Choosing the Right Approach for Business Process Review

By Bruce Haghighat

When an organization decides to review its business processes, one of the first questions is which method to use. Two names dominate the conversation: Six Sigma, the defect-reduction discipline made famous by Motorola and GE, and Lean Six Sigma, which combines Six Sigma's statistical rigor with Lean's relentless focus on speed and waste.

The short answer: for most business process reviews, Lean Six Sigma is the better choice. Six Sigma asks, "Is this process producing errors?" Lean Six Sigma asks that question too, but it also asks, "Why does this process take so long, and which steps should not exist at all?" In most organizations, the second question uncovers more value, faster.

That does not make Six Sigma obsolete. There are situations, mostly in high-volume, precision-driven operations, where pure Six Sigma remains the sharper tool. This article explains how the two approaches differ, what the evidence shows, and how to decide which one fits a given review.

Two methods, two starting points

Six Sigma was developed at Motorola in 1986 and later popularized by AlliedSignal and GE (iSixSigma). Its premise is that most quality problems come from variation: a process that produces slightly different results each time will eventually produce results that fall outside what the customer accepts. Six Sigma teams follow a five-phase cycle called DMAIC (Define, Measure, Analyze, Improve, Control) and rely heavily on statistics to find the root causes of variation. The name refers to the goal: a process so consistent that it produces no more than 3.4 defects per million opportunities.

Lean grew out of the Toyota Production System. Rather than focusing on defects, it focuses on flow. Lean practitioners map each step of a process and sort it into work the customer would pay for and work the customer would not, such as waiting, rework, unnecessary handoffs, excess inventory, and extra approvals. The goal is to remove the second category so work moves quickly from start to finish.

Lean Six Sigma joins the two. The term was popularized by Michael George's 2002 book *Lean Six Sigma*, which argued that each method covers the other's blind spot: Six Sigma makes a process accurate, and Lean makes it fast (iSixSigma). Lean Six Sigma projects still

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follow DMAIC, but teams use Lean tools such as value stream mapping and rapid improvement events alongside statistical analysis.

Side by side

The two methods share a structure but aim at different problems. The table summarizes the main differences a process review team will notice.

	Six Sigma	Lean Six Sigma
Core question	Why does this process produce errors?	Why is this process slow, wasteful, or error-prone?
Main target	Variation and defects	Waste, delay, and defects
Headline metric	Defects per million opportunities (sigma level)	Lead time and process cycle efficiency, plus sigma level
Signature tools	Statistical analysis, hypothesis testing, design of experiments, control charts	Value stream mapping, 5S, pull systems, rapid improvement events, plus the Six Sigma toolkit
Typical project pace	Months, data collection first	Days to weeks for many fixes; months for complex root causes
Who leads	Highly trained Black Belts and Green Belts	Belts plus frontline teams in short workshops
Best suited to	High-volume, repeatable processes where errors are costly	Most business processes, especially those with long wait times or many handoffs

The most important row for process review is the first one. Six Sigma assumes the process is basically right and needs to be made more consistent. Lean Six Sigma starts by questioning whether each step should exist at all, which is exactly the question an outdated process needs.

What the evidence shows

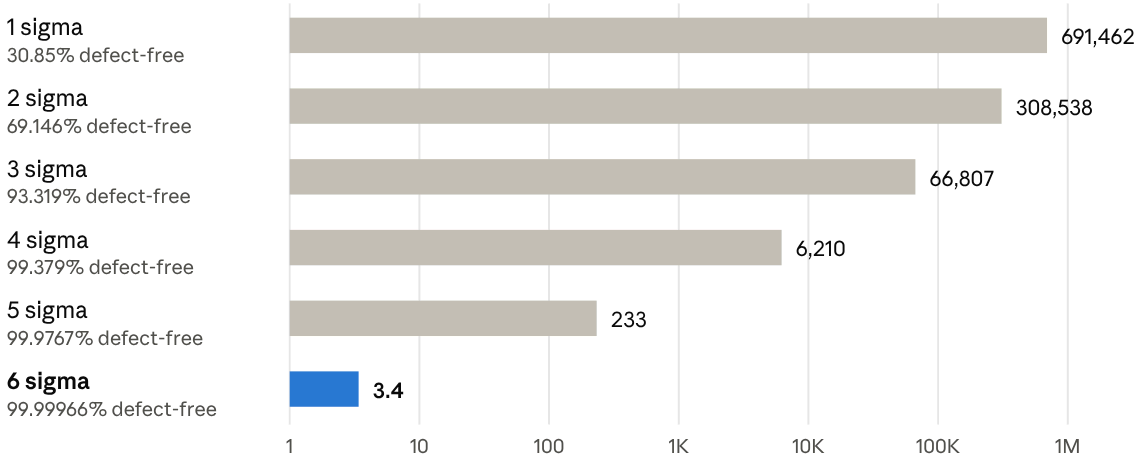
Each method has its own yardstick. Six Sigma rates a process by how many defects it produces; Lean rates it by how much of its elapsed time actually adds value. Looking at both reveals why they suit different problems.

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The sigma scale. Six Sigma converts a process's error rate into a sigma level. The higher the level, the fewer defects, and each step up is harder to reach than the last.

Each step up the sigma scale cuts defects more steeply, ending at 3.4 per million

Defects per million opportunities by sigma level (log scale), with the share of output that is defect-free

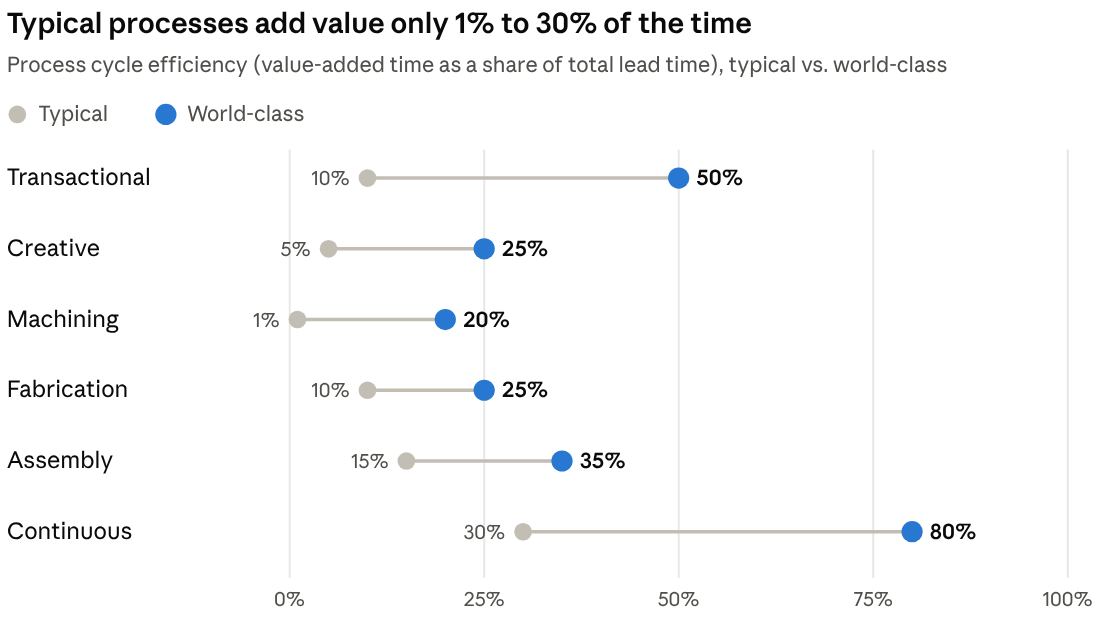


iSixSigma, Sigma Performance Levels · standard table with the conventional 1.5-sigma shift

The climb from four to six sigma is where Six Sigma's statistical tools earn their keep, and it is essential when a single defect is expensive, such as in aircraft parts or microchips (iSixSigma). But for an expense-approval or customer-onboarding process, moving from four to five sigma rarely matters as much as how long the process takes.

Process cycle efficiency. Lean measures the share of a process's total lead time that is spent actually adding value. Michael George, who popularized Lean Six Sigma, found that most processes run at efficiencies far below what is achievable (Quality America).

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Quality America, citing Michael George, Lean Six Sigma (McGraw-Hill, 2002) · 6 process types

The transactional row is the one most office processes fall into: work moves forward only about one-tenth of the time, and the rest is spent waiting in queues, inboxes, and approval chains. A Six Sigma project that eliminated every error would leave that waiting untouched. A Lean Six Sigma project goes after it first.

Case results from the field

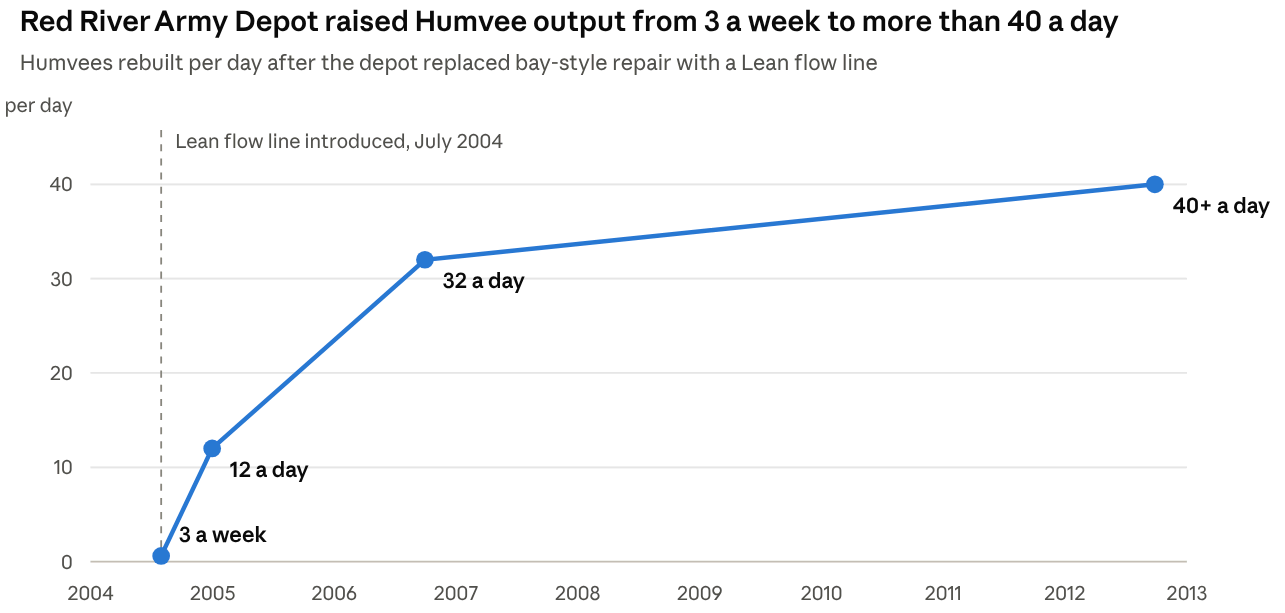
Both methods have produced large, documented gains. What differs is where the gains come from.

GE: Six Sigma in industrial manufacturing. GE adopted Six Sigma in 1995 and reported that annual savings grew from about $0.2 billion in 1996 to $2 billion in 1999, against roughly $0.6 billion invested that year (iSixSigma). Those savings came largely from making high-volume manufacturing and service processes more consistent, which is Six Sigma's home ground.

U.S. Army: Lean Six Sigma in defense operations. The Army deployed Lean Six Sigma across the force in 2005. By fiscal 2013 it had trained more than 11,000 practitioners who ran over 2,000 projects a year, saving more than $1 billion and avoiding more than $5 billion in costs that year alone. Army Materiel Command completed 717 projects with $87.7 million in financial benefits, about 4.6 percent of its budget (U.S. Army).

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The Army's Red River Army Depot in Texas shows how much of that value came from flow rather than error reduction. In 2004 the depot rebuilt each Humvee in a single repair bay, and by the end of July it was completing only three vehicles a week. Teams then redesigned the work as a moving line, with a different repair function at each station (U.S. Army Materiel Command).



U.S. Army Materiel Command, "Red River Army Depot exceeds previous Humvee production efforts" (October 2012) · 4 milestones, 2004–2012

Boeing: Lean in aerospace. Applying the same flow principles to 737 final assembly, Boeing cut assembly time in half, to 11 days, and reduced work-in-process inventory by 55 percent between 1999 and 2005 (Boeing).

The pattern is consistent. GE's gains came mainly from making processes more consistent. Red River's and Boeing's came from making work flow, by removing waiting, handoffs, and idle inventory that no defect-reduction effort would have touched.

Where Six Sigma alone still wins

Pure Six Sigma is the stronger choice when the main problem is inconsistency rather than slowness. That usually means:

- **High-volume, precision work.** In semiconductor fabrication, machined components, or chemical processing, a process may run millions of times, and a tiny variation in temperature or tolerance can scrap an entire batch. Here the statistical depth of Six

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Sigma pays for itself. Motorola, where the method was born, built it to improve electronics manufacturing.

- **Processes that are already lean.** If a value stream has been mapped and the waste removed, the remaining gains come from tightening variation, which is Six Sigma's specialty.
- **Problems with unclear causes.** When defects appear without an obvious pattern, designed experiments and regression analysis can isolate interacting causes that a whiteboard session will miss.
- **Rich, reliable data.** Six Sigma depends on measurement. Where sensors and systems already capture detailed process data, its tools can be applied quickly.

Even 3M, which famously pulled Six Sigma out of its research labs, kept it in its factories, where consistency is exactly the goal (Fortune). The lesson is not that Six Sigma fails, but that it is a specialist's tool.

Why Lean Six Sigma is the better default for process review

A business process review is rarely about fine-tuning a well-designed process. More often it is about discovering that a process has accumulated steps, approvals, and delays that no longer serve anyone. Four reasons make Lean Six Sigma the better fit for that job.

It finds the biggest losses first. In most processes, the largest cost is not defects but waiting. When value-added time is often 10 percent or less of total lead time, a method that only reduces errors leaves the other 90 percent untouched. Lean Six Sigma attacks that time directly.

It questions whether a step should exist. Six Sigma can make an unnecessary approval step more consistent. Lean Six Sigma asks whether the approval step is needed at all. For processes that have drifted over the years, removal often beats refinement.

It delivers results faster. A traditional Six Sigma project typically spends weeks collecting data before changing anything. Lean's rapid improvement events can redesign a process in days, and those early wins build the momentum a review program needs to survive.

It protects flexibility and creativity. Six Sigma's emphasis on reducing all variation can backfire outside the factory floor. At 3M, after Six Sigma was applied to research and development, the share of revenue from products launched in the previous five years fell to 21 percent by 2005, well below the company's 30 percent goal. After the method was

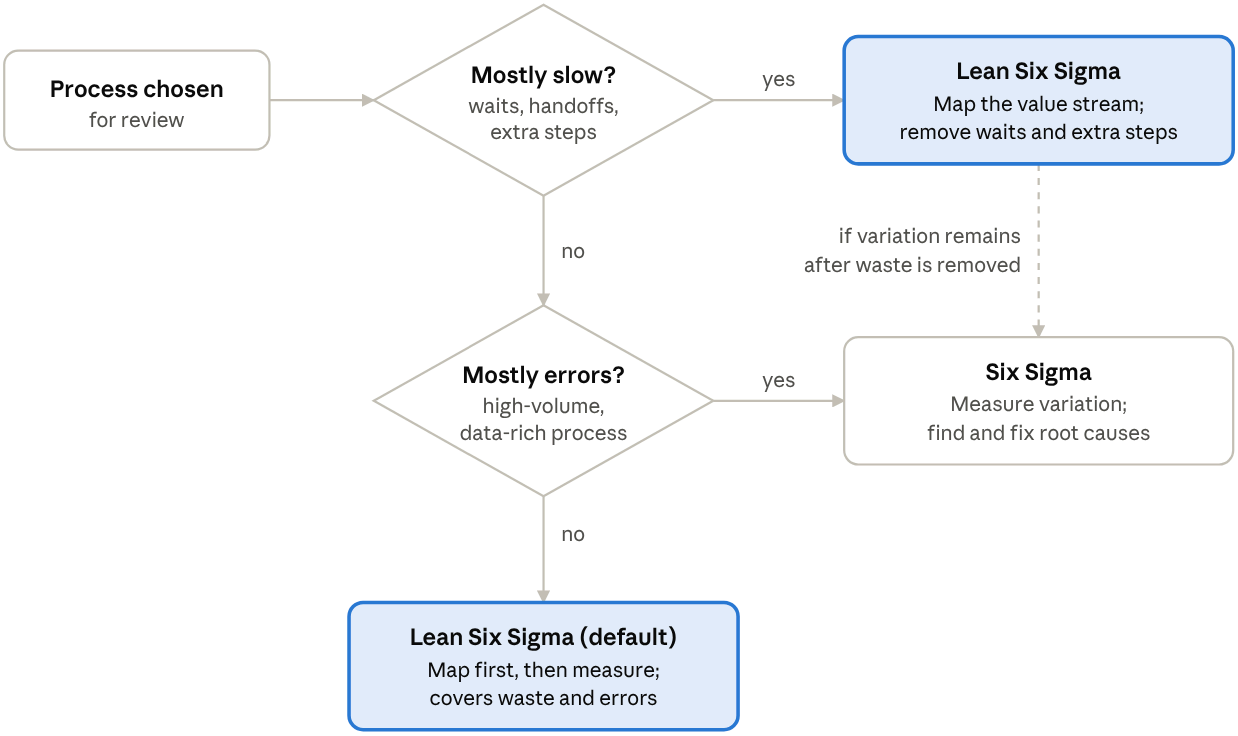
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removed from the labs, that share recovered to 30 percent by 2010 (Fortune). Lean Six Sigma's focus on flow and customer value is generally a better match for knowledge work, where some variation is the point.

Choosing an approach

Two questions settle the choice for most process reviews: is the process mainly slow, and is it mainly producing errors in a high-volume, data-rich setting?

Start with Lean Six Sigma unless errors in a high-volume process are the main problem



decision guide · 2 questions, 3 starting points

The dashed path matters as much as the starting point. Many reviews begin with Lean Six Sigma, clear out the waste, and then find that the remaining problem is variation. At that point, the deeper statistical tools of Six Sigma become the right next step, which is exactly why the combined method includes them.

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Conclusion

Six Sigma and Lean Six Sigma are not rivals so much as tools of different widths. Six Sigma is a precision instrument: unmatched when the problem is variation in a high-volume, data-rich process. Lean Six Sigma is the broader toolkit: it asks whether each step should exist, removes the waiting that consumes most of a process's time, and still brings statistical rigor to bear when defects are the real issue.

For the typical business process review, where the goal is to find out whether processes are still relevant, efficient, and effective, Lean Six Sigma is the better starting point. Begin there, and reach for Six Sigma's deeper statistical tools when the data shows that variation, not waste, is what stands in the way.

Sources

- iSixSigma: Six Sigma Costs and Savings (Michael Cyger)
- iSixSigma: Ask the Expert, Integrating Lean and Six Sigma (Michael George)
- iSixSigma: Sigma Performance Levels, One to Six Sigma
- Quality America: Process Cycle Efficiency (typical efficiencies from Michael George, Lean Six Sigma, McGraw-Hill, 2002)
- Fortune: 3M's innovation revival (September 2010)
- Boeing: 737 final-assembly time cut 50 percent (January 2005)
- U.S. Army: LEAP awardees save Army billions (September 2014)
- U.S. Army Materiel Command: Red River Army Depot exceeds previous Humvee production efforts (October 2012)

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