

Modified Approach

MODULAR KAIZEN
METHOD DRIVES
IMPROVEMENT
AMID HECTIC
SURROUNDINGS

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W. Edwards Deming said, “A bad system will defeat a good person every time.”¹ Anyone who has struggled with a poorly designed process can relate. A bad system grinds people down until they no longer care about the quality of the product or service delivered to the customer. People using a bad system take out their frustrations on customers, who complain about the poor quality they receive. This is a never-ending, destructive cycle for the person using the bad process and those receiving the low-quality product or service.

The stress created by a poorly designed system is even more pronounced in the arenas of public health and local government, both of which have seen budgets slashed during the recent economic downturn. The result is a reduction in the workforce and an increase in workload related to community needs. This untenable situation has fostered a workday replete with interruptions, an environment exacerbated by the increasing use of mobile communication. But even in this rapidly changing environment, lean principles are well designed to spur improvement.

Loosely defined, lean is the relentless elimination of waste throughout the entire value stream, in which waste is any nonvalue-added activities from the customer’s perspective. Lean concepts were initially documented in manufacturing environments and, as a result, most of the terminology used to describe the system and associated tools are based on functions of the shop floor.² But there is potential for waste in all processes, which is why lean also works well in service and transactional environments.

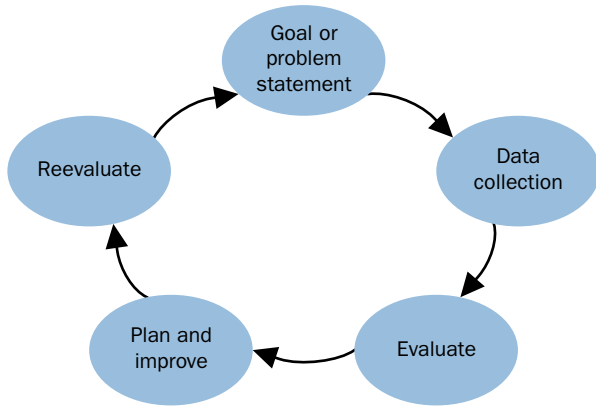
The essence of lean is to build a better, faster, more efficient and streamlined process.³ Basically, lean is centered on preserving value with less work and is a variation on the theme of efficiency based on optimizing flow. It is a present-day instance of the recurring theme in human history toward increasing efficiency, decreasing waste and using empirical methods to decide what matters, rather than uncritically accepting preexisting ideas.⁴

Using lean in a highly interruption-driven environment that requires rapid turnaround, such as emergency response, does not mean all activity must be planned strategically to achieve effective outcomes. Although it is true that system planning is the basis for long-term performance improvement, individual tasks can be performed quickly and on short notice, bolstered by a solid infrastructure of resources and policy.

It’s an emergency

An organization whose mission is to prepare for and respond to national emergencies requested assistance enhancing a culture of quality improvement. Most assignments within this organization are prone to constant interruption. Few staff members have the luxury of planning several days—much less months—ahead of time to employ the standard process design and implementation approaches usually espoused by quality texts.

Figure 1. **Modular kaizen project flow**



This organization has two core business functions—with an additional four support functions—overseen by the immediate office of the executive. It recently reorganized its 750 employees and contractors to improve the balance of knowledge and skills among several scientific and academic disciplines.

By experimenting with a concept called modular *kaizen*, this organization addressed the need for continuous improvement within an environment built for interruptions. In this modular approach, all the components of an effective *kaizen* event are planned

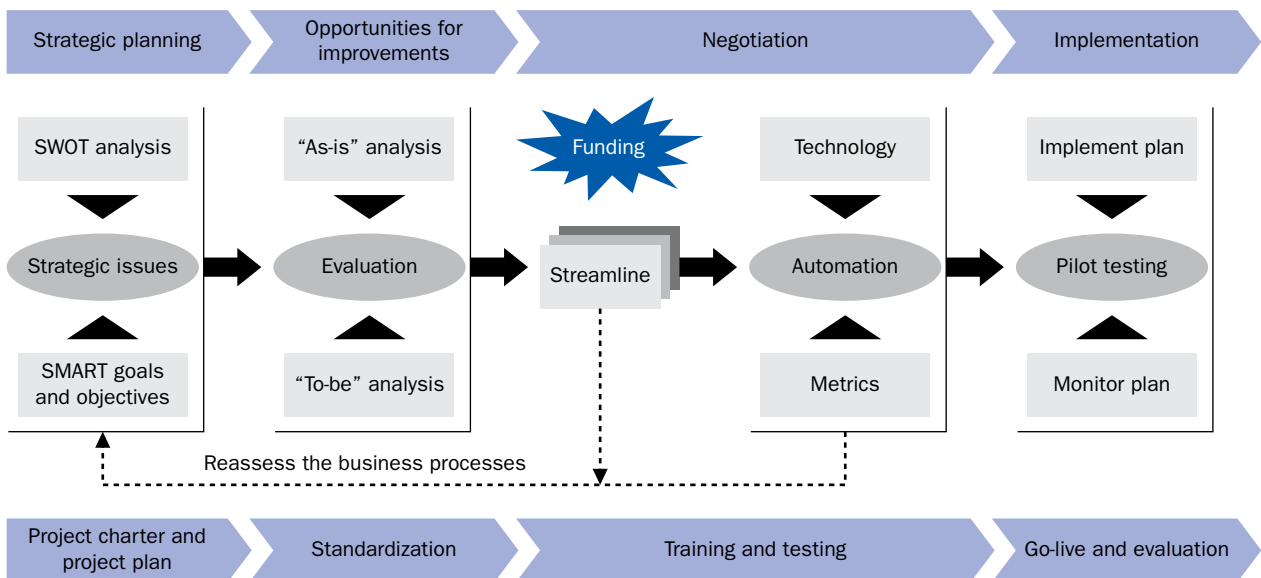
and conducted, but the activities are scheduled in small chunks that fit the rapidly changing calendar of team members and subject matter experts (SMEs).

As in traditional *kaizen*, the define, measure, analyze, improve and control (DMAIC) process is used for improving existing processes. And when new processes must be designed to accommodate restructured or new mandates, the design for Six Sigma approach of define, measure, analyze, design and verify is employed. Figure 1 was developed by one of the improvement project facilitators to orient senior management to the general approach, which bears a close resemblance to the basic DMAIC model.

Modular *kaizen* is the opposite of a rapid, consolidated blitz event. The *kaizen* blitz (or *kaizen* event) is a focused, short-term project to improve a process. It includes training followed by analysis, design and, often, rearrangement of a product line or service area. The usual *kaizen* event takes between two and 10 days.

With modular *kaizen*, the improvement or redesign project is planned along a timeline that recognizes the highly volatile nature of the client’s core business processes. High-priority projects are planned at the senior leadership level to establish realistic milestones, resources and measurements to ensure a return on investment that includes not only financial commitment, but also the involvement of highly skilled facilitators and SMEs.

Figure 2. **Advanced plan for modular kaizen improvement project**



SWOT = strengths, weaknesses, opportunities and threats
 SMART= specific, measurable, achievable, relevant and time-bound

Although steps in the DMAIC process are used in the traditional way of most lean Six Sigma projects, the modular *kaizen* approach anticipates and even builds interruptions into the timeline. It may appear this design increases waste in the process, but pre-planning for the absence of key personnel significantly reduces the disruption this might otherwise create.

Travel trouble

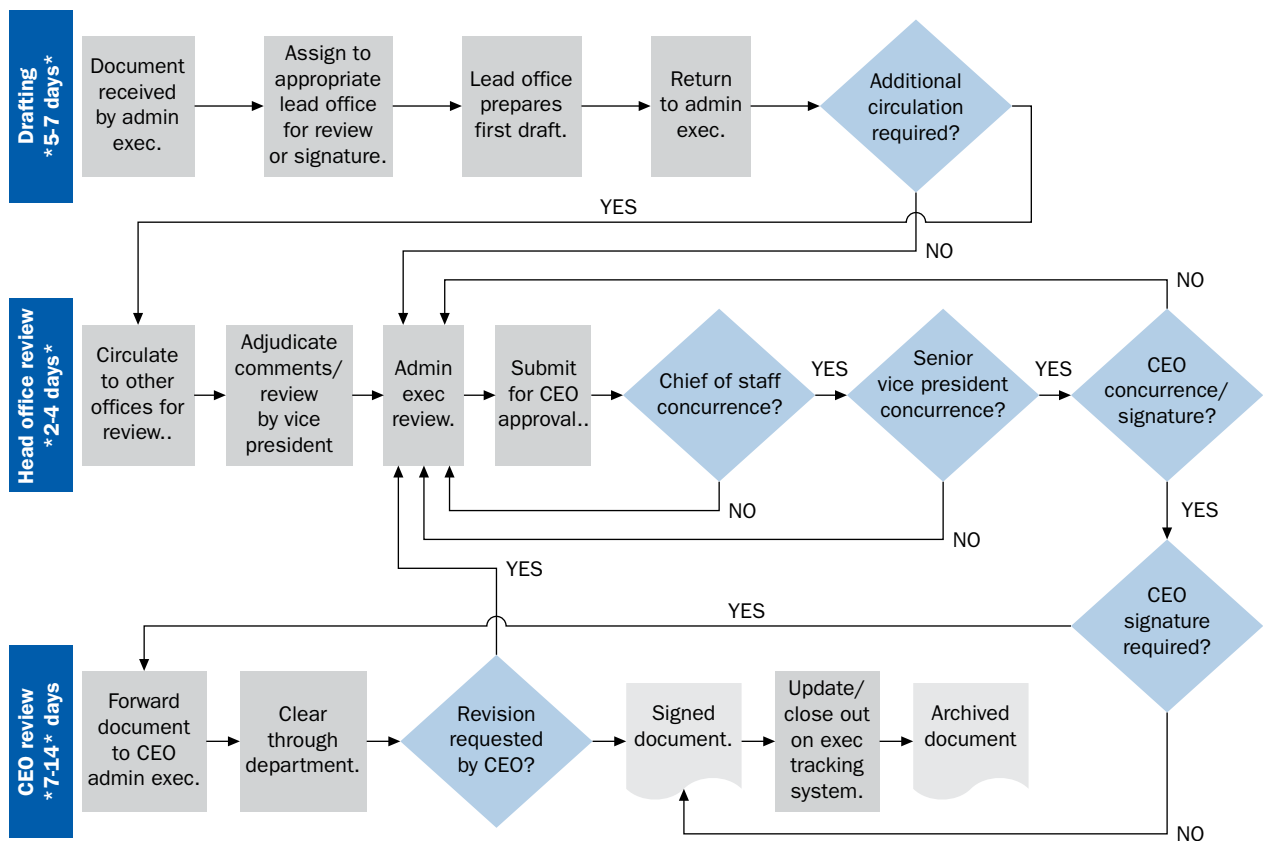
Figure 2 is a structured flow anticipated by the team facilitator for a project consolidating two overlapping travel functions within the restructured organization. Although the rapid pace of operations did not allow time for project team members to be trained on the DMAIC improvement process, the facilitator, with assistance from a lean Six Sigma Master Black Belt

(LSSMBB) coach, used traditional lean Six Sigma steps to modularize team efforts by anticipating interruptions for funding and technology delays.

This planning is equivalent to a value stream map or program evaluation review technique chart, providing advance warning of cycle times when other activities can be scheduled by team members, SMEs and other stakeholders. Using the time and workforce for other priority activities while funding negotiations take place or technology updates are performed serves the same purpose as reducing the waste of waiting or not using professional abilities effectively.

The organization also required the integration of a quality improvement culture into everyday operations.⁵ Figure 3 is an example of the future state flowchart identified by another quality improvement team within the same organization using a work team

Figure 3. **Future state flow for head office and CEO correspondence**



****Note:** Due dates are scheduled regardless of the complexity of the issues to be addressed in the memos and letters. On many occasions, meetings must be scheduled with subject matter experts, or policy decisions not already decided must be made prior to responding to inquiries or issues discussed in correspondence. This directly affects the timeliness of the response. The nature of the clearance process is to identify and adjudicate all conflicts before presenting the final product to the immediate office, CEO, senior vice president and the chief of staff. The goal is always to respond in a timely manner. If a timely response is not possible, communicate this with the immediate office, as well as the CEO administrative executive.

comprised of leadership and staff within the executive secretarial office. This team dedicates part of their regularly scheduled weekly staff meeting to the status of the improvement project. The LSSMBB coach for the project attends the department staff meeting, as well as other scheduled work sessions.

The work team for the executive document approval process flow (Figure 3, p. 17) gathered voice of the customer (VOC) cycle-time requirements from existing policy documents. Because the current correspondence process did not meet these requirements on a consistent basis, the team instituted a process improvement project to assess the current state and adjust operations. After the target process is mapped, the improvement team can identify wastes in the process.

As noted at the bottom of the figure, some correspondence activities were beyond the control of the executive offices. As a result, exception reporting was established as part of the monitor and control phases of the project to gather objective data and identify subsequent process redesign opportunities (see Figure 5, p. 20).

Skipping steps

Too often, current state flowcharts are constructed but not analyzed for what resources are consumed and at what cost.⁶ You make changes to the current state flow and do not fully understand if the changes result in decreased costs, time or workforce. You assume that because you made changes, the end result will improve. This is not always the case.

Using lean principles, you can investigate the current process and search for the eight forms of waste described in Table 1. When you find instances of any of the eight lean wastes, you must eliminate them and make sure they do not carry over to the future state design.

Modular *kaizen* is effectively structured to take advantage of an assessment of the eight wastes during process improvement activities. Pre-project planning provides a platform for identifying potential areas of waste before resources are expended on early measurement activities.

This priority setting encourages experiments designed to identify effective data gathering based on operational feedback. Because project milestones are set more widely apart than normal *kaizen* events, there is less pressure on teams to rush sampling or other observational activities during the assessment phase.

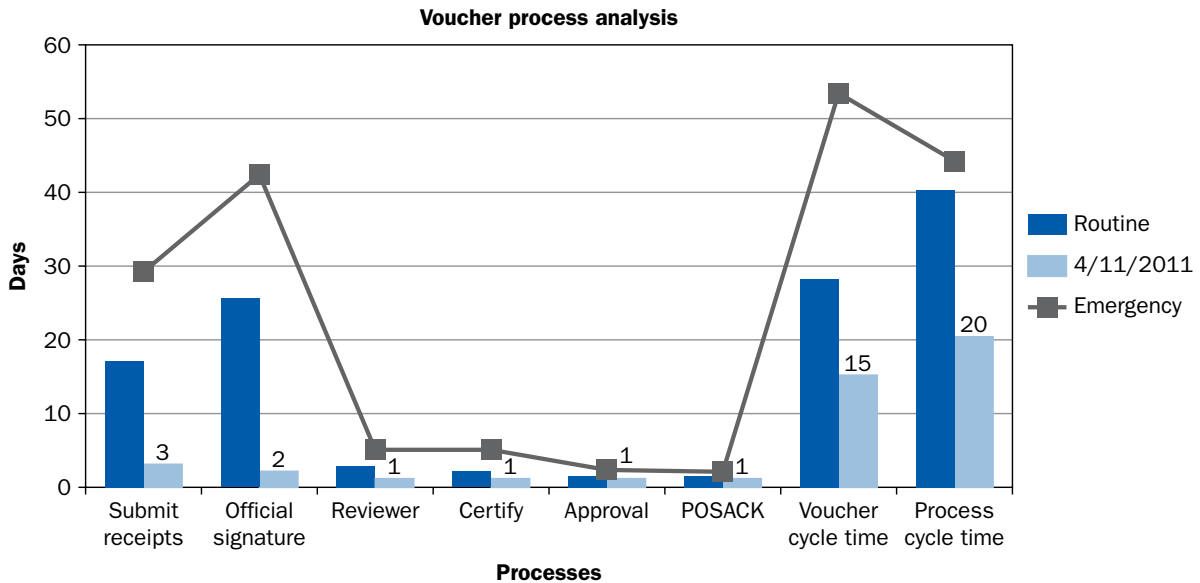
Figure 4 returns to the travel consolidation project with an example of assessment measures pointing to areas within the process in which mandated cycle times are not met. This situation addresses the waste of waiting. The measurement revealed that when the travel professionals have control over the actions, cycle times are well within the requirement to submit claims within five working days.

This feedback guided the team to ask a different set of problem-solving questions about how to move forward with improvement efforts. Because the delays occur before the travel office receives the signed request for reimbursement or after the office has acknowledged receiving required receipts and

Table 1. **Definition of eight lean wastes**

Waste	Description	Public health example
1. Overproduction	Items produced in excess quantity and products made before the customer needs them.	Insurance filing or immunization record opened before all required information is received.
2. Unnecessary inventory	Any excess inventory that is not directly required for the current client's order.	Overestimating vaccination support materials, requiring additional locked storage cages, inventory counting and reconciliation.
3. Defects	Errors produced during a service transaction or while developing a product.	Ineffective scripts for initial intake applications. Unclear directions for filling out required forms.
4. Overprocessing	Spending more time than necessary to produce the product or service, and duplication.	Combining client survey instruments into one form rather than developing specific instruments for each program.
5. Waiting	Periods of inactivity in a downstream process that occurs because an upstream activity does not produce or deliver on time.	Paperwork waiting for management signature or review.
6. People	Not using people's abilities fully.	Poor job design, ineffective process design within business functions and lack of empowerment.
7. Unnecessary motion	Extra steps taken by employees and equipment to accommodate inefficient process layouts.	Immunology testing equipment stored in cabinets far from specialist work area.
8. Transportation and handling	Unnecessary movement of materials or double handling.	Department vehicles stored in central facility, requiring constant movement of vehicles to and from other high-traffic locations.

Figure 4. **Measure/assess phase tracking**



According to the internal policy, travelers are to submit claims within five working days after a completed travel period. This time period also includes officially signing voucher to process for payment.
 *POSACK = positive acknowledgement

documentation, cycle-time reduction must be pursued by influencing those outside their area of control—namely, the traveler.

To help analyze a current or future state flowchart, a matrix was developed to help guide the investigation of lean wastes (see Table 2). Each step of the current state flowchart is examined to root out waste that can be eliminated during design of the future state. The

Table 2. **Lean wastes process mapping matrix**

Process flow step	Step 1	Step 2	Step 3	Step 4	Step XXX
Touch point					
Lean waste					
Overproduction					
Unnecessary inventory					
Defects					
Overprocessing					
Waiting					
People					
Unnecessary motion					
Transportation and handling					

matrix is used again with the future state flowchart as a validation that new wastes have not been inadvertently designed into the improved process. Process steps in which the customer sees the process are identified as touch points, drawing attention to VOC opportunities.

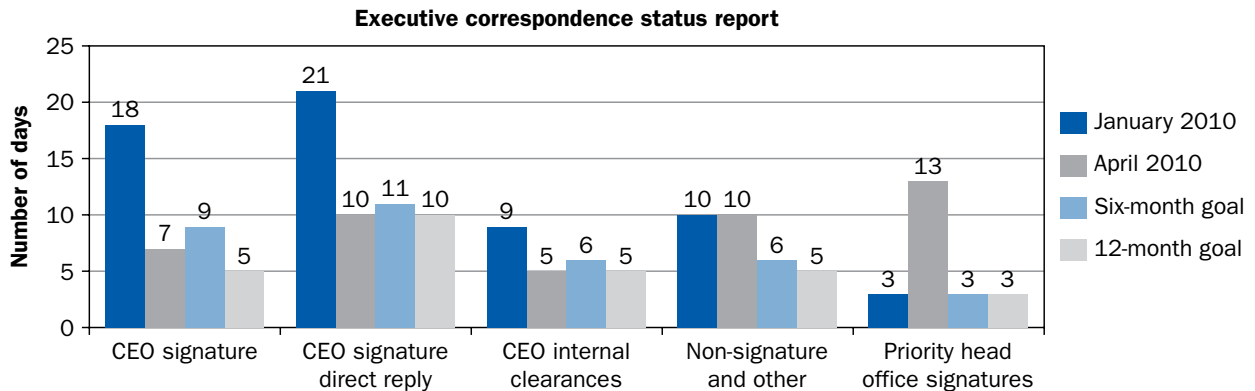
This matrix can guide a team through each step in the process to identify wastes and develop an action plan to eliminate them in the future state flowchart. That frees time and resources for higher-priority department outcomes. The matrix identifies the process step in which waste occurs, describes how it manifests itself and indicates where documentation can be found to verify the waste.

Figure 5 (p. 20) is an example of the dashboard created to show progress of cycle-time reduction for priority correspondence within the highest levels of the organization. Note that through the process of stabilizing existing activities, this team has already successfully reduced turnaround time for two of the five areas relative to its six-month goal.

Backup documentation and exception management for those areas not yet achieving goal are a standard part of the briefing. The process owner or department manager provides objective data to support effective problem solving and resource balancing for escalation when appropriate.

Figure 5. **Monitor and control plan reporting**

Type of correspondence	Current for January 2010 (days)	Current for April 2010	Six-month goal	12-month goal
CEO signature	18	7	9	5
CEO signature direct reply	21	10	11	10
CEO internal clearances	9	5	6	5
Non-signature and other	10	10	6	5
Priority head office signatures	3	13	3	3




Waste management

Henry Ford said, “Standardization is the necessary foundation on which tomorrow’s improvement will be based.”⁷ But it’s important to make sure any improved process that is standardized is free of waste. Identifying the eight lean wastes is a quick method that improvement teams can use to target areas that can be streamlined in the current process.

An inherent, yet subtle, requirement of the modular *kaizen* approach is a constant awareness of each segment of process improvement activity. Project teams are directed to perform short bursts of design, measurement, analysis, improvement or feedback. Without oversight, these activities will quickly spiral into discontinuity. A central coordinating function must monitor and energize individual activities. This coordinating function, whether performed by a quality manager or another highly regarded individual within the organization, is a requirement of any quality program.

By identifying the eight lean wastes, project teams in an interruption-driven environment can achieve the gains associated with quality improvement. In the case of the emergency-response organization, the correspondence and travel project teams used the lean and Six Sigma tools to define, measure and analyze their assigned process.

Both teams progressed through advanced milestone planning within the timeframe of senior executive expectations. Monthly senior management reviews keep leadership informed of progress through realistic goals tied to the priorities of the organization. After the restructured organization stabilizes, more advanced quality improvement projects will lead to even greater performance excellence. 

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