
Lean Government Methods Guide



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Lean Government Methods Guide

This *Lean Government Methods Guide* is designed to help environmental agencies better understand the array of Lean methods and when to consider using each method. This Guide focuses primarily on Lean production, which is an organizational improvement philosophy and set of methods that originated in manufacturing but has been expanded to government and service sectors. Lean enables environmental agencies to work more effectively and efficiently to protect human health and the environment by identifying and eliminating waste in government processes. Numerous government agencies have used Lean to improve the effectiveness, efficiency, and transparency of government programs and services in better, faster, and cheaper ways. Use this Guide to learn more about the variety of process improvement methods available and to help you select what method to use for your next Lean effort.

This Guide is a product of the U.S. Environmental Protection Agency's Lean Government Initiative (www.epa.gov/lean/government) and is a supplement to the Lean in Government Starter Kit, which provides guidance and practical resources on how environmental agencies can use Lean methods to improve their processes and operations.

How to Use the Guide

This Guide is designed to provide an overview of Lean methods and how they can be applied in government. You may be coming to this Guide with a strong sense of the initial scope of your process-improvement project or you may be looking to get basic information on Lean methods so you can decide how best to apply them within your organization. In either case, the Methods Guide can help you select the Lean method or methods that are best suited to your organization and needs. For additional information on scoping a Lean event (such as a kaizen or value stream mapping event described in this Guide), see the Lean Government Event Scoping Guide.

This Guide is organized into two main sections: Overview of Lean Methods and Lean Method Profiles. In the overview section, we describe the range of different types of Lean methods, ranging from short-term, easily implemented methods to organization-wide continuous improvement methods. We also provide guidance, including a flowchart, to assist readers in identifying methods to fit the type of project they have in mind.

LEAN METHODS GUIDE KEY CONTENT

- Overview of Lean Methods
 - Types of Lean Methods
 - Finding the Method That's Right for Your Improvement Goals
 - Table 1: Overview of Lean Methods
- Lean Method Profiles:
 - Process Walk/Treasure Hunt
 - 5S
 - Visual Controls
 - Standard Work
 - Kaizen Event and Mini-Lean Event
 - A3
 - Value Stream Mapping Event
 - Six Sigma
 - Lean Process Design
 - Strategy Deployment

This section includes a table that summarizes key information about individual methods. Finally, the final section of the Guide contains longer profiles of the methods; these profiles define the method, describe the implementation process for the method, explain why the method is useful, and provide example government applications along with additional tools and resources.

Overview of Lean Methods

Types of Lean Methods

Lean methods vary considerably in function, level of effort, and complexity. They can range from quick fix actions your organization can implement regularly without formal tools or team participation, to week-long events that require more in-depth planning, participation and formal tools. Designed to reduce waste and improve efficiency, Lean methods can be used for a variety of purposes—from making your own working environment less cluttered to designing and implementing faster and less complex ways of delivering key services. Examples of the different types of Lean methods can be categorized as:

- **Simple, Structured Methods for Workplace Improvements:** Lean methods, including 5S, standard work, and visual controls, are relatively easy to implement, but provide some defined structure for process improvements. These can be thought of as “daily Lean” methods, since they can be implemented at any time to facilitate continuous improvement, either during or outside Lean events. For example, the 5S method can help to de-clutter and organize a workspace, making it more efficient. Standard work helps to ensure that improvements are documented and made common practice for workers.
- **Event-Based Process-Improvement Methods:** Several Lean methods are implemented as “events” lasting anywhere from a half-day to five days. Two common types of Lean events are kaizen events and value stream mapping. These team-based methods are very powerful methods for driving improvement in agency processes. Although the intense period of activity in an event is focused in a few days, keep in mind that events require substantial prep and follow-up work to be successful. (The [Lean in Government Starter Kit](#) provides information and resources on how to conduct successful Lean events.)

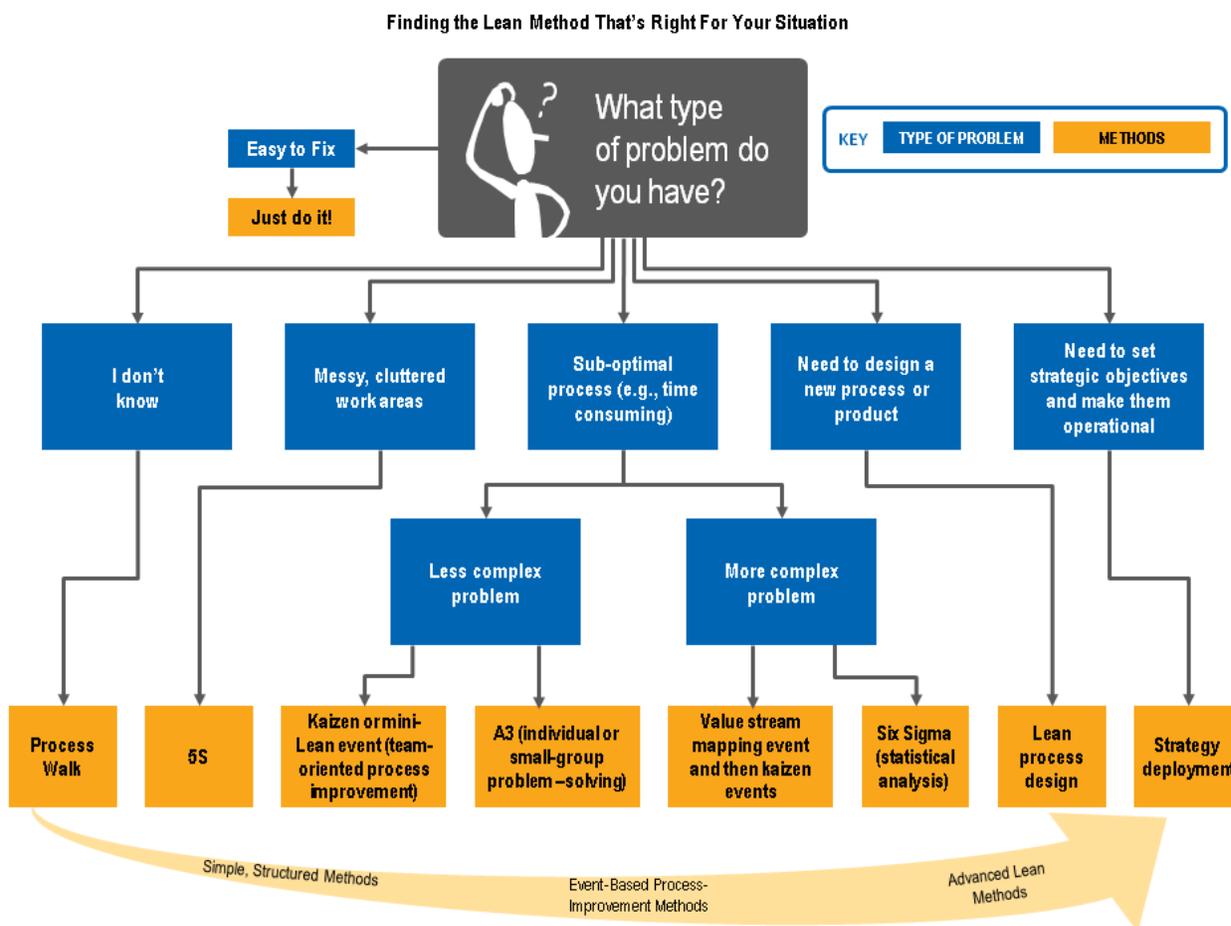
Shorter event-based activities, such as mini-Lean events and process walks, are more focused and use fewer resources than weeklong events, but they may only address limited goals or scope. For example, a half-day process walk can provide an overview of a process and lead a team to identify immediate opportunities for improvements.

- **Advanced Lean Methods for Specialized Needs:** More advanced Lean methods include Six Sigma, strategy deployment, and Lean process design. Six Sigma projects depend on statistical tools for analyzing problems involving multiple variables, so require more technical expertise than typical Lean events. Strategy deployment allows for strategic alignment of improvement initiatives within an organization. Finally, Lean process design enables agencies to use Lean concepts to design processes from scratch.

Finding the Method That’s Right for Your Improvement Goals

There are many ways to use Lean methods to improve your agency’s processes and programs. Before choosing a method, it can be helpful to have a sense of the initial scope of your project so you can more readily identify the method that is best suited for your needs. It is important to match your goals to the function of method, as well as to the level of resources required. The Figure 1 flowchart provides a graphical illustration of how you might select a Lean method based on the type of problem you have. Your facilitator can also help match your needs with a method that is best suited for your problem, the outcomes you are hoping to achieve, and your agency.

Figure 1: Finding the Lean Method That’s Right for Your Situation



If you do not yet know how you will apply Lean, you can use this Guide to gain a basic understanding of the scope, time commitment, and results Lean methods can offer your agency. The table below provides a brief description of each Lean method in this Guide, identifies when it is most appropriate to use each method, and provides examples that are applicable to government agencies. More detailed Lean method profiles are in the following section.

Table 1: Overview of Lean Methods

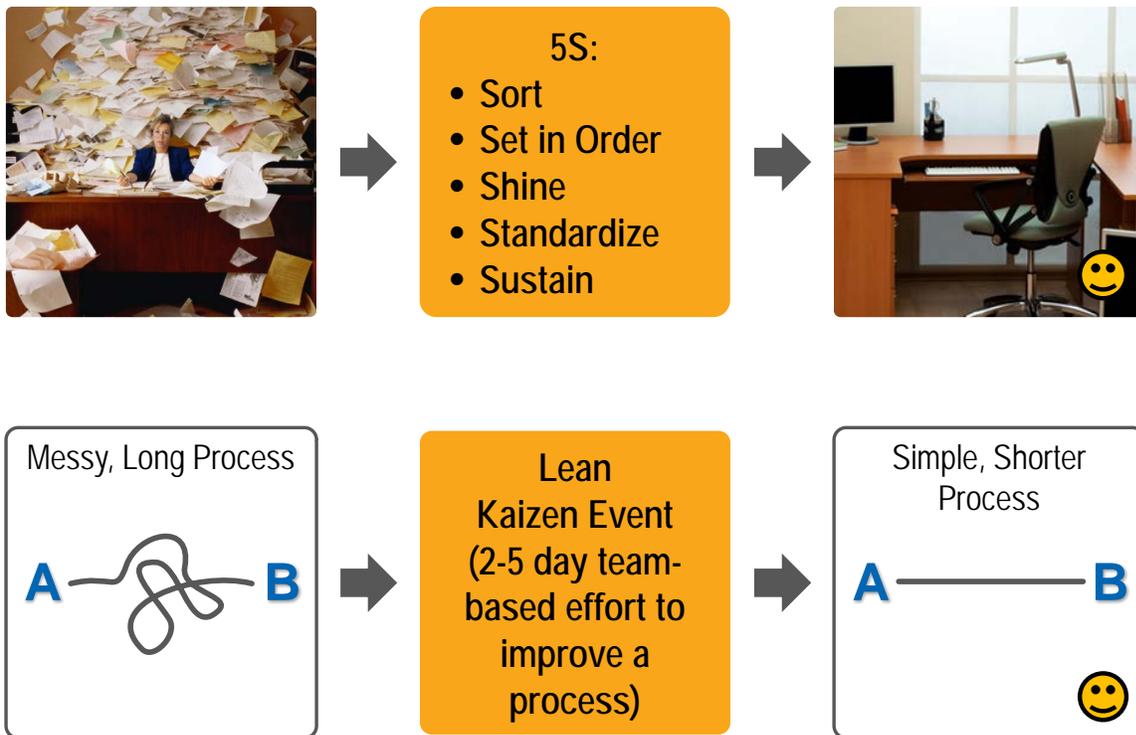
METHOD	DESCRIPTION	WHEN TO USE THIS METHOD	EXAMPLES
Just Do It	A simple action that can be taken immediately to fix a problem or reduce waste in a process. You can identify "just do its" in Lean events, through process walks, or in your daily work once you have an understanding of Lean concepts. In this way, processes can continue to improve without needing to wait for events.	Any time there is an easy solution that can be implemented right away	Fixing a jammed printer or moving paperwork that was incorrectly filed
Process Walk/ Treasure Hunt	A cross-functional team of employees walks through the work area over a short period, identifying opportunities to reduce waste and introduce improvements as they walk. Improvements can usually be implemented rapidly, resulting in quick gains. This method can help to engage employees in spotting waste in their day-to-day activities beyond the scope of the initial treasure hunt or waste walk.	To identify immediate and/or easy changes; to identify waste in a process "on the floor" (e.g., your office)	Physically walk through the stages of a permitting process (follow the path of the permit application) and identify ways to improve the process
5S	5S is a method for maintaining a clean & orderly workplace based on five steps: <ul style="list-style-type: none"> • Sort (organize tools and materials, retaining only what is essential) • Set in Order (arrange and label items in an order that maximizes workflow) • Shine (regularly straighten and tidy workspaces and restore items to their place) • Standardize (spread identified improvements to all workstations) • Sustain (maintain and review standards to ensure they continue to be implemented) Some organizations add a sixth "S" for Safety.	When there is a need to improve workstations and workplace organization	Reorganizing, de-cluttering, and maintaining clean, orderly office spaces or supply areas
Visual Controls	Visual controls, which are signs or symbols to remind employees of standard procedures, can be used to reinforce the improvements made to a workspace using 5S. These controls are also used for implementing standard work and improvements identified during other Lean events, to provide visual feedback on process performance.	To quickly remind employees of identified improvements and ensure continued implementation, reducing deviations from the desired standard	Color-coded filing systems, lines or signs indicating when supplies need to be reordered
Standard Work	This tool represents the sequence of activities needed to perform a given operation, and forms the baseline that is essential for measuring progress later. Improvements made during kaizen events are immediately documented as standard work to ensure that all employees understand and consistently implement the new process. Standard work (e.g., templates, forms, & process maps) ensures consistency and prevents errors.	In conjunction with other process improvement efforts, to document and sustain identified process improvements	Templates and forms for a corrective action plan

METHOD	DESCRIPTION	WHEN TO USE THIS METHOD	EXAMPLES
Mini-Lean Event/Point Kaizen	A condensed, small-scope improvement effort on a single improvement that can be completed in a very short time-frame, often a matter of a few days or even hours. Point kaizen events focus on a small part of a process or work cell. Improvements are implemented rapidly in order to realize immediate results.	Time constraints and/or limited financial resources; when there is a need for extremely rapid and/or small-scale improvements	A team convenes for a one day event to design a new form for a permitting process and develop standard work
A3	Using this rapid-deployment and communication tool, individuals or small teams diagram a process or problem using only what they are able to fit on a standard A3-sized (approx. 11 x 17") piece of paper. The team, having improved its problem-solving capacity and gained a more complete understanding of the process, then uses the view of the process created on the paper to find areas to improve the process. This method requires that the team communicate well to depict the process simply, and results in a high-level view of the steps in the process.	To identify areas for quick improvement and flag areas for potential future improvements; to concisely communicate process-improvement activities and ideas on one large sheet of paper	Diagram and describe on a 11x17" sheet of paper the problem (e.g., with the travel authorization process), the root causes, proposed solutions, and action items
Value Stream Mapping Event	A structured event led by a facilitator in which a team of participants maps out an entire process in detail from beginning to end, identifying areas for future process improvement efforts. This method provides a thorough, high-level understanding of the process and helps identify future steps for improvement.	Prioritization and planning tool to gain high-level understanding of processes and identify areas for future improvement efforts	Develop a big-picture view of the current and future process for air construction permitting and an implementation plan for priority improvement actions
Kaizen Event	A structured event led by a facilitator in which a team of participants (composed of a mix of leaders, staff, and customers of the process) map out a process and identify areas for rapid improvements and areas for waste elimination. Sometimes called a "kaizen blitz," this tool can help jump-start a larger, sustained process improvement effort across an organization by serving as a pilot project.	The primary implementation method for Lean, use kaizen events to identify process changes for practical implementation	A week-long event focused on reducing the time for review of wetlands dredge and fill discharge permits or for review and posting of public notices
Six Sigma	A process improvement methodology that aims to improve processes by removing the causes of defects (or errors) and removing variability in processes. Six Sigma uses a set of quality management methods that are often statistically based. Six Sigma experts (often known as green or black belts) lead projects. Six Sigma improvement efforts follow the DMAIC methodology: <ul style="list-style-type: none"> • Define the problem • Measure key aspects of process data • Analyze the data • Improve or optimize the current process • Control the future state process to correct any deviations 	When the specific problems in a process are rich in numerical data and statistical analysis would be useful <i>(Requires knowledge of statistical methodologies)</i>	Analyze variation in wastewater permitting processing times to identify and address root causes of problems and improve process performance

METHOD	DESCRIPTION	WHEN TO USE THIS METHOD	EXAMPLES
Lean Process Design	Methods for designing new processes or products or for redesigning existing ones. These methods incorporate Lean and Six Sigma concepts and tools to design processes that meet customer needs through processes that are as simple and waste-free as possible, anticipating and addressing potential problems early. Lean process design methods include Design for Lean Six Sigma and Production Preparation Process (3P).	When designing a new process or product, or redesigning an existing one (<i>More advanced Lean method</i>)	Develop a design for a new inspection process
Strategy Deployment	A strategic planning methodology in which all employees participate in process management to “cascade down” strategy deployment goals through all levels of the organization. This method is designed to ensure that all staff go about their work in a way that applies the master plan of the organization consistently. Regular review of actions is necessary to address deviations from the strategic plan. Also known as policy deployment or <i>hoshin kanri</i> .	When an organization is interested in connecting process improvement efforts to overall strategic goals (<i>More advanced Lean method</i>)	Connect performance expectations of individual employees to organizational strategic objectives

Although they may focus on different aspects of organizational effectiveness and efficiency, all of the methods support common objectives: helping agencies achieve their objectives and achieve their missions in faster, less costly, more transparent, and more effective ways. Figure 2 illustrates some of the different ways that Lean methods can provide results and benefits for your agency –whether it is at the level of an individual worker or an entire agency process.

Figure 2: How Lean Methods Can Work for You



Lean Method Profiles

To gain a richer understanding of the mechanics of each method and the potential benefits it can provide for government agencies, we have developed in-depth profiles for all of the methods in this Guide except for just-do-it actions. The method profiles in this section include: process walks, standard work, visual controls, 5S, A3, kaizen and mini-Lean events, value stream mapping events, Six Sigma, Lean process design, and strategy deployment. (The just-do-it method does not have a corresponding profile, since it is a simple concept rather than a formal method.) Each method profile below defines the method, provides more information about when to use the method, explains its implementation process and typical duration, provides one or more example government applications, and lists tools and references relevant to the method.

Process Walk/Treasure Hunt

A process walk, also referred to as a treasure hunt or waste walk, is a rapid technique to help you identify wastes in your everyday operations. A cross-functional team of employees walks through the work area over a short period of time, identifying opportunities to reduce waste and introduce improvements as they progress. Improvements can usually be implemented rapidly, resulting in quick gains. This method can help to engage employees in spotting waste in their day-to-day activities after the initial treasure hunt or process walk.

Implementation Process

Typical Duration: A process walk is usually conducted in one day or less.

Identify the employees who are involved with the process. Have the group walk through the workplace with clipboards, while team members write down wastes as they identify them. Some questions to ask during the walk include:

- What inputs and outputs do you see in the process?
- Where do the outputs go?
- What is the typical process time?
- How many items are currently waiting to be processed?
- What causes delays or problems?
- What “DOWNTIME” wastes (see below) do you observe, and what causes them?
 - D – Defects
 - O – Overproduction
 - W – Waiting
 - N – Non-utilized/underused employees
 - T – Transportation
 - I – Inventory
 - M – Motion
 - E – Excess processing

WHY IT'S USEFUL

This tool requires very little advance planning, training, or resources. A process walk can be done quickly and the improvements that you identify during the walk can be implemented immediately. Employees who participate in process walks will gain skills and habits that will empower them to spot wastes during their normal jobs, helping your organization to continually improve efficiency. Finally, the areas for improvement that are identified during a process walk can be incorporated into your organization's overall continuous improvement strategy as potential targets for future Lean events.

EXAMPLE GOVERNMENT APPLICATIONS

- The South Carolina Department of Environmental Health and Control conducted a process walk prior to a Lean process improvement event in order to establish an understanding of areas with the greatest need for improvement.*

* For more information about the event, see the case study at www.epa.gov/lean/government/state-initiatives/southcarolina.htm

Tools

Example checklists to use during a process walk:

- Process Walk Checklist from Blue Hangar:
www.bluehangar.com/uploads/5/3/2/3/532364/bh_process_walk_checklist.pdf
- Waste Walk Checklist from South East Employers:
www.seemp.co.uk/lean_waste_walk_checklist.pdf

Articles and Books

- Case study of Lean and Energy Treasure Hunts at GE:
www.epa.gov/lean/environment/studies/treasure.htm

5S

5S is a rapid improvement method that you can use to improve the efficiency of workstations by cleaning and organizing the office environment. Each “S” corresponds to a specific step in the implementation process: Sort, Set in Order, Shine, Standardize, and Sustain. Some organizations add a 6th “S” for Safety.

Implementation Process

Typical Duration: A 5S exercise can be conducted in less than one day.

Follow these five steps to conduct a 5S in your workspace:

- Sort (organize tools and materials, retaining only what is essential).
- Set in Order (arrange and label items in an order that maximizes workflow).
- Shine (regularly straighten and tidy workspaces and restore items to their place).
- Standardize (spread identified improvements to all workstations).
- Sustain (maintain and review standards to ensure they continue to be implemented).

Some organizations add a sixth “S” for Safety.

WHY IT'S USEFUL

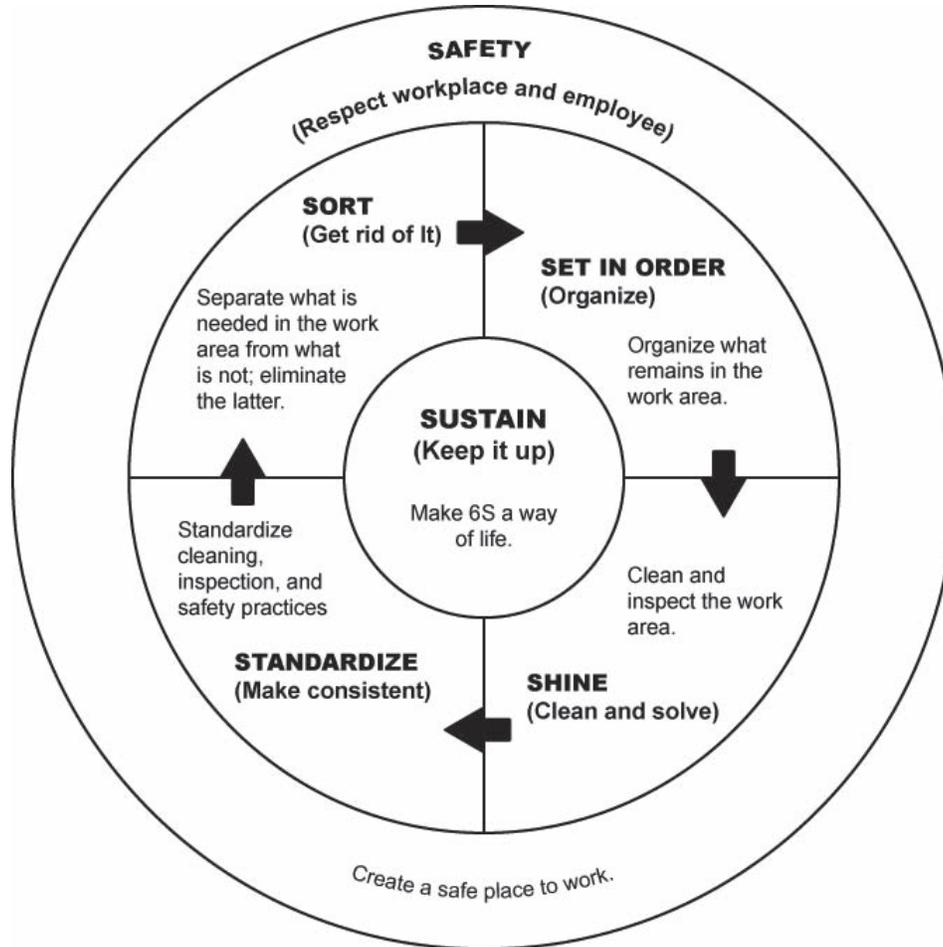
5S engages workers in Lean improvements in a hands-on, practical way to make improvements to clean, organize, and standardize work areas. Agencies or individuals can conduct a 5S exercise rapidly and with little need for training or advance planning. In a short time, improvements can be implemented to reduce waste and boost efficiency at workstations.

EXAMPLE GOVERNMENT APPLICATIONS

- Minnesota state agencies have held at least 265 kaizen and 5S events from 2008 to 2012, and have developed on-line resources on 5S.*
- Indiana Department of Environmental Management has used 5S to establish orderly, efficient work areas.

*For more information about Minnesota's efforts, see: www.lean.state.mn.us.

Figure 3: 5S + Safety (6S) Diagram



Source: Adapted from Productivity Press Development Team, *5S for Operators: 5 Pillars of the Visual Workplace*, (Productivity Press 1996).

Tools

- Example 5S matrix (including explanations of each step and tips) from the State of Ohio: <http://lean.ohio.gov/Resources.aspx>
- 5S Event Tools and Materials (collection of resources) from Minnesota Enterprise Lean: www.lean.state.mn.us/LEAN_pages/tools_resources_5S_event_tandm.html
- 5S Photo Gallery from Minnesota Enterprise Lean: www.lean.state.mn.us/LEAN_pages/5S_photo_gallery.html
- Office 5S training presentation on the Oregon Office of Transformation webpage: www.oregon.gov/DAS/TRFM/pub.shtml

Figure 4: Office Space Before 5S



Figure 5: Office Space After 5S (Same office, Different Angle)



Source: Minnesota Enterprise Lean 5S Photo Gallery,
http://www.lean.state.mn.us/LEAN_pages/5S_photo_gallery.html

Articles and Books

- Tom Fabrizio and Don Tapping, *5S for the Office: Organizing the Workplace to Eliminate Waste*, New York: Productivity Press, 2006.
- Productivity Press Development Team, *5S for Operators: 5 Pillars of the Visual Workplace*, Portland: Productivity Press, 1996.
- Don Tapping, *The 5S for the Office User's Guide*. Chelsea: MCS Media, 2010.
- Bert Teeuwen, *Lean for the Public Sector: The Pursuit of Perfection in Government Services*, New York: Productivity Press, 2011. (Note: This is also relevant for kaizen events and other methods.)

Visual Controls

Visual controls are signs, symbols, and/or other visual cues to remind employees of proper procedures. These signs are frequently developed during kaizen events to simplify the workplace and provide visual feedback on process performance, and can be used to reinforce the improvements made to a workspace using 5S.

Implementation Process

***Typical Duration:** Visual controls can be implemented immediately at any time, whether in conjunction with another improvement tool or as a standalone method.*

Visual controls can be developed to quickly remind employees of identified improvements and ensure continued implementation, reducing deviations from the desired standard. These are simply signs or other visual cues that serve as reminders in the workplace. In this way, potential problems are kept more visible, which enables them to be quickly addressed. Visual controls should help employees focus on a process and compare expected performance versus actual performance.

The form that visual controls take is not limited to any specific model; instead, creativity can generate nearly any kind of useful visual control. You can experiment with developing visual controls for your processes, and with revising them to track the status of those processes. For example, Figure 6 below shows a visual control that the EPA Region 10 office uses to clearly display the progress of a process, showing users whether it is on track or if delays have occurred. Figure 7 shows an example of a visual tracking board from another Lean improvement project, which was used to display and monitor the status of implementation items after the event. Team members were able to use the visual tracking tool to see whether implementation items were on schedule or had encountered delays.

WHY IT'S USEFUL

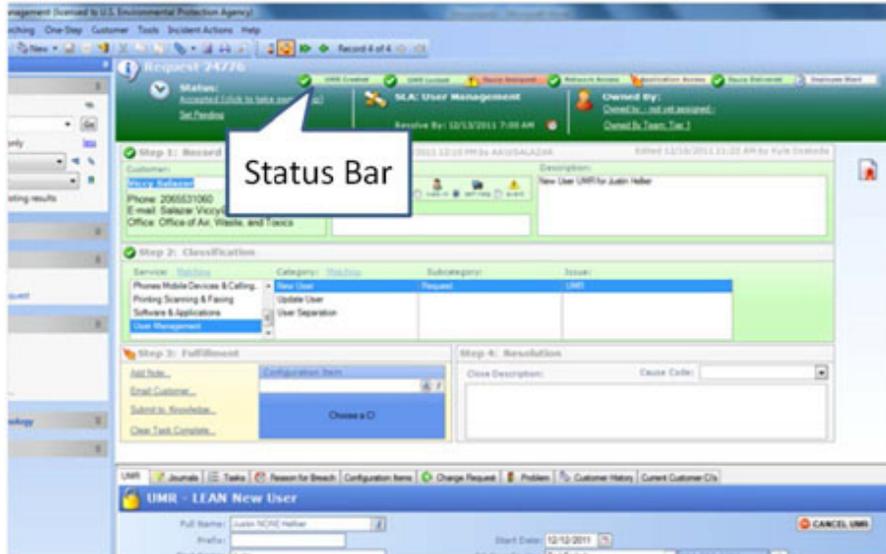
Visual controls are useful for reinforcing standardized procedures and for displaying the status of an activity so every employee can see it and take appropriate action. When used properly, visual controls display the difference between actual and expected performance, allowing you to identify areas for improvement. This tool provides rapid feedback to improve real-time decision-making and problem-solving.

EXAMPLE GOVERNMENT APPLICATIONS

- EPA Region 10 uses a visual status bar to show the progress of the new user workstation setup process.*
- Other examples of visual controls include color-coded filing systems, recycling and waste bins, labels, timers, and signs reminding employees of proper practices.

*For more information about EPA's event, see <http://www.epa.gov/lean/government/epa-initiatives/r10-umr-casestudy.htm>

Figure 6: Example Visual Control: Process Status Bar



Source: EPA Region 10 New Personnel Workstation Setup Process Lean Event

Figure 7: Example Visual Tracking Board



Source: EPA Region 10 State Implementation Plan Lean Event

Some common visual controls include hour-by-hour production tracking charts, job-by-job tracking charts, and recycling and waste disposal reminders, which can include various colored disposal bins with different shapes, signs, and/or photos to guide what users should dispose of where. Visual controls should be clear and the team should keep them maintained. When

visuals are kept current, they constantly reinforce the contrast between expected and actual process performance, and therefore allow opportunities for improvement to be identified. In this way, visual controls can substantially contribute to the effectiveness of other Lean methods.

Tools

- Examples of Lean visual control charts from Systems 2 Win:
<http://www.systems2win.com/solutions/VisualManagement.htm>

Articles and Books

- David Mann, *Creating a Lean Culture: Tools to Sustain Lean Conversions*, New York: Productivity Press, 2010, p. 53-84.

Standard Work

Standard work is a documentation of the best way (as currently known) to perform an operation; it also can be known as standard operating procedures. Lean standard work often incorporates pictures, color-coding, and/or other visuals to make it easy to follow.

Implementation Process

Typical Duration: Standard work can be developed in a few hours, or as part of a Lean event or improvement project.

Organizations develop standard work to document the proper way to perform an operation or task and make it easy for workers to do the task correctly. Standard work can be created for an entire process, or it can document the specific steps for each part of the process, such as standard work for issuing a permit. Lean teams may produce standard work through a process-improvement project (e.g., a Lean event team could create a new report template) or through other means. Once standard work is documented, employees can use that as the starting point for further improvement efforts. Standard work can also make it easier for new employees to efficiently undertake their new duties. Developing standard work with the people who actually use it, evaluating it “in the field,” improving the documented practices over time, and reviewing it regularly are some best practices for standard work.

Tools

- Standard work presentation on the Minnesota Lean webpage: www.lean.state.mn.us/LEAN_pages/tools_resources_kaizen_facilitator_tandm.html
- “Standard pig” exercise, facilitator instructions, participant handouts, and a presentation (an activity to illustrate the value of standard work) on the Minnesota Lean webpage: www.lean.state.mn.us/LEAN_pages/tools_resources_kaizen_facilitator_tandm.html
- Office standard work presentation on the Oregon Office of Transformation webpage: <http://www.oregon.gov/das/trfm/pages/resources.aspx>

WHY IT'S USEFUL

Standard work makes it easier for employees to work in an effective, efficient, safe, and compliant way. Consistent practices minimize errors and other problems. Standard work also eliminates reliance on “tribal knowledge,” and makes organizations more resilient and flexible to address their needs even if key staff leave or are missing.

EXAMPLE GOVERNMENT APPLICATIONS

- EPA Office of the Chief Financial Officer developed a standard format for corrective action plans, dramatically improving efficiency and data accessibility.*
- Indiana’s Office of Air Quality used standard work to focus on the reduction of work and standardization of tasks for its Digital Inspector tool. **
- The Indiana Office of Land Quality used standard work as part of its geology technical document review process. The new standardized process is expected to eliminate 1,560 hrs of non-value added document assessment and printing time for staff.**

**For more information about EPA’s event, see www.epa.gov/lean/government/epa-initiatives/ocfo-casestudy.htm*

*** For more information about Indiana’s events, see the case studies in the ECOS Green Report, www.ecos.org/files/4323_file_ECOS_Lean_Inventory_November_2010.pdf*

Articles and Books

- David Mann, *Creating a Lean Culture: Tools to Sustain Lean Conversations*, New York: CRC Press, 2010.
- Productivity Press Development Team, *Standard Work for the Shopfloor*, New York: Productivity Press, 2002.
- Bert Teeuwen, *Lean for the Public Sector: The Pursuit of Perfection in Government Services*, New York: CRC Press, 2011.

Kaizen Event and Mini-Lean Event

In a kaizen event, a multi-disciplinary team comes together for one to five days to examine the existing process and identify areas to reduce waste and effect quick improvements to improve overall efficiency. Kaizen events typically use a facilitator trained in kaizen methodology as opposed to other methods that require less training. Kaizen events are typically 3-5 days, while point kaizen or mini-Lean events are conducted on an extremely narrow, focused scope over a shorter period (1-2 days).

Implementation Process

Typical Duration: Kaizen events typically take place over a three-to-five day period. Point kaizen events/mini-Lean events are shorter, with more narrow scope, and can be conducted in one or two days.

The scope of the project, complexity of the process, and the number of people involved are good indicators of whether or not a kaizen or point kaizen event is appropriate. Typically, point kaizen events involve relatively simple processes or a component of a complex process that a small set of people are involved with (e.g., a permit-application form or a data-entry process). Your Lean facilitator can help you determine if a kaizen or point kaizen event is most appropriate. The [Lean Government Event Scoping Guide](#) provides guidance on effectively scoping events.

Follow these steps to prepare for a kaizen event:

1. Select the process you wish to improve.
2. Identify an event facilitator.
3. Select the event team (the team should include leaders, employees involved in the everyday operations of the process, and customers or

WHY IT'S USEFUL

Many organizations find kaizen events to be a useful way to begin their Lean journey, as this method introduces Lean skills to a team of employees and, when done well, results in rapidly implemented improvements. Conduct a kaizen event on any targeted process in your organization in which improvements are needed quickly but that is more complex than could be addressed by a process walk alone.

EXAMPLE GOVERNMENT APPLICATIONS

- Florida Department of Environmental Protection's Submerged Lands and Environmental Resource Permitting Program kaizen event achieved a 50 percent reduction in the time it takes for an application to reach a processor.*
- Iowa Department of Natural Resources has conducted six point kaizen exercises on processes with a small scope and condensed timeline.**
- EPA Region 7 conducted a mini kaizen event to improve the efficiency of the Spill Prevention, Control, and Countermeasure (SPCC) rule inspection and compliance process.***
- Many government agencies have conducted kaizen events to identify and implement process improvements. Several kaizen event case studies are available on the EPA and ECOS Lean Government websites.

*For more information about this event, see the case study at: www.epa.gov/lean/government/state-initiatives/florida.htm

** For more information about this event, see the case study at: <http://www.epa.gov/lean/government/state-initiatives/iowa-wastewater.htm>

*** For more information about this event, see the case study at: <http://www.epa.gov/lean/government/pdf/reg7spcc-fs.pdf>

stakeholders of the process) and individuals to fill key roles in the team.

4. Develop an event charter in a pre-event meeting (this defines the scope and boundaries of the process).

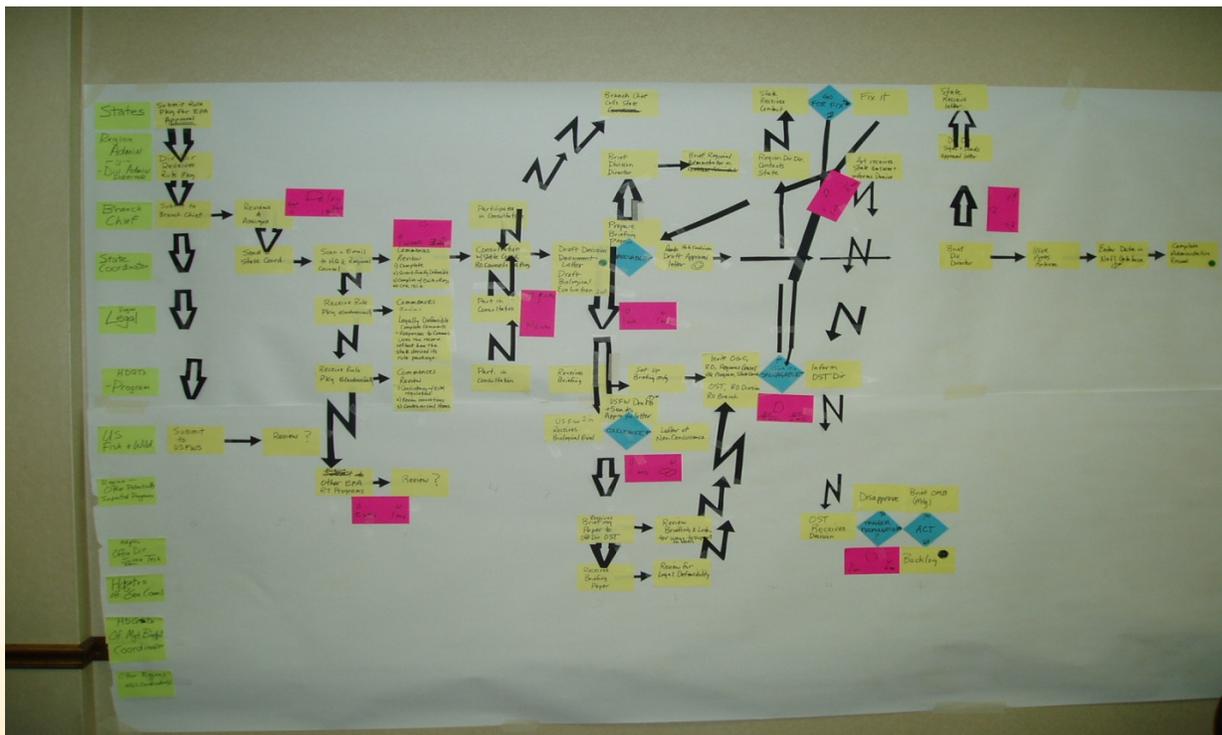
The event itself consists of one or two days of mapping the current process, using sticky notes to allow the team to visualize all parts of the process, followed by one or two days to map a new process with reduced waste. The team creates an implementation plan to effect the improvements identified during the event, and reports out on their findings to organizational leadership on the final day. Some Lean facilitators describe the flow of a kaizen event as (1) measure, (2) analyze, (3) improve, (4) control, and (5) report and celebrate. An example agenda outline and process map are below.

See the [Lean in Government Starter Kit](#) for more information on how to conduct a kaizen event.

Figure 8: Five-Day Kaizen Event Agenda Outline

Day 1	Day 2	Day 3	Day 4	Day 5
Training Day Begin mapping and measuring current work process	Discovery Day Measure and analyze current work process	Do Day Create and map new process	Do, Re-Do, Document Day Finalize new process design, estimate benefits, develop action plan	Celebration Day Present results and celebrate

Figure 9: Partial “Swim-Lane” Style Process Map from a Kaizen Event



Tools

- Lean in Government Starter Kit downloadable resources: www.epa.gov/lean/government/starterkit/resources
- Kaizen preparation tools and instructional videos: www.lean.state.mn.us/LEAN_pages/tools_resources_kaizen_facilitator_tandm.html
- Kaizen event resources, including sample team charter, sponsor contract, event agenda, and more (many of these are similar to the Starter Kit resources): <http://lean.iowa.gov/resources/index.html>
- Schedule for conducting a kaizen event, key roles for a kaizen event, and event checklist: <http://lean.ohio.gov/Resources.aspx>
- Kaizen event videos:
 - Minnesota DEED Kaizen video: http://www.lean.state.mn.us/LEAN_pages/DEEDKaizen.wmv
 - Connecticut DEP Lean Event video: www.depdata.ct.gov/video/mainpsa.asp?url=http://u10videos.com/DEP/LEAN/GreenAndLean.wmv?sami=http://u10videos.com/DEP/LEAN/GreenAndLean.smi&name=Green

Articles and Books

- EPA Lean Government case studies (includes kaizen and value stream mapping events): www.epa.gov/lean/government/epa-initiatives/index.htm
- EPA Lean Government links to state Lean case studies (many of which are kaizen events): www.epa.gov/lean/government/state-initiatives/index.htm
- Environmental Council of the States (ECOS) compilation of case studies of various state agency and EPA-State Lean projects (includes kaizen and value stream mapping events): http://ecos.org/files/3578_file_April_2009_Green_Report_Lean_Case_Studies..pdf?PHPSESSID=69e321fc755d29431f5c58c5f02448f1
- Martin, Karen. *Kaizen Event Planner: Achieving Rapid Improvement in Office, Service, and Technical Environments*. New York: Productivity Press, 2007.
- Productivity Press Development Team. *Kaizen for the Shopfloor*. Portland: Productivity Press, 2002.
- Bert Teeuwen, *Lean for the Public Sector: The Pursuit of Perfection in Government Services*, New York: Productivity Press, 2011. (Note: This is also relevant for 5S and other methods.)

A3

The A3 method is based on Toyota’s “A3 Problem-Solving Report,” which is designed to produce a high-level understanding of a process and how it fits together with surrounding efforts within an organization. With A3, individuals or small teams diagram a process or problem using only what they are able to fit on a standard, A3-sized piece of paper (approximately 11” x 17”). This method requires that the team communicate effectively to depict the process simply, and results in a high-level view of the current steps in the process. A3 is a fundamental problem-solving tool that can be used at all levels of an agency.

Implementation Process

Typical Duration: The A3 analysis can be conducted in as little as a few hours.

An individual or small team completes the following steps to conduct an A3 problem analysis:

1. Identify a problem or need.
2. Conduct research to understand the current situation.
3. Conduct root cause analysis.
4. Devise countermeasures to address root causes.
5. Develop a target state.
6. Create an implementation plan.
7. Develop a follow-up plan with predicted outcomes.
8. Discuss plans with all affected parties.
9. Obtain approval for implementation.
10. Implement plans.
11. Evaluate the results.

Follow these steps and transfer the results onto the A3 form. The completed form will include the background of the problem, the current condition of the process, root-cause analysis of the problem, the target state, an implementation plan, countermeasures, and a future action plan.

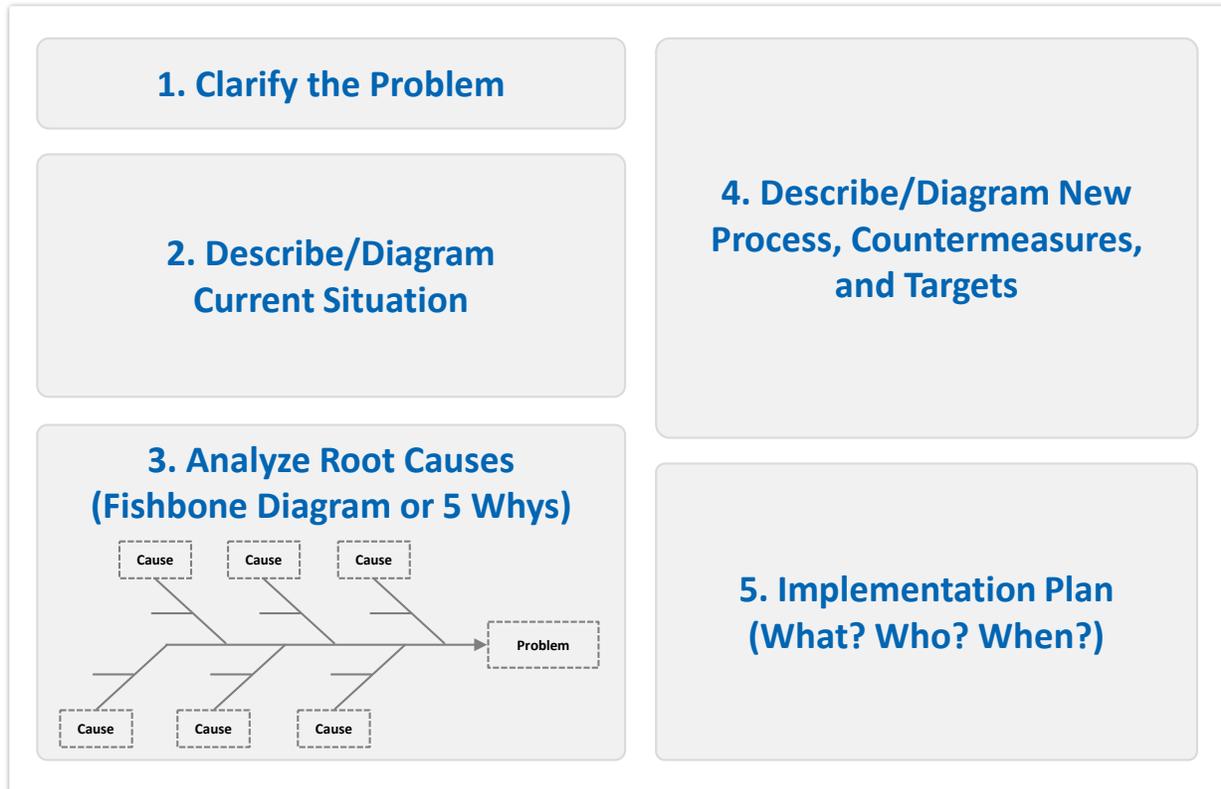
WHY IT'S USEFUL

The A3 Process helps people engage in collaborative, in-depth problem-solving that addresses the root cause of problems and allows teams to provide structure to problem-solving and maximize learning. The team, having improved its problem-solving capacity and gained a more complete understanding of the process, then uses the view of the process created on the paper to identify areas for improvement. This process helps agencies to identify areas for quick improvement, and to flag areas for potential future improvement efforts.

EXAMPLE GOVERNMENT APPLICATIONS

- The Indiana Department of Environmental Management has applied the A3 method at the staff level to improve connections between strategy and improvement efforts, and to improve communication across the agency.

Figure 10: A3 Report Layout



Tools

- A3 Form with Instructions from Washington State: www.accountability.wa.gov/leadership/lean/documents/A3_Instructions_for_8-Step_Problem_Solving.docx
- A3 Template from Washington State: www.accountability.wa.gov/leadership/lean/documents/A3_Blank_Form.docx
- A3 Report Template and Instructions by the Montana State University College of Engineering: <http://www.coe.montana.edu/IE/faculty/sobek/A3/report.htm>

Articles and Books

- A3 Process Tutorial (with case study and report template, also linked above) by the Montana State University College of Engineering: www.coe.montana.edu/IE/faculty/sobek/A3/index.htm
- John Shook, *Managing to Learn: Using the A3 Management Process to Solve Problems, Gain Agreement, Mentor, and Lead*, Cambridge, MA: Lean Enterprise Institute, 2008.
- Durward K. Sobek II and Art Smalley, *Understanding A3 Thinking: A Critical Component of Toyota's PDCA Management System*, New York: Productivity Press, 2008.

Value Stream Mapping Event

A value stream mapping event is similar to a kaizen event, but higher level and more strategic. Like a kaizen event, a value stream mapping event requires the dedication of a team of participants, and the services of a facilitator. A value stream mapping event can be used to create a full picture of a complex process before drilling down into tactics through another method such as a kaizen event. In a value stream mapping event, two maps are created, a current state map showing the process as it currently operates and a future state map showing a design for a new process that is less complex and more efficient. Many agencies have expanded a typical 3-day value stream mapping event to add more time for implementation planning, thereby making them more similar to kaizen events.

Implementation Process

Typical Duration: A value stream mapping event typically takes place over two to four days.

In a value stream mapping event, the team maps out the entire process from start to finish in its existing state in a high-level visual representation of process flows. Color-coded sticky notes are often used to show where time in the process is value-added and where there is waste, or the map can be drawn on a white board. Participants calculate and record the time required for each step, including wait time and delays. Participants then brainstorm improvement ideas and create a future state map based on the elimination of waste from the current process. The team develops an implementation plan with specific, actionable improvements to eliminate the wastes that they identified in the current state and to make the future state map become reality. The next steps identified in value stream mapping events may be kaizen events, other Lean projects, or immediate actions to improve targeted areas of the process in the future.

WHY IT'S USEFUL

Value stream mapping events allow organizations to approach a complex process and present in a simple yet comprehensive picture. Use value stream mapping events to gain high-level understanding of processes from start to finish, identify areas for future improvement efforts, and develop an implementation plan to achieve the desired "future state."

EXAMPLE GOVERNMENT APPLICATIONS

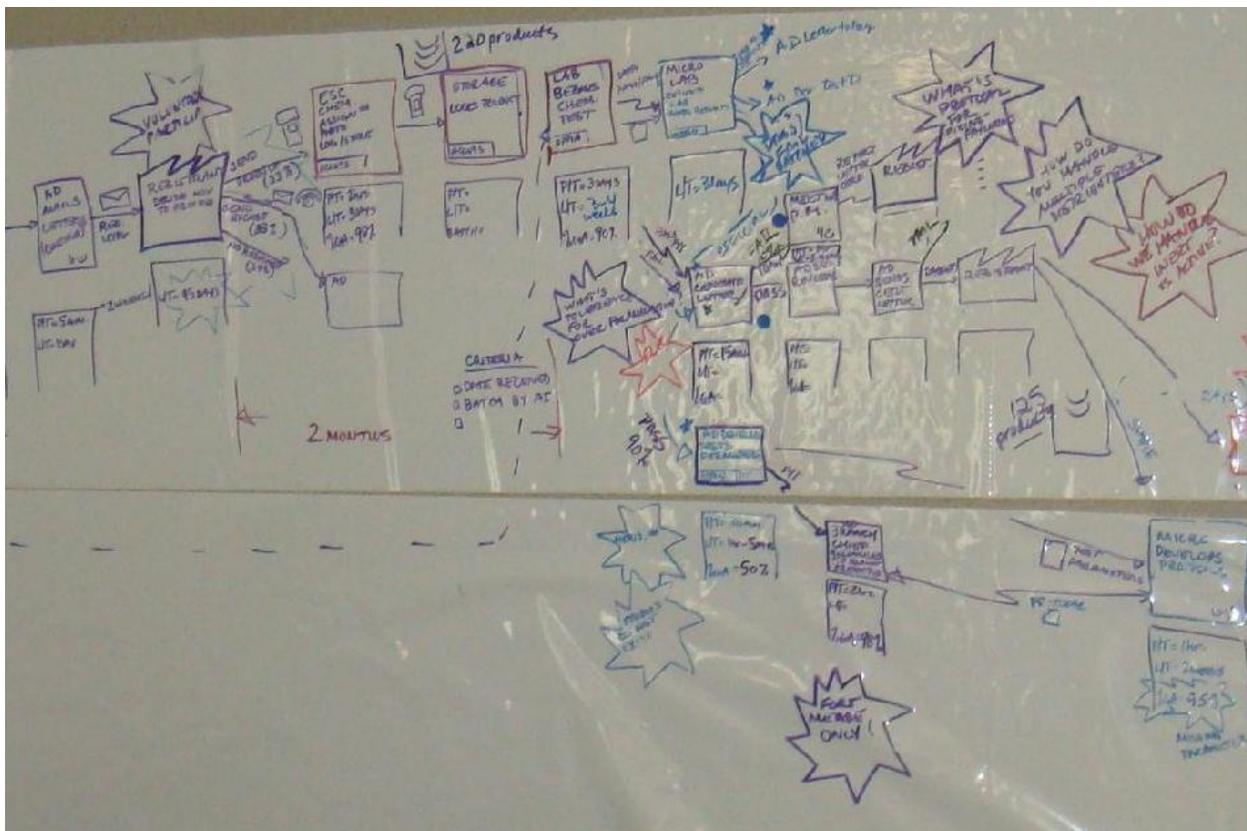
- EPA Region 6 Pesticides Enforcement value stream mapping event reduced total processing time by 53 percent.*
- Several government agencies have used value stream mapping events to identify areas for improvement in complex processes. Several value stream mapping event case studies are available on the EPA Lean Government website.

*For more information about this event, see the case study at www.epa.gov/lean/government/epa-initiatives/r6-pest-casestudy.htm.

Figure 11: Three-Day Value Stream Mapping Event Agenda Outline

Day 1	Day 2	Day 3
<p>Training & Current State Map Value stream mapping training; map & analyze the current state of the process</p>	<p>Future State Map & Implementation Plan Map a desired future state for the process; develop an implementation plan</p>	<p>Celebration Day Present results and celebrate</p>

Figure 12: Partial Value Stream Map Showing “Starbursts” of Improvement Opportunities



Source: EPA Office of Pesticide Programs Antimicrobial Testing Program Lean Event, <http://www.epa.gov/lean/government/pdf/opp-casestudy.pdf>

Tools

- Information on value stream mapping and on value stream mapping events in Delaware and other states: www.dnrec.state.de.us/DNREC2000/VSM/Index.htm

Articles and Books

- Environmental Council of the States (ECOS) compilation of case studies of state agency and EPA-State Lean projects (includes kaizen and value stream mapping events): http://ecos.org/files/3578_file_April_2009_Green_Report_Lean_Case_Studies..pdf?PHPSESSID=69e321fc755d29431f5c58c5f02448f1
- Beau Keyte and Drew Locher, *The Complete Lean Enterprise: Value Stream mapping for Administrative and Office Processes*, New York: Productivity Press, 2004.
- Mike Rother and John Shook, *Learning to See: Value Stream Mapping to Create Value and Eliminate Muda*, Brookline, MA: Lean Enterprise Institute, 2003.
- Tapping, Don and Tom Shuker, *Value Stream Management for the Lean Office: Eight Steps to Planning, Mapping, and Sustaining Lean Improvements in Administrative Areas*, New York: Productivity Press, 2003.

Six Sigma

Six Sigma is a continuous improvement methodology that aims to improve processes by reducing variability and removing defects (or errors) using quality management methods including statistical analysis. Six Sigma projects are led by Six Sigma or Lean Six Sigma “belts” (yellow, green, or black belts), who are familiar with Six Sigma statistical tools and ways to reduce process variation.

Implementation Process

Typical Duration: A Six Sigma project takes as long as 6 to 18 months to implement; however, Six Sigma analytic tools also can be used in the context of Lean events.

Six Sigma uses data and statistical analysis to measure and improve an organization’s performance, practices, and systems. Agencies that implement Six Sigma strive to improve processes by reducing variation. By reducing variation in how a process is conducted, agencies can reduce delays, improve quality, and increase outputs (such as approved permits). Six Sigma is most useful when it is applied to processes that are rich in data.

Six Sigma improvement efforts follow the DMAIC methodology, defined as follows:

- Define the problem
- Measure key aspects of process data
- Analyze the data
- Improve or optimize the current process
- Control the future state process to correct any deviations

Some organizations have added a “Green it Up” step in order to address environmental and natural resource implications of the process, forming the acronym DMAGIC.¹

There are several Six Sigma tools that agencies can use during the above steps of the DMAIC methodology. For example, during the “Analyze” step, teams can identify and analyze the root causes of quality problems using “fishbone” root cause analysis diagrams, Failure Mode Effects

¹ For more information on “Green it Up” and DMAGIC, see EPA’s Lean Six Sigma and Environment JEA case study: <http://www.epa.gov/lean/environment/studies/jea.pdf>

WHY IT’S USEFUL

Six Sigma enables agencies to improve performance by minimizing defects in their processes. Through data gathering and statistical analysis, Six Sigma helps agencies better understand the sources of their waste and reduce abnormalities to improve efficiency.

EXAMPLE GOVERNMENT APPLICATIONS

- Minnesota Pollution Control Agency used Six Sigma to improve the timeline for issuing NPDES permits from 9% to 75% within 180 days and reduce the NPDES reissuance permitting backlog from nearly 50% to 8%.*
- Charleston Water Services used Six Sigma to reduce variation in its treatment plant disinfection process and meet regulatory requirements. The improvements the utility identified optimized operations and reduced chemical costs by \$50,000 per year and labor costs by \$50,000 per year.**

* For more information about this event, see the case study at:

www.epa.gov/lean/government/state-initiatives/minnesota-wastewater.htm

**For more information and other utility Lean and Six Sigma examples, see case studies at: www.epa.gov/lean/environment/pdf/eum-lean-guide.pdf

Analysis (FMEA), Pareto charts, and/or other means. These tools can enable your agency to determine the source of efficiency problems and select the best actions to improve the process.

Six Sigma projects are led by technical experts, since knowledge of statistical analysis is needed. These individuals are often called different colored “belts,” borrowing from martial arts terminology, with levels including master black belts, black belts, green belts, and yellow belts. Organizations seeking to establish or expand Lean and Six Sigma capacity internally may seek to have staff trained at these various levels of expertise.

Six Sigma can be implemented in a single project or broadly across an organization, and can pay off in substantial efficiency improvements over time. Six Sigma techniques can be fused with Lean tools for a complementary system of continuous improvement (this combination is often called “Lean Six Sigma”). For example, an agency might choose to hold a kaizen event as part of its overall Six Sigma improvement effort, or apply standard work or visual control tools in conjunction with Six Sigma tools and analysis. Although both are holistic improvement approaches, Lean tools focus on eliminating unnecessary time and process wastes, while Six Sigma tools target quality improvements and elimination of variation.

Tools

- Six Sigma sample templates (Six Sigma Plan-Do-Check-Act Project Worksheet, Cause-and-Effect (Fishbone) Diagram, and Suppliers-Inputs-Process-Outputs-Customers [SIPOC] Process Definition Sheet) available in EPA’s Resource Guide to Effective Utility Management and Lean, Appendix D: www.epa.gov/lean/environment/pdf/eum-lean-guide.pdf
- Six Sigma tools and templates from isixsigma: <http://www.isixsigma.com/tools-templates/>
- Downloadable Pareto chart template: <http://paretochart.org/paretocharttemplateexcel/>

Articles and Books

- JEA Lean Six Sigma Case Study from EPA: www.epa.gov/lean/environment/studies/jea.pdf
- Brandon Cole, *Lean Six Sigma for the Public Sector: Leveraging Continuous Process Improvement to Build Better Governments*, Milwaukee: American Society for Quality, 2011.
- Michael L. George, *Lean Six Sigma for Service: How to Use Lean Speed & Six Sigma Quality to Improve Services and Transactions*, New York: McGraw-Hill, 2003.
- Michael L. George, David Rowland, and Bill Kastle, *What is Lean Six Sigma?* New York: McGraw-Hill, 2003.
- James William Martin, *Lean Six Sigma for the Office*, Boca Raton: CRC Press, 2009.
- John Morgan and Martin Brenig-Jones, *Lean Six Sigma for Dummies*, New York: For Dummies, 2012.
- U.S. Department of Defense, *Continuous Process Improvement/Lean Six Sigma Guidebook, Revision 1*, July 2008. http://www.au.af.mil/au/awc/awcgate/dod/cpi_leansixsigma_hdbk2008.pdf
- Ian D. Wedgewood, *Lean Six Sigma: A Practitioner’s Guide*, New York: Prentice Hall, 2006.

Lean Process Design

Lean Process Design is focused on creating efficient and effective processes from the start using Lean concepts and techniques. There are two main methods that fall under Lean Process Design that are relevant to service and administrative applications: Design for Lean Six Sigma (DFLSS) and 3P. Although one method is rooted in the Six Sigma framework and the other is rooted in the Lean framework, both design methods use a structured approach for identifying customer needs, brainstorming and testing new process and/or product design ideas, and then implementing the new service or process.

Design for Lean Six Sigma

Design for Lean Six Sigma or Design for Six Sigma is a set of tools, methods, and concepts used to ensure designs are consistent with customer requirements. It relies on a structured set of tools and methods drawing from both Lean and Six Sigma that systematically identify, prioritize, and translate customer needs into the design of processes or services. It typically includes five steps: Define, Measure, Explore, Develop, and Implement. Design for Lean Six Sigma is focused on process generation versus process improvement.

3P

The Production Preparation Process, or 3P, incorporates many of the traditional elements of Lean. It helps to optimize customer requirements by starting with a clean process (or product) development slate to rapidly create and test a variety of process designs. The focus of the design process is to develop a new process or product that requires the least amount of time, materials, and resources. The 3P method represents a shift from the continuous, incremental improvement of an existing process (e.g., through kaizen events and daily Lean efforts) to making “quantum leap” design improvements that can improve performance and eliminate waste beyond that which can typically be achieved through improving an existing process.

WHY IT'S USEFUL

Lean Process Design is often used to design a new process or product, or when an existing process has so much variation and is so complicated that it is better to redesign it rather than to map out the process to identify areas to improve. It can also be used to identify alternative ways to meet the customer's needs using different product or process designs. Lean Process Design typically results in processes that are less complex and easier to use and maintain. It is a powerful enabler for invention and innovation because it creates a structure and process for an organization to create a new process or service both independently and collaboratively. There are two key Lean design methods: Design for Lean Six Sigma and 3P.

Design for Lean Six Sigma is particularly helpful for designing processes where there are a large number of unknowns or addressing customer needs requires significant new knowledge or capabilities.

3P is particularly useful when a team wishes to design or redesign a process or product in a short time frame.

EXAMPLE GOVERNMENT APPLICATIONS

- The State of Iowa has used Design for Lean Six Sigma for several events, including developing a process for a new electrical inspection program, redesigning the Department of Natural Resources' magazine, and launching the Office of Energy Independence.

Implementation Process

Typical Duration: The duration of a Design for Lean Six Sigma project can vary depending on the size and scope of the process being redesigned. They can take anywhere from several days to several months.

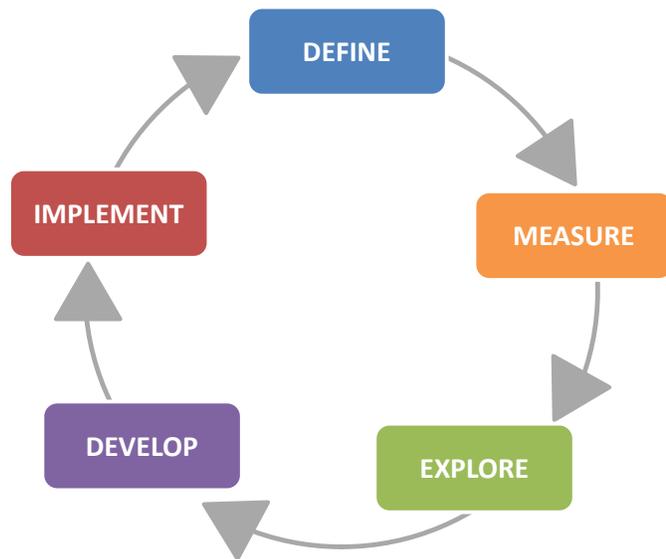
3P events typically take place over a 4-5 day period, plus prep and follow-up work.

Design for Lean Six Sigma

DFLSS projects are run using similar infrastructure and guidelines as Six Sigma projects. Projects are conducted by teams of black belts, champions, and process owners, as well as a variety of cross-functional staff from the organization. The teams often rely on software tracking tools that allow them to monitor overall progress and present the outcomes of each step to their leadership team to solicit feedback. DFLSS emphasizes capturing and understanding customer and business needs and helps teams establish links at every step to translate “needs” into “requirements.” The requirements are also used to inform the processes needed to create the new service or product. The typical steps in a DFLSS event are described below:

1. *Define:* The project team meets with the event sponsor to develop a charter that is clearly tied to the overall organizational strategy. The team also produces a product or service description, business case, project goals and scope, and a high-level plan for the event.
2. *Measure:* The team then focuses on understanding the Voice of the Customer² and how to translate customer feedback into measurable design requirements. This is a crucial step in the process as a good understanding of customer needs is the key determinant of the project's success. Team members start the Voice of the Customer process by examining existing customer information and identifying what additional information is needed.
3. *Explore:* The team seeks to understand the best way to meet customer needs at a conceptual design level. Team members innovate to develop solution alternatives and present the most promising options to the sponsor and senior management.
4. *Develop:* This phase focuses on the detailed design of the most promising alternatives. In addition to designing the core service, the team also develops a plan for all associated elements (e.g., establishing a plan for human resources or the information technology department, purchasing supplies, etc.) that will be required for implementation. In this stage in particular, the project team relies on Lean and Six Sigma tools to minimize waste and maximize speed in the new process or product. Teams often use mistake-proofing or design-optimization tools to identify ways to improve the new process.

Figure 13: Design for Lean Six Sigma Process



² Voice of the Customer is a Lean and Six Sigma technique in which customer requirements are translated into specifications that are used to inform the event.

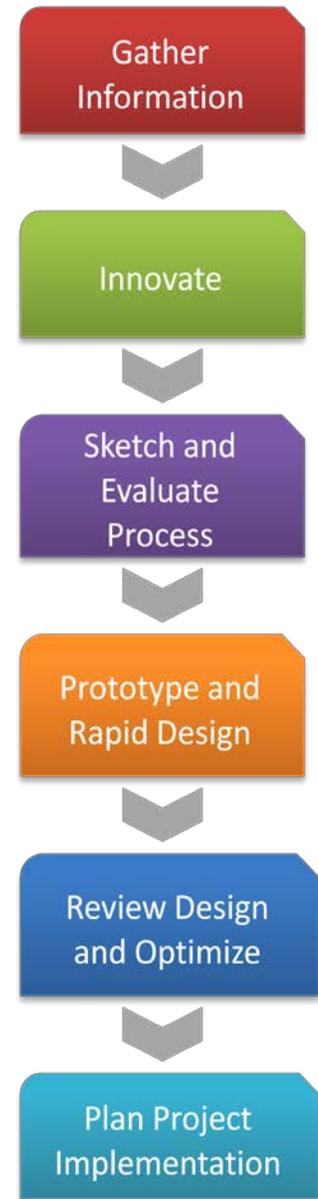
5. *Implement*: The objective of this stage is for the project team to successfully conduct a pilot of the new process, transfer ownership of the new process to the process owner, and implement the new process or service.

3P

During a 3P project, cross-functional teams spend several days working to develop multiple alternatives for each process step and evaluating each alternative against established criteria (e.g., designated cycle time) and a preferred cost. Team members typically need experience in Lean to make the event successful because 3P design events incorporate nearly all of the Lean methodologies. The goal is to develop a process or product design that meets customer requirements with minimum waste. There are five main groups of people involved in a 3P event: process owner, process experts, judges (i.e., senior management or technical subject matter experts), process outsiders, and facilitators. The typical steps in a 3P event are described below.

1. *Information Gathering*: The team seeks to understand core customer needs and to fully understand the problem that is being addressed through the design effort. The team collects information, including process attributes, previous lessons learned, forecasts, goals, boundaries, and constraints to create a coherent body of knowledge.
2. *Innovation*: The team then focuses on innovation and exploring ideas and potential approaches to each element of the new process or service. The goal in this stage is to cast a wide net and develop an array of possible solutions. For example, team members may be asked to identify a minimum of “Seven Ways” to solve a problem, to stimulate creativity.
3. *Sketch and Evaluate the Process*: The team divides into sub-teams and each sub-team member draws different ways to accomplish the process in question. The sub-teams evaluate the sketches and choose the best (along with any good features from the sketches that are not chosen) for a mock-up.
4. *Prototyping and Rapid Design*: The project team then develops a prototype or pilot of the process and experiments with applying the better alternative that the team selected. In this stage, the team typically relies on “try-storming” rather than brainstorming. With try-storming ideas are quickly generated and tested rather than thought about and analyzed for validity. Team members make adjustments throughout the prototyping process and evaluate the alternative solution at each functional step of the process. For example, if the team was testing a new human resources hiring process, they would role play every step in the new process to test it for efficiency and value and make changes as necessary to develop the best process.
5. *Design Review and Optimization*: Once the team has selected a concept for additional refinement, the team presents it to a larger group (including the original product designers) for feedback to ensure that the new process attributes are harmonized with the process owners and senior management.

Figure 14: 3P Process Steps



6. *Develop Project Implementation Plan*: Once the new process is finalized, the team selects a project implementation leader who helps determine the schedule, process, resource requirements, and distribution of responsibilities for completion.

Articles and Books

Lean Process Design

- Ronald Mascitelli, *The Lean Design Guidebook*, Northridge: Technology Perspectives, 2004.
- Allen C. Ward, *Lean Product and Process Development*, Cambridge: The Lean Enterprise Institute, 2007.

Design for Lean Six Sigma

- Michael L. George, *Lean Six Sigma for Service*, New York: McGraw-Hill, 2003.
- James William Martin, *Lean Six Sigma for the Office*, New York: CRC Press, 2009.
- Jugulum Rajesh and Phillip Samuel, *Design for Lean Six Sigma: A Holistic Approach to Design and Innovation*, Hoboken: John Wiley & Sons, Inc., 2008.

3P

- Allan R. Coletta, *The Lean 3P Advantage*, New York: CRC Press, 2012.
- U.S. EPA, “3P,” *Lean Thinking and Methods*, www.epa.gov/lean/environment/methods/threep.htm.
- Amanda Vaughn, Fernandes Pradeep, and J. Tom Shields, *Manufacturing System Design Framework Manual*, http://lean.mit.edu/downloads/cat_view/94-products/581-manufacturing-system-design-framework-manual.

Strategy Deployment

Strategy deployment, also referred to as policy deployment or *hoshin kanri*, is a strategic planning methodology in which all employees participate in process management to “cascade down” strategic objectives through all levels of the organization. This method is designed to ensure that all staff go about their work in a way that applies the master plan of the organization consistently. Strategy deployment elegantly links the strategic goals of an organization with a cascade of increasingly specific programs and activities that support those goals.

Implementation Process

Typical Duration: Developing a strategy deployment framework typically takes place over a three- to four-day event. The framework is then implemented continuously and updated annually.

Strategy deployment requires an organization to review its key strategy for the coming year, set goals to support strategic direction, identify specific areas where Lean events and other tools can support those goals, establish a pattern of improvement events and processes for the coming year, document objectives and improvement projects in an X-matrix, and set a schedule of regular review of progress. This method is a cyclic management strategy, and requires the regular review of actions to address any deviations from the strategic plan.

The strategy deployment cycle can be thought of as an adapted version of a Plan-Do-Check-Act (PDCA) cycle of continuous improvement. Instead of top management forming and executing strategy in a vacuum, this nested cycle engages all levels of an organization by involving middle management and staff in planning and implementing strategy. This method requires every member of an organization to become a practitioner of continuous improvement methods by applying the PDCA cycle to their work.

WHY IT'S USEFUL

Strategy deployment is useful for agencies that are ready to connect process-improvement efforts to its overall strategic goals. This tool helps to integrate an agency's strategic and business plans with its vision, mission, value proposition, core competencies, and each individual's annual work plan. A more advanced continuous improvement tool, strategy deployment helps agencies evolve from short-duration Lean events and other tools to integrate Lean methods into long-term strategy as well as everyday operations. Strategy deployment enables agencies to achieve and sustain a cultural shift toward lasting improvement.

EXAMPLE GOVERNMENT APPLICATIONS

- The Iowa Department of Management applies policy deployment to prioritize process improvement efforts based on strategic objectives, and to select projects that promise to have the greatest impact on agency performance.*

* For more information about Iowa's continuous improvement efforts, see <http://lean.iowa.gov/>

Figure 15: Example X-Matrix

		2																						
		1	Strategy 1																					
	Objective 1		Strategies – “How”										Implementation Teams											
			Objectives – “What”					Deliverables and Metrics – “How Much”					Team for Strategy #1											
			Timeline – “When”										Deliverable 1 & Expected Results											
2	1		Deadline 1					1	2	3	4	5	1	2	3	4	5	Color Key						
		1																		On Track				
		2																		Warning				
		3																		Off Track				
		4																						

Strategy 1, deliverable 1 is on track

In a typical strategy deployment event to identify strategic priorities, teams begin by sharing information to establish a common understanding of the strengths, weaknesses, opportunities, and threats (SWOT) present in the external and internal environment of the agency. This information is then used to conduct a SWOT analysis to identify significant, vital issues that the agency will need to address. Generally speaking, strengths and weaknesses are internally-focused, and opportunities and threats are externally-focused. The team, which can be divided into sub-teams, then identify actions and an implementation schedule to align the direction of the agency with the information revealed in the SWOT analysis.

Teams document the organization’s midterm strategy, annual strategy, and tactical improvement projects using a **strategy deployment matrix**, or **X-matrix**, which is used to guide strategy design and record the results. An X-matrix presents a visual display of the planning team’s strategy design on one piece of paper, and it is a place to record decisions to articulate and execute an improvement strategy. The teams use the strengths and opportunities identified in the SWOT analysis to guide the development of specific objectives that are broad yet also specific enough to produce achievable targets. These objectives are then used to identify improvement projects. When completed, the X-matrix displays the business objectives, selected projects, goals, projected project impact, and implementation teams.

Deselection is another important step in strategy deployment. Deselection requires team members to evaluate the alignment of improvement projects against the strategic objectives in the X-matrix, and “kill” deselected projects that are not aligned. This step helps ensure that the agency’s improvement efforts are focused and not spread over too many priorities.

Tools

- Downloadable example X-matrix to use to guide strategy deployment and record results (free registration required): <http://www.velaction.com/policy-deployment-matrix/>

Articles and Books

- Pete Babich, *Hoshin Handbook: Focus and link activities throughout the organization*, Total Quality Engineering, 1996.
- Michael Cowley and Ellen Domb, *Beyond Strategic Vision: Effective Corporate Action with Hoshin Planning*, Burlington, MA: Butterworth Heinemann, 1997.
- Thomas L. Jackson, *Hoshin Kanri for the Lean Enterprise*, New York: Productivity Press, 2006.
- Karen Martin, *The Outstanding Organization: Generate Business Results by Eliminating Chaos and Building the Foundation for Everyday Excellence*, McGraw-Hill, 2012.
- Anand Sharma and Gary Hourseit, *The Antidote: How to Transform Your Business for the Extreme Challenges of the 21st Century*, North Carolina: Managing Times Press, 2006.
- Anand Sharma and Gary Hourseit, "Plan for Success through Policy Deployment," Manufacturing.net, 2008.

Conclusion

The variety of process improvement methods available offer many options for building a continuous improvement program. As you begin your Lean journey, you may wish to select one or two methods to get started with process improvement in your organization. When you are getting started, it can be useful to think about two main types of process-improvement activities:

1. Lean events (such as a 2-5 day kaizen event)
2. Ongoing process improvement activities that are supported through simple Lean tools such as 5S, visual controls, and standard work

After considering the scope and complexity of your project, consider both what type of event-based Lean projects your team would like to conduct (e.g., a half-day process walk, a 3-day high-level value stream mapping event, or a 5-day focused kaizen event) and what Lean methods and techniques you might use to support continual improvement in day-to-day work practices. As you progress to sustain process improvement and effect a Lean culture over time, consider the benefits of all of the methods in this Guide, as many can be appropriate for different needs and processes.

We hope that the descriptions and resources in this Guide have been useful in providing information and guidance to your organization as you identify appropriate methods for all your process improvement needs. For more Lean government resources, visit the EPA Lean Government website at www.epa.gov/lean/government. We wish you luck in your process-improvement efforts, and encourage you to share your ideas and experiences.

EPA Lean Government Contact

To learn more or to share your ideas and experiences, visit the EPA Lean Government website (www.epa.gov/lean/government) or contact:

Kim Green-Goldsborough
U.S. EPA, Office of Policy
(202) 566-2355
green-goldsborough.kimberly@epa.gov

This document was prepared for EPA by Ross Strategic.

United States Environmental Protection Agency
www.epa.gov/lean
June 2013
EPA-100-K-13-001