

Putting It All Together

Continuous improvement is better than postponed perfection

GIVEN TODAY'S RELENTLESS drive to do things better, faster and cheaper, your organization has likely been working on improvement for some time. Perhaps lean, Six Sigma, lean Six Sigma or other improvement methods have streamlined many aspects of your operation and produced significant bottom-line results.

Yet no matter how large the gains you have made, you and your colleagues probably have begun to wonder what the next stage of improvement might be. You might be asking one or more of these questions:

- How can we make even greater improvement gains?
- How can we use improvement tools more broadly and on a daily basis?
- How can we involve more people in improvement efforts and empower more employees to make improvements?
- How can we leverage the use of data analytics and make them an integral part of the decision-making process?
- How can we make improvement part of

the organization's culture?

Even in companies that have been working at process improvement for extended periods, opportunities exist for better approaches. For example, consider a \$6 billion company with 125 sites worldwide that has been pursuing Six Sigma and lean for many years.

Yet the company lacks such basics as business process documentation, metrics and goals. No one owns particular processes. Divisions and plants duplicate efforts using independent methods, instead of standardizing them. No process exists for understanding or managing processes.

Similarly, a \$300 million organization that has spent more than two years implementing Six Sigma and lean suffers from the same problems and from a general lack of process thinking in the organization. As a result, its gains from lean Six Sigma soon erode.

For companies that have been asking themselves how to achieve even more

improvement, the answer lies in developing a comprehensive process management system that integrates three critical components:

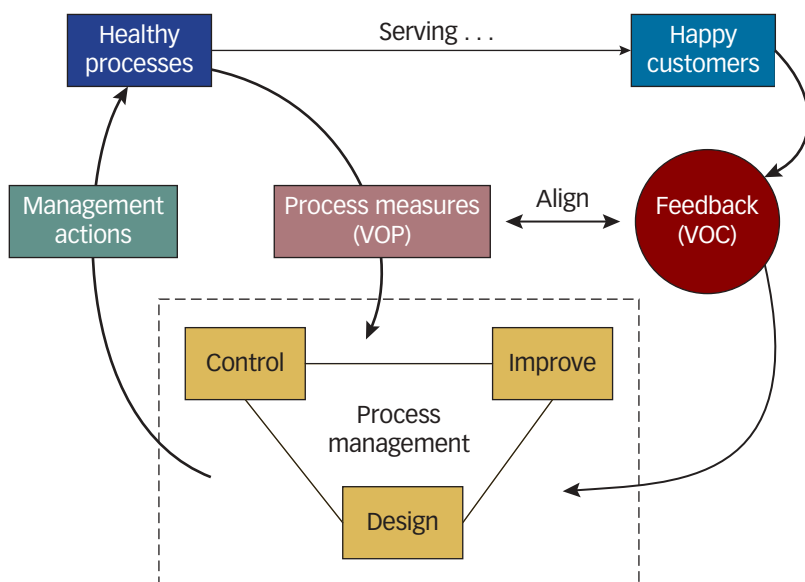
1. Process design or redesign.
2. Process monitoring and control.
3. Process improvement.

Because the term "process management" has often been used synonymously with "process control," it is important to distinguish among the three components clearly. At the same time, to reap the maximum benefits from all three, it is necessary to connect them in a truly integrated system.

In such systems, those three elements work together in a virtuous circle of data from processes, data from customers and management actions based on the analysis of process and customer data,¹ as shown in Figure 1.

In short, to reach the next stage of improvement through process management, you need to understand the distinctions and make the connections.

Key elements of process management / FIGURE 1



Understanding the distinctions

Each of the three elements of a comprehensive process management system has specific uses and methods:

- **Process design or redesign:** New processes often have to be designed for new markets and products, and for many other purposes. Existing processes often reach a point at which they are no longer able to meet required levels of performance. Process design or redesign focuses on the design of those new processes and the reengineering of existing processes.

For example, a manual order-processing system might be performing at entitlement (the best performance that can be expected from this process), and yet higher levels of performance are needed for success in the marketplace. Instead

of attempting to improve the existing manual system, the company could use process design to create a new internet-based processing system.

“With continuous process improvement, more satisfied customers and employees, and a better bottom line, your organization can get ahead—and stay ahead—of the competition.”

- **Process monitoring and control:** This part of process management is often mistaken for the whole. The goal of process monitoring and control is to keep the process working within acceptable parameters so that it profitably produces products and services that satisfy customers. Monitoring and control entail the routine collection of data that is then analyzed by management to determine whether the process is operating on target and, if it is not, to ascertain what corrections or adjustments will get the process back on course.

Although process control is familiar to many people who use the define, measure, analyze, improve and control (DMAIC) method of Six Sigma, it is important to note there is much more to process control than Six Sigma control plans.

Controlling a process also can include such elements as standard operating procedures, maintenance procedures and safety regulations. To operate and control the process effectively, the DMAIC control plan should work in conjunction with these other elements of process control.

- **Process improvement:** Often, great gains in performance can be achieved by improving an existing process, usually via the lean Six Sigma approach, without changing the fundamental design of the

process. Further, process improvement, again using lean Six Sigma, is often brought to bear on newly designed or redesigned processes after they have been launched.

In improvement projects in which the solution for improving a process is not known, such as an upgrade to a corporate intranet, approaches other than lean Six Sigma might be more appropriate.

The key difference between process improvement and process control is simple. Process improvement attempts to drive a process to new levels of performance. Process control identifies root causes of the deterioration of process performance so it can be brought to normal levels.

Consider the case in which the variation in cycle times for producing bills for hospital stays is increasing. A multivariate study might identify differences in the performance of employees, which results in better process control. Process control methods then identify the root cause of the differences—in this case, a lack of knowledge of the billing system on the part of two new employees. The new employees then can be provided with proper training, thereby resolving the problem and bringing the performance of the overall system back to normal.

Process control thus resolves the problem, but it does not drive the process to improved levels of performance in billing cycle time. It only returns the cycle time to its prior level. To improve the process, you might modify the billing procedures used by all relevant employees, resulting in unprecedented levels of performance in cycle time.

To redesign the billing process entirely, you might implement a new computerized billing system that automatically produces bills when patients are discharged. Although process redesign often involves the introduction of new technology, as in this example, there are many cases in which it does not. Further, in some cases, the line blurs between process improvement and process

redesign. To be clear about precisely how to proceed, however, it is usually worthwhile to maintain the distinction.

Making the connections

While clarity about the distinctions helps ensure each element of the system is understood and well executed, attention to their connections takes process management to the next level of excellence.

Figure 2 (p. 58) depicts a high-level schematic of a typical process management system based on these principles.² The organization routinely collects data from the process. The appropriate levels of management regularly review the data to determine whether—and what—actions should be taken regarding the process. Typically, in high-throughput environments, process workers review data continuously and daily, process managers and staff review weekly, the site manager and staff review monthly, and the business manager and staff review quarterly.

Process operators—which, depending upon the process, could mean customer service representatives, accountants, salespeople or other personnel—review the process performance data continuously. They look for out-of-control situations and review daily summaries to detect other sources of problems. Analysis tools often present the data in a statistical control chart format or other graphical presentations.

It is the process control plan developed in the control phase of the DMAIC improvement project that tells personnel what to look for, what actions to take and whom to inform when they need assistance. Process operators also can use DMAIC tools such as process maps, control charts, histograms and Pareto charts to troubleshoot. Typically, the control plan also details the process adjustments that can bring the outputs of the process to the desired target and range.

In some processes, adjustments are straightforward. For example, an organization in danger of failing to close the books on time might call in additional accountants. A potentially unmet sales quota might require a salesperson to work over-

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time. Clearly, in such instances, the aim is to sustain the current level of performance and not drive it to new levels, as performance improvement would. Such improvement often requires bringing in people with specialized skills, such as experienced underwriters in insurance organizations or engineers in manufacturing.

Achieving genuine improvement, as opposed to control, usually requires project teams that include process workers, technical specialists and perhaps someone trained in improvement methods.

Note the reviews of the data in Figure 2 also feed the process improvement system and, when needed, process redesign. The process improvement system resembles the project selection system in lean Six Sigma. The organization identifies good improvement opportunities, selects promising projects, carries out the improvements and gathers feedback on how the overall system is working so it can be improved. By using DMAIC, where appropriate, to make improvements as part of the process management system, you can continue to extract benefits from lean Six Sigma well into the future.

Gradually, the process management infrastructure, which ideally has been

in place all along, replaces the lean Six Sigma infrastructure. And because you are no longer ramping up a new initiative, as with lean Six Sigma, a properly established process management infrastructure should be smaller.

Getting started

To initiate a process management system, you first should identify your organization's core processes, remembering that processes are meant to deliver value to the customer, not to a function or department. You can start small—and think big—by initially selecting only one of the critical processes. Then assign that process an owner who is responsible for the performance and ongoing improvement of the process and who manages a portfolio of supporting improvement projects.

After identifying some key process metrics and goals to be monitored routinely, begin the monitoring and review the data using daily, weekly and monthly review teams. Unless processes are reviewed and managed continually, they will inevitably degrade in performance and alignment.

In parallel, you also should establish an improvement process that can identify opportunities for driving the process to new levels of performance, making sure that

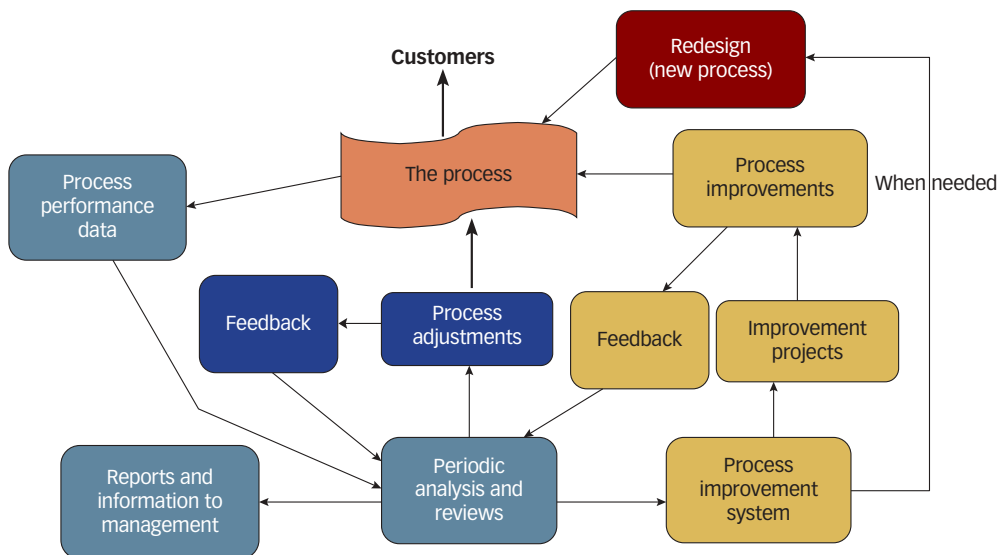
the process is aligned with organizational strategy and goals. Initiate a quarterly review process led by the process owner and be prepared, when necessary, to consider redesigning the process or designing an entirely new process to replace it.

Throughout the implementation of the new system, be prepared for resistance and deal promptly with legitimate concerns. Remember, too, that continuous improvement is better than postponed perfection. Get started and learn as you go, secure in the knowledge that as you become more familiar with the system, the amount of effort required will diminish and the financial return will grow.

The next example illustrates how to get started with process management and how this management system can work, especially in terms of integrating process control and process improvement.³

On average, a monthly billing process was sending out bills in 17 days—far more than the target of 8-9 days. Payment was delayed and customers were unhappy. To keep the process operating at all required enormous effort. Although the process workers were meeting at 10 a.m. daily to review operations and make adjustments, process performance didn't improve.

Data-based process management



To better manage the process, the organization created a process review structure. In addition to the 10 a.m. process worker meeting, process managers gathered for an 11:30 a.m. meeting to review the operations and the results of the 10 a.m. process workers' meetings.

At the end of the month, the process owner and his staff met to review the data of the month's operation and the results of their improvement activities during the previous month. Then they identified any needed additional improvement activities. Note that in this process review structure, the daily meetings of process workers and pro-

cess managers addressed needed process adjustments, whereas the monthly process owner's meeting addressed process improvements.

Dramatic improvement

During the next six months, the performance of the process dramatically improved. The billing process consistently met the 8-9 day target for sending out bills. Customers were pleased, and process workers no longer had to go to extraordinary lengths to keep the process operating. Further, the organization reduced costs, which could be extrapolated to \$2.5 million per year.

This combination of daily process adjustments and longer-term process improvements not only reduced the billing cycle, but also gradually reduced the amount of management review time required as the organization became more adept using its process management system.

For example, the 11:30 a.m. process managers' meeting, which initially averaged 1.5 hours in length, was gradually reduced to 15 minutes daily and ultimately became a weekly meeting. Because the process then continued to operate on target, sending out the bills in 8-9 days on average with reduced variation, a process redesign was not required.

Business benefits

A fully functioning, integrated process management system can produce widespread organizational benefits: Managing by process requires functions to come together to document and monitor process performance, heightening cross-departmental and cross-functional collaboration, cooperation and efficiency.

It also improves project selection by placing it in a comprehensive context, allowing process owners and the management team to readily determine high-yield projects, prioritize them and eliminate redundant improvement projects. Regular review improves the chances of success for projects and ensures sustained results, as does the broader use of data on a daily basis. And because the process owner is

accountable for the ongoing performance of the process and its impact on customers and the business, the system helps maintain constancy of purpose in project selection, implementation and control.

Moreover, the process management system creates an organizationwide platform for steering the total improvement effort, enabling management to see simultaneously the performance of each process performance, gaps that fall between processes, and cases requiring process redesign. Ultimately, process-centered improvement becomes an integral part of how the organization does business.

These organizational benefits translate into business and financial benefits. Process improvements that increase return on the process reduce costs, generating significant annual bottom-line benefits. Process design or redesign can greatly magnify those returns by replacing failing processes or introducing new ones and thereby accomplishing a great leap forward in savings and customer satisfaction.

Customer satisfaction often shows up in increased revenues and market share. Employees, too, are happier. Empowered by the system to do their jobs more effectively and participate in moving the organization forward, they become far more productive, even surpassing the increased productivity that comes from process improvement, control and redesign.

With continuous process improvement, more satisfied customers and employees, and a better bottom line, your organization can get ahead—and stay ahead—of the competition. **QP**

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REFERENCES

1. Ronald D. Snee and Roger W. Hoerl, *Six Sigma Beyond the Factory Floor: Deployment Strategies for Financial Services, Health Care and the Rest of the Real Economy*, Pearson Prentice Hall, 2005.
2. Ronald D. Snee, "Statisticians Must Develop Data-Based Management and Improvement Systems as Well as Create Measurement Systems," *International Statistical Review*, Vol. 67, No. 2, 1999, pp. 139-144.

3. Snee and Hoerl, *Six Sigma Beyond the Factory Floor: Deployment Strategies for Financial Services, Health Care and the Rest of the Real Economy*, see reference 1.

BIBLIOGRAPHY

Snee, Ronald, and Roger Hoerl, *Leading Six Sigma—A Step by Step Guide Based on the Experience with General Electric and Other Six Sigma Companies*, FT Prentice Hall, 2003.



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