

# Lean Six Sigma ?

## Bringing Lean systems thinking to Six Sigma

For years companies have struggled with the dilemma of which quality improvement program to use: lean or Six Sigma. While some are still debating the either/or issue, others have come to realize that lean tools and Six Sigma work well together to achieve quick process improvements and greater product consistencies - the answer Lean Six Sigma.

This is true particularly if you subscribe to a top-level and often misunderstood and misaligned definition of each. Lean equals zero waste. Six Sigma equals zero variation. Certainly there's some overlap here because lean includes variation elimination as well, but the point is, you really can't separate the two when it comes to developing an overall improvement effort.

Lean encourages action along a broad front by empowering people at all levels to contribute. This allows organizations to welcome challenges and implement improvement initiatives. Of course, improvement starts by using the appropriate tools. We're all familiar with the results of lean tools and practices such as process mapping, kanban, kaizen and 5S. Kaizen can help us standardize a process or eliminate waste, and often we see results within days. 5S can help us structure our environment so that problems can be identified more quickly. Lean Six Sigma is the obvious answer.

Six Sigma brings the discipline of define, measure, analyze, improve and control, as well as the rigor of statistical analysis, to identify a root cause, sustain improvement and provide the solid measurements that create a balanced scorecard. Most of us know by experience that Six Sigma is a solid, scientific methodology for reducing process variability. Process variability affects quality because the more you reduce variation, the more likely it is that the process will produce a good product. It's not just quality, though. Variation reduction also affects the entire value stream (a uniquely lean view) because reducing variation will provide more consistent yields, which means that you can predict what you will get out based on what you put in. Therefore, you can design your process to flow more continuously, with less just-in-case inventory and improved lead times. Very often this is an underappreciated benefit of reducing variation. Lean Six Sigma is the obvious answer.

If we look at improvement through *lean Six Sigma* lenses, we have the necessary tools, methods and strategies to not only uncover root causes, but also to pay attention to the obvious. In the old days, this was known as "common sense," and as Mark Twain once observed, "There's nothing common about common sense anymore."

Lean Six Sigma, A winning combination For many of us, it's no longer a matter of lean vs. Six Sigma, but one question still remains: How do we integrate the various efforts at improvement to deliver sustainable results using Lean Six Sigma?

To answer this question, we have to know how companies fail at integrating lean and Six Sigma. One major way of failing is to do this improvement work strictly for the sake of lean or the sake of Six Sigma. These are the wrong reasons. Companies should execute lean and Six Sigma for the sake of business results. If leaders don't clearly provide a "why" and "how" for lean and Six Sigma, the focus will not be on leveraging the methods for business results.

The second most common way companies fail is in choosing a few tools—whether lean, Six Sigma or something else—and drastically overusing them. An example of this is the overuse of kaizen. There are no magical tools that can do all things. It takes the right tool at the right time. If you can't find a tool to do what you need, you shouldn't force-fit one. Develop your own tool to accomplish what you need using the Lean Six Sigma methodologies and some degree of intelligence.

A major utility company that leveraged its improvement project selection criteria for business results used the right combination of lean tools and Six Sigma to solve a problem with respect to third-party billing. Challenged with improving the billing process, eliminating the defect and retrieving lost revenue, the company assembled a team consisting of a lean Six Sigma Black Belt from finance, a Green Belt from the pole yard, a pole yard foreman and various yard personnel. One of the first steps was a kaizen workshop where the current state was documented through a series of process maps. Next, waste and nonvalue-added activities in the current state were identified. From that information, the team worked to redesign a more ideal state. At that stage, specific lean tools such as one-piece flow, 5S, visual control, control point standardization and error proofing were used. Proving that Six Sigma can be equally effective outside the manufacturing arena, the company also used tools such as FMEA and hypothesis testing to understand, measure and systematically reduce the variations in the billing process. The result? A \$1.4 million revenue enhancement from using the combined effort of Lean Six Sigma.

Another example is that of a food company that wanted to improve its processing. Like the utility company, this organization was focused on business results and used both lean tools and Six Sigma to realize them. For the Six Sigma initiative, one of its suppliers even loaned it a Black Belt to help establish baseline data on its equipment.

This company was faced with a regulation that required it to completely purge, clean and check its system every 72 hours to test for bacterial growth before running production again. This cleaning process was taking too long, chewing up capacity and resulting in back orders and quality issues. The challenge was to reduce the 10-hour cleaning cycle time without sacrificing the quality of the product or equipment.

The company mobilized the key people involved with the process and attacked the problem like a NASCAR racing team pit crew. The crew was coached by a lean Six Sigma Black Belt using process mapping, lean layout, visual management with digital cameras and process capability analysis in the product packing area. Cycle time was reduced by more than two hours, and improvement in the overall capability of the packaging line equaled an additional increase in annual production of more than 30 percent. All backlog was eliminated.

Lean systems thinking Chances are you've never sat on a two-legged stool, and with good reason: It's tough to do when you can't find the right balance - Lean Six Sigma.

Balancing lean and Six Sigma in your operation might give you the best of both worlds, but not the best of all worlds. Without a third essential component, real success doesn't have a leg to stand on (pardon the pun). The cultural transformation brought on by lean leadership and lean systems thinking within an organization provides the long-term stability—or balance—necessary to sustain your quality improvement efforts.

Whatever combination of lean tools and Six Sigma you're using, when it comes to quality improvement, they work. This is good news, but it's not the whole story.

The real "Aha" moment for companies comes when lean systems thinking is factored into the quality improvement equation. Lean systems thinking is about empowering people to drive change. This is accomplished by following these five key principles:

1. Directly observe work as activities, connections and flows
2. Systematically eliminate waste
3. Establish high agreement of both what and how
4. Systematically solve problems
5. Create a learning organization

The fundamental message here is simple, yet not universally understood. No technique, tool or methodology alone can improve a process or system and sustain that improvement long-term. It takes lean systems thinkers to successfully implement lean tools and drive Six Sigma change.

To see lean systems thinking as a distinct leg in our stool analogy—separate from lean tools and as a companion to Six Sigma—is to understand that it's not just a series of events or methodologies that contribute to problem fixes. These efforts often lead to what we call the three Fs of improvement: frustration, flavor of the month and, ultimately, failure to deliver sustainable results.

Lean rules provide the guidance needed to implement improvement, explaining the "why" behind lean tools and the Six Sigma methodology. Lean rules also help develop new solutions to problems. For everyone in an organization, these rules help structure activities, connect customers and suppliers, specify and simplify flow paths, and bring improvement through experimentation at the right level.

Imagine driving in your car. You have all the tools at your disposal: an easy-to-read speedometer, a clear windshield with an accurate view of the speed limit sign, a smooth accelerator pedal and even cruise control. However, if the principles or beliefs of the driver are inconsistent with the correct use of these tools, there's very little chance that individual will stay within the speed limit. No amount of tools or rules will change people's behavior. They can guide, coax, constrain and aid, but they cannot change how someone acts. Only by changing their beliefs can you change their actions for good.

Lean tools and Six Sigma initiatives can help us change the way we do things, but without a mechanism such as lean systems thinking to align the organization's goals and objectives for the most effective application of these tools, an improvement strategy won't be complete.

The best of all worlds - Lean Six Sigma.

Consider one plant manager who recently bought a new piece of equipment designed to increase production by 30 percent and free up 3,000 square feet of floor space. While he couldn't wait to get it into his shop, he wondered how he would get the equipment up and running without causing order delays or increasing his number of defects, which averaged about 2.5 percent.

With the assistance of a lean Six Sigma specialist, the plant manager trained, engaged and empowered a cross-functional team to accomplish this mission. On the lean side, the team's efforts included a kaizen workshop, waste walks and process mapping. As for Six Sigma, the team performed process capability studies, looked at quality data for defect identification and did baseline metrics for all product lines.

The team was also introduced to lean systems thinking. With an understanding of the current state, the team established an ideal vision and developed an action plan. This process improvement plan encompassed input measurements around safety, delivery and cost—all of which directly affected output. The team is now implementing a complete layout of the shop floor and undertaking a substantial 5S effort to uncover other improvement opportunities. All of this has been done, by the way, during the company's SAP implementation, which included the introduction of bar coding on the shop floor.

It seems like an impossible task, but the balanced effort provided by lean tools, Six Sigma and lean systems thinking is helping to accomplish it in a smooth, undisruptive manner. Thanks to the third leg of our proverbial stool, the team approached the challenge systematically, with a shared vision.

Successful quality improvement involves using all the tools and methodologies at your disposal. Traditional lean efforts will help you reduce flow time and waste, leading to improvements that will boost overall quality. Six Sigma, with its focus on statistics, will help you deliver a more consistent product. But to fully support your long-term goals, you need the all-important third component: the cultural change that comes with adopting lean rules, principles and vision.

About the authors Paul Mullenhour is a senior management consultant with Achievement Dynamics and a partner of The Lean Learning Center. He provides consulting services, training and education in a wide variety of areas, specifically lean manufacturing and Six Sigma. He has more than 20 years of experience in all aspects of developing and implementing quality improvement. Mullenhour is a graduate of the Goldratt Institute and is a certified Master Black Belt.

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