimacros.com/Moneybelt/lean-spaghetti-diagram.html

Simply rearrange processing "stations" to minimize movement of people and products. It's not unusual to reduce movement by 50 percent or more.

Then Shift from Economies of Scale to Economies of Speed

One of the secrets of Toyota's Production System is called *one-piece flow*. The idea is to get down to a batch size of one, not 100 or 1000. When you can make one of anything

immediately, you don't need any inventory. If Taco Bell can take a drive-through order, make a taco and a burrito, take payment and deliver the order in 180 seconds, why can't you do the same thing with whatever it is that you do?

What if you don't make anything? Sure you do. Every office worker produces forms. Service reps produce orders. Computers produce transactions (e.g., real-time vs batch).

Simply redesign the process to reduce batch sizes, ideally to a size of one. An exception to this rule might occur when customers always order 100 a month. From a load-leveling perspective, it may be more efficient to produce 25 a week.

I worked with a company that printed national magazines. They printed a million at a time (big batch). But the bindery could only glue or staple 200,000 a day (smaller batch). The other 800,000 (overproduction and unnecessary inventory) had to be stored somewhere (unnecessary movement), where they could be hit by passing forklifts (waste and rework). By switching to a *quick changeover process*, they could print 250,000 the first day and an additional 200,000 each subsequent day until they had met the volume required. This made it easier to schedule other, higher profit jobs between runs. It eliminated unnecessary inventory and motion. And, if they discovered a printing error in the bindery (waste and rework), they didn't have to reprint the entire magazine run.

I worked with a hospital lab. We had the lab techs wear pedometers for a week and record their travel distances. Techs were walking *two-to-four miles a day* (unnecessary motion) in the 2400 sq. ft. lab. By rearranging the machines in the lab, putting the highest volume ones into work cells, we were able to reduce movement by over 50 percent saving an estimated seven hours of delay per day, accelerating diagnosis, treatment and discharge of patients. www.qimacros.com/Moneybelt/lean-spaghetti-diagram.html

I worked with a computer operations group that couldn't get nightly batch processing done in time to bring up the online systems in the morning. They thought they were going to have to buy a new mainframe computer at a cost of several million dollars. After laying out the nightly process, we found 32 decision points where the process waited on a technician to verify and release the next job in the string. A new employee suggested that the computer's operating system could handle most of these checks (employee wisdom). By giving 30 of the 32 decisions to the computer system, *the nightly batch run fell from*

nine hours to just one. qimacros.com/Moneybelt/value-stream-mapping-computer-operations.html

These are the kinds of opportunities that exist in every business.

So there you have it, the essence of Lean. There's a lot more depth to be explored, but for most companies, delays are the number one problem. Once those are gone, you'll be ready for ways to reduced unnecessary movement of people and materials. When that's done, you can refine the steps in the process, but first, spend some time simplifying and streamlining the existing process. And there are added benefits.

Lean's Secret Byproduct

One of the lesser known byproducts of simplifying and streamlining the process is a 50 percent reduction in defects. When employees don't have to pick up where they left off, remember where they were, do something and set the product or service back down to wait for the next step in processing, when they can handle it using one-piece flow, they have *no* opportunity to make a mistake, miss a step or do a step twice. The chance of error falls dramatically.

People sometimes ask: "Jay, should I start with Lean or Six Sigma?" I say if delays are costing you customers, start with Lean. Defect reduction is a byproduct. It doesn't take a lot of fancy tools or methods. The process is simple.

Lean: Simplify and Streamline the Process

1. 5S the workspace.
2. Map the Value Stream paying special attention to the delays between work activities.
3. Map unnecessary movement of people and products using a Spaghetti Diagram.
4. Redesign to eliminate the delays.
5. Redesign to eliminate unnecessary movement.
6. Redesign for one-piece flow.
7. Repeat until you can *just do it now!*

Video Learning (one hour)

Watch the Lean Videos at: www.qimacros.com/Moneybelt/lean-video.html

Practice (one hour): Use Post-it Notes to lay out a value stream map (process) and/or spaghetti diagram (workspace) of one of your processes. How would you change it to eliminate DOWNTIME?

Improvement Team (two-four hours): Gather a team to reduce delays and movement in one of your key processes. Use Post-it Notes to develop the before and after value stream map and/or spaghetti diagram. Implement changes immediately or develop an action plan to implement them within the next week.

The 4-Hour Six Sigma Black Belt

Learning effectively requires massive elimination and removal of options.
–Timothy Ferriss

Can you learn *every* method and tool of Six Sigma in four hours? Of course not. Can you, however, learn the Magnificent Seven tools that will solve 99 percent of the key business problems? You bet. And, with the right technology, you can learn them in less than four hours and start making immediate improvements.

There is simply no limit on better. -Matthew E. May

Defects

Where Lean focuses on the delays *between* process steps, Six Sigma focuses on the steps where defects and deviation occur. Defects and deviation are the enemies of productivity and profitability. A defective product is infinitely more costly than one that works right the first time. Like it or not, every process produces defects. Defects aren't spread all over a company like cream cheese on a bagel. They are more like mold growing in one corner or another. To eliminate defects requires laser focus, which brings us to the 4-50 Rule.

The 4-50 Rule: Four percent of any business (one step out of every 25) causes over 50 percent of the mistakes, errors, hitches, glitches, waste and rework. Simple tools like control charts and Pareto charts can laser focus improvement efforts on just the four percent causing the bulk of the problem. A SWAT team of employees can usually figure out the root causes and countermeasures to solve the problem in a matter of hours.

www.qimacros.com/Moneybelt/six-sigma-4-50-rule-video.html

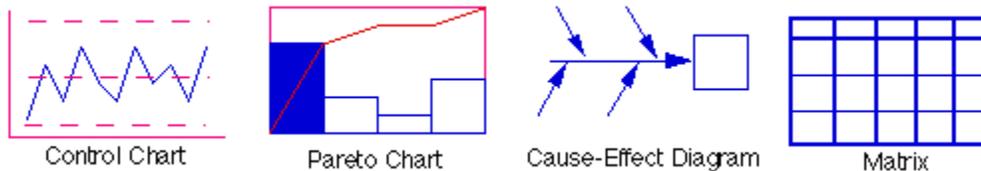
The Dark Side of the 4-50 Rule – 50 percent of an unfocused, widespread Six Sigma effort will only yield 4 percent of the benefit which leads to cancellation of Six Sigma. Don't let this happen to you; use data (i.e., facts and figures) to laser-focus the improvement effort for maximum results with minimum effort.

Six Sigma Tar Pit: Trying to create a new *measurement* system. If defects matter to the business, someone is already tracking them. Use the data that's already available to save time and start getting results immediately.

Every million-dollar improvement project I've ever worked on began with Excel PivotTables. So to maximize the results from Six Sigma, you may first need to summarize your data using PivotTables.

www.qimacros.com/Moneybelt/pivortable-examples.html

Once you have summarized the data, finding and solving problems with defects involves four main tools used in this order: 1) control charts, 2) Pareto charts 3) Ishikawa or fishbone diagrams and 4) matrix diagrams (countermeasures and action plans). The QI Macros can create these easily in Microsoft Excel. Download a 90-day trial at www.qimacros.com/trial/demystified.



First, Chart Your Performance

Begin by tracking the number of defects (mistakes, errors, or glitches) that occur *over time*. Control charts, like a heart monitor, will track the rise and fall of defect rates, identifying when a process starts to get into trouble and enable rapid response to prevent a catastrophic failure.

For non-manufacturing companies, the most common control chart will be the XmR (individuals and moving range) chart. This chart can monitor cycle or turnaround times per order. It can monitor defect rates (defects per 100, 1000 or 1,000,000 units). It can monitor costs like billing adjustments. Attribute charts like the c, p and u charts can also monitor defects, but first master the XmR.

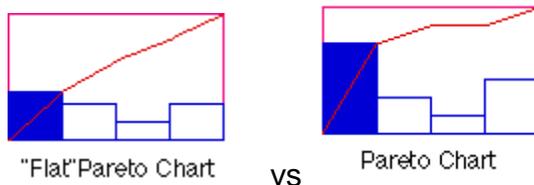
www.qimacros.com/Moneybelt/control-chart.html.

Then, Narrow Your Focus

Once the process is stable, count and group defects into various types or categories. These show up on a Pareto chart as the “big bars.” A few “big bars” out of many indicates that there are one or more problems to solve.

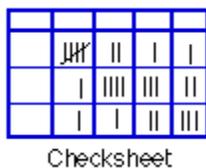
www.qimacros.com/Moneybelt/pareto-chart.html

Six Sigma Tarpit: If all the bars are of equal height (a flat Pareto), there is nothing special going on. You haven’t found the 4% causing 50% of the defects. Trying to solve problems based on a “parflato” chart is a waste of time, but teams often try:



Data Collection

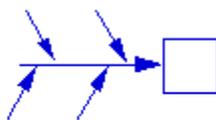
Given a sufficient data about defects, this analysis can be done in a matter of minutes or hours. If not, it may take a week or two of collecting data to enable analysis, but it doesn’t take months or years. You don’t have to wait on measurement systems to be built and installed. Simple manual data collection using a check sheet will suffice.



Checksheet

www.qimacros.com/lean-six-sigma-articles/data-collection

Fishbone or Ishikawa Diagrams



Cause-Effect Diagram

Each “big bar” of the Pareto chart becomes the head of a fishbone, Ishikawa or cause-effect diagram. Once you know what problem you’re trying to solve, it’s easy to figure

out who should be on the root cause analysis team. Until you've narrowed your focus using control and Pareto charts, *it's impossible to know who should be on a team!*

www.gimacros.com/Moneybelt/root-cause-analysis-video.html

Six Sigma Tar Pit: Never convene a team without a laser-focused problem to solve or they will be much more likely to fail and discredit Six Sigma.

SWAT teams meet for a few hours to identify the *root causes* of the problem and *countermeasures*. Disband the root cause analysis team and form an implementation team. Choose a project manager to run the implementation. Keep your Money Belt's focused on solving problems, not implementing solutions.

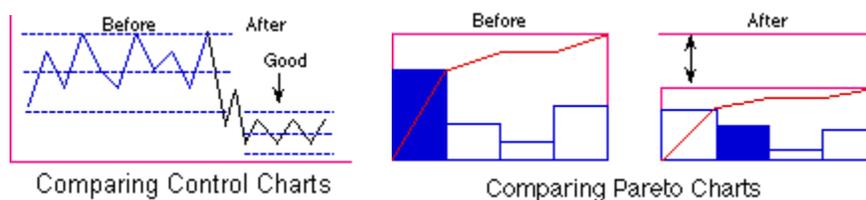
Six Sigma Tar Pit: If the team starts *whalebone diagramming*—filling a conference room with sheets and sheets of causes, the problem wasn't narrowly focused enough using Pareto charts. **Stop!** Back up. And narrow the focus using additional Pareto charts.

Implementation

Depending on the changes required, the implementation team may include some or none of the root-cause team's members. Implementing countermeasures can take minutes or months. Simple process changes can be implemented immediately. IT system changes may take months to schedule, test and implement.

Validation

Once the countermeasures have been put in place, just track the defect rates and types to determine if the problem has been reduced or eliminated.



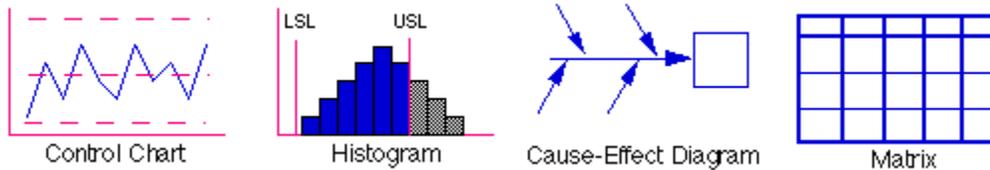
If performance has improved, great! If not, the team didn't find the real root causes. If the error rate has fallen to zero (perfect), stop, otherwise analyze the next "big bar."

A defect-reduction project should be able to figure out how to eliminate defects in a few hours, not months or years. Using data to laser-focus the improvement is the key to pinpointing and eliminating defects.

Deviation

In a manufacturing environment, Six Sigma focuses on reducing *variation*, but I think that variation sounds too benign. *Deviation* points to the product or service deviating from the perfection customers now expect. Deviation results in warranties, recalls, returns, scrap, waste and rework that devour productivity and profitability.

Finding and solving problems with deviation involves four tools used in this order: 1) control charts, 2) histograms 3) fishbone diagrams and 4) matrix diagrams (countermeasures and action plans). The QI Macros can draw these charts easily in Microsoft Excel. Download a 90-day trial at www.qimacros.com/trial/demystified.



In service industries, most deviation involves cycle time or turnaround time. In other words, it takes too long to deliver the service. Lean can slash cycle time by eliminating unnecessary delays and movement. Control charts and histograms are excellent ways to display improved performance. Mapping the value stream or process flow will be the quickest way to solve these problems. Again, get process subject matter experts in a room for a few hours to map the current process and redesign to eliminate delays, eliminate unnecessary movement, eliminate inventory and deliver one-piece flow.

In manufacturing, deviation involves adjustments in methods, materials and machines to perfect the product. If you're in manufacturing, you already probably know how to do this or you would be out of business. However, you may still have too many

problems caused by order errors, billing errors, etc. Focus the tools of quality on *all* of the support functions that turn your perfect product into a nightmare for the customer.

First, Analyze Current Performance

Manufacturing companies use XbarR charts and histograms to monitor stability and capability of production processes that suffer from deviation.

www.qimacros.com/Moneybelt/six-sigma-spc-auto-xbarr-chart-video.html

QI Macros histograms provide two key indicators of how well a product meets the customer's requirements: Cp and Cpk. Cp evaluates if the process will fit *within* the customer's specifications. Cpk evaluates how *centered* the process is on the target value. Cp and Cpk should be greater than 1.33 (4-sigma), preferably 1.66 (5-sigma) or 2.0 (6-sigma).

www.qimacros.com/Moneybelt/six-sigma-spc-histograms-Cp-Cpk-video.html

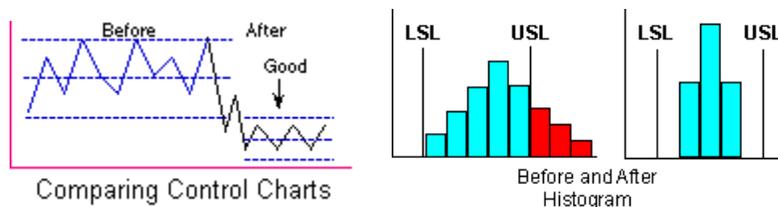
Service companies will most often use an XmR chart to analyze turnaround times. Histograms will show how close each process comes to delivering the service *now*.

Then, Analyze Causes of Deviation

SWAT teams analyze root causes of deviation using Ishikawa or fishbone diagrams. This can be done in a matter of hours.

Validation

Once countermeasures have been put in place, teams track deviation to determine how much the problem has been reduced or eliminated.



If performance has improved, great! If not, the team did not find the real root causes. If the deviation has fallen to zero (perfection in Six Sigma is 3.4 defects per million), stop, otherwise continue analysis.

The Journey to Perfection (Six Sigma)

Most companies think that because it's taken a long time to get to their current level of quality that it will take a lot longer to get to Six Sigma. Not true. By laser-focusing improvements on the 4% of the business producing over 50% of the defects and deviation (4-50 Rule), companies can go from their current 3-sigma performance to 5-sigma performance in 18-24 months.

Don't try to fix everything; just fix the "vital few" things of critical importance.

Once a company has made the leap from 3-to-5 sigma, the next step will involve developing more expertise. In the rise from 3-to-5 sigma, employees with the drive and passion required to become a Six Sigma Black Belt will become apparent. Send them to advanced training and focus their attention on the next round of improvement projects. Going from 5-to-6 sigma will take a greater depth of methods and tools than are presented here.

Video Learning (2-3 hours)

Watch the Six Sigma videos and case studies at: www.qimacros.com/Moneybelt/toc.html

Do the practice exercises using the QI Macros to practice creating control charts, Paretos and histograms.

Data Analysis (one hour): Find some data about defects, mistakes and errors in your business. Use the QI Macros to create a PivotTable (defects), control chart (defects or deviation) and Pareto (defect types) or histogram (deviation) of the process. Then figure out who should be on the root cause analysis team.

Improvement SWAT Team (two-four hours): Gather a team to reduce defects or deviation in one of your key processes. Use the data analysis—control charts, pareto charts or histograms—to laser-focus the improvement effort. Conduct a root cause analysis. Use an Ishikawa/fishbone diagram to show the results of root cause analysis. Use countermeasures and action plans to plan the improvements. Implement changes

immediately or develop an action plan to implement them within the next week. Use the same control chart and Pareto/histogram to verify that the improvement worked.

Certification: Once you've successfully completed an improvement project, submit it for Green Belt Certification following the rules at: www.qimacros.com/services/six-sigma-certification. Then do another project and submit it for Black Belt Certification.

Mistake-Proof Lean Six Sigma Implementation

Let's face it, nobody wants Lean Six Sigma. Companies want the bottom-line, profit-enhancing results they think Lean Six Sigma will deliver.

Companies are asking: "Isn't there a better way to implement Lean Six Sigma?"

The 10-to-20 day "belt" certifications that span several months are too expensive and slow for most companies recovering from the recession. I say: "Companies don't need lots of training and belts; they need '4-Hour Black Belts' who can find ways to save time and money and add those savings to the bottom line. To make it easier for employees and companies to deploy Six Sigma without the high costs, I've put up a complete, no-cost, four-hour Money Belt video training at www.fourhourblackbelt.com.

Companies are asking: "How soon can I get results?" Most Six Sigma folklore suggests it will take months or years. I say: "Five days." I have helped teams solve million-dollar problems in anywhere from a few hours to a few days using [Lean Six Sigma Demystified](#). I helped one hospital system save \$5 million a year in just five days using [Lean Six Sigma for Hospitals](#).

Companies are turning away from certifying "belts." Healthcare companies are training "improvement advisors" rather than certifying belts because adding certifications to an employee's resume leads to turnover, not improvement. Since the recession, companies would rather hire Six Sigma expertise than spend time training existing employees.

Companies are balking at buying expensive Six Sigma software. Six Sigma trainers across America have been calling about the QI Macros because their clients are asking for more affordable Six Sigma software that works in Excel. The [QI Macros](#) are an easy-to-use Excel addin that will do all of the math, graphs and statistics for Six Sigma. Companies can buy 10 copies of the QI Macros for the price of a one copy of most other Six Sigma software packages.

Employees balk at learning Six Sigma formulas and statistics. I say: "You don't need to know electrical engineering to turn on a light switch. So, you don't need to be a

statistician to do Six Sigma. Drawing charts and graphs should be as easy as clicking your mouse." The QI Macros have four powerful "wizards" that demystify data analysis, statistics and charts.

Lean Six Sigma needs to drink its own Kool-Aid and slash cycle time, defects and deviation to achieve results faster than most people believe is possible.

Start Using the Magnificent Seven Tools to Solve Problems Now!

What are you waiting for?

- You can learn the Magnificent Seven methods and tools in day.
- It doesn't cost a fortune. It's *free* at www.fourhourblackbelt.com.
The training is FREE. Certification, however, will incur a small fee.
Start with the Yellow Belt Certification.
Do a project and submit it for Green Belt Certification.
Do another project and submit it for Black Belt Certification.
- Your software should do most of the thinking for you. It should help you select the right chart, analyze the data and point you in the right direction. And it shouldn't cost a fortune. Download a 90-day trial at www.qimacros.com/trial/demystified or buy a copy at www.qimacros.com/store.

Do you have the desire and drive to be a Money Belt?

Get started now at www.fourhourblackbelt.com.