

Lean

Achieving Critical Mass



BY SHAYNE KAVANAGH AND JEFF COLE

Progressive governments are always looking for ways to serve their constituents more effectively and less expensively. To that end, many governments have begun exploring the efficiencies Lean practices can provide. Lean thinking and methods have made their way from private industry to the public sector and appear to be having a powerful impact on many government organizations. Based on several years of research, the GFOA sees a potential for public-sector entities to achieve significant value from adopting Lean. Using Lean techniques to reduce waste allows public managers to operate more cost effectively, maintaining the quality of the services offered, along with a high level of respect for the people — the public servants — who deliver them. This article reviews the main questions public managers might have about Lean, explaining the essential elements of Lean, why Lean is so well-suited to government operations, and how to begin implementing Lean practices.

WHAT IS LEAN?

Lean is a system of thinking and way of working that emphasizes reducing waste in both time and material costs while providing the same, or enhanced, value to the customer (e.g., a citizen or another department). Lean is often thought of as a process improvement method, known for its expansive toolset for improving efficiency and effectiveness in the workplace. And while those are perhaps the most tangible benefits, the true power of Lean is its ability to transform the culture of an organization — encouraging an entire workforce to work together as they strive for continual improvement. In that state, Lean is no longer a project to be completed; it has been ingrained into the DNA of the organization.

Lean evolved from total quality management and the manufacturing practices of the Toyota Motor Corporation. Toyota's methods were thrust into the popular consciousness and dubbed "Lean" by a global study of automotive manufacturers, performed by the Massachusetts Institute of Technology.¹ From there, its use has spread to manufacturing companies more generally, and then to organizations in the service industry, including government. In the last few years, the GFOA has observed increasing interest in Lean among

governments² as budgets tighten and the need to perform services better, faster, and cheaper has become paramount.

Put in the most basic terms, Lean is an evolution beyond the Industrial Age standard of mass production. Exhibit 1 summarizes some of the major differences. The rest of this article will explore the finer points of what comprises Lean.

CORE CONCEPTS OF LEAN

The starting point of Lean is to think in terms of how work creates value for the customer. Value is a product of quality, cost, and timeliness. Lean encourages one to understand who the customers of a process are and what they expect from the process. Only then can one begin to improve the value those customers receive. For example, a restaurant health inspection service dramatically improved its results when inspectors realized that restaurant owners are often as

interested in food safety as inspectors, and any failure to provide safe food was often a result of insufficient knowledge or skill, rather than intentional neglect. This led the inspectors to schedule food safety assessments with new restaurants when they first opened to ensure that owners were aware of safe food handling practices. Proactively addressing food safety with new restaurant owners allowed inspectors to ingrain essential practices in the restaurants' culture from

the beginning. The incremental cost of the training was more than offset by discontinuing "routine" inspections that were unrelated to the actual risk posed to the public by the establishment being inspected.³

Lean authors and researchers estimate that in a typical American firm, only 2 to 10 percent of workers' time is spent on activities that add value for the customer.⁴ The implication is that an overwhelming proportion of time is spent on activities that don't add value, or waste. The concept of waste is core to Lean, which aims to discover root causes of waste and eliminate or minimize them. In fact, Lean categorizes eight types of waste, helping employees more easily recognize it. The eight forms of waste are:⁵

- **Defects.** When incorrect work is sent to the next step in the process or to a customer.

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Exhibit I: Mass Production versus Lean

Mass Production

Batch Processing. Work is processed in large batches before moving on to the next step.

Push. Work is produced regardless of the demand for the product from the next step in the process.

Reactive to Change. Change in work only happens when management requires it.

Control. Management's job is to make sure workers stay on task.

Functional. Work is compartmentalized into departments and divisions.

Fix Problems. Problems must be fixed as quickly as possible so that work can move down the line.

Manage from Data. Use data to understand how work is proceeding and to make decisions.

Lean

Continuous Flow. Work moves continuously along the process with minimal or no interruptions; time spent in inventory or waiting is minimized.

Pull. Work is produced only upon a signal that the work is needed.

Adaptive to Change. Change often happens as a result of worker initiative.

Enable. Management's job is to make sure standards are clear and impediments to good work are removed.

Process. The business process is the primary unit of analysis. Departments are secondary.

Learn from Problems. Problems must be solved *in a way that prevents recurrence.*

Use Data, but Rely on Observation and Experience. Data are important in finding anomalies and monitoring progress, but first-hand observation and experience in the work is indispensable.

- **Over-Processing/Inspection and Checking.** Over-processing is putting more work into a product or service than is necessary to meet customer requirements. Inspection and checking is a particularly prevalent form of this waste, especially in government.
- **Waiting.** Idle time created when employees (or customers) wait for information, physical items, and so on. Wait time equals downtime.
- **Inventory/Backlog.** The sum of all tasks waiting to be processed; also includes physical inventory.
- **Transport.** Transporting anything that does not directly add value to a final product or service is a form of waste.
- **Motion.** Excess motion in completing a task causes waste.
- **Over-Production.** This results when a product or service is provided in greater amounts than necessary or has more features than are necessary.
- **Underutilizing People's Abilities.** The most insidious form of waste is failing to make use of employees' full talents, skills, and knowledge.

The starting point of Lean is to think in terms of how work creates value for the customer.

Lean does not suppose that waste can ever be completely eliminated, but encourages an organization to continually strive to minimize waste in all areas. In fact, Lean researchers and authors estimate that even the most efficient transactional process will add 25 to 50 percent value for the customer, at most.

If adding value for the customer and reducing waste are the first and second core concepts of lean, then the third is flow. Flow describes a state in which work moves from one step of the process to the next in a continuous fashion, without waiting or being stuck in inventory. Eliminating waste is the vital first step in creating efficient flow. After waste is eliminated, more advanced Lean tools can be applied.

ESSENTIAL LEAN TOOLS

One of the most attractive features of Lean is the variety of tools that have been developed to help realize the core concepts described above. But not every tool is suitable for every task or for every stage of Lean. The GFOA has identified five of the most critical Lean tools for governments,

based on the immediacy of the benefits created and the applicability to the most common problems governments face.

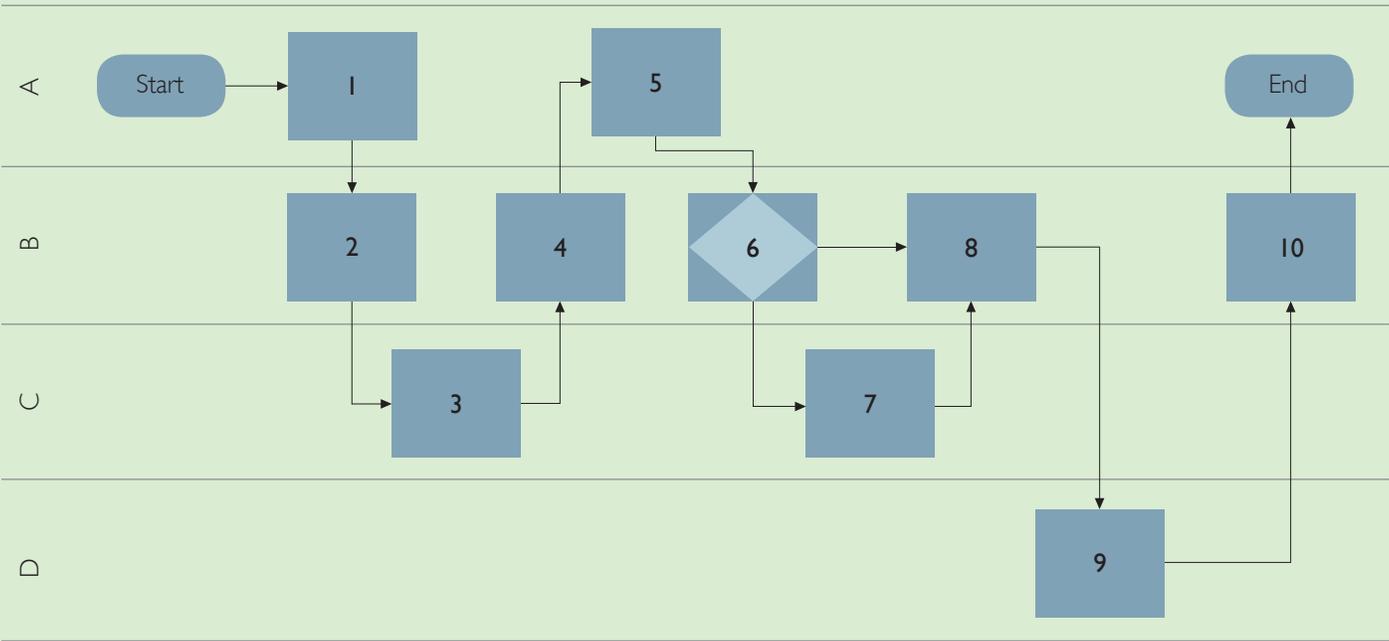
5S. 5S is a process and method for creating and maintaining an organized, clean, and high-performance workplace. It helps identify and eliminate the eight forms of waste while closely involving line employees in a project they can easily accomplish, allowing them to see visible results. Under 5S, staff follow five steps — sort, set-in-order, shine, standardize, sustain — to organize the workplace in the most efficient and effective manner possible.⁶ When 5S is complete, employees recognize the benefits of a more organized, ergonomic, and safe workplace, in terms of both productivity and aesthetic presentation. Think of 5S as the broken windows theory for efficient and effective processes: It may not be realistic to expect efficient, effective work if the workspace is not well maintained.

Using Lean techniques to reduce waste allows public managers to operate more cost effectively, maintaining the quality of the services offered, along with a high level of respect for the people who deliver them.

Process Mapping. Process maps are perhaps the best-known Lean tool. The GFOA has found that a variety of process mapping techniques are used, but the technique that appears to have the most use for government is the swim lane diagram. (See Exhibit 2.) Swim lane diagrams have the advantage of being fairly similar to standard flowcharts, except for the added dimension of showing process participants, making it easy to learn and use. Participants in the process are listed down the vertical axis and steps are shown sequentially, from left to right.

Swim lane diagrams clearly illustrate where work is passed from one person to another, which is important because these hand-offs of work are often a key point of process failure. The swim lane diagram is used to make the flow of work visible and, thus, to make waste more visible. In our example, we see that participant B hands off the work a number of times to other people. Assessing the way the work stream is struc-

Exhibit 2: Swim Lane Diagram



tured can make it possible to reduce or eliminate unnecessary hand-offs. For instance, step 5 might be a check or inspection by participant A that causes delay without adding value, and eliminating it would create a smoother workflow.

A swim lane diagram can be a powerful conversation starter for process improvement, as it might be the first time all participants see the full end-to-end process detail. The simple act of creating a process map can have immediate effects by creating a common understanding of how the group could work together.

Visual Management. Visual management allows managers and workers to see waste in easily digested ways, allowing corrective action to begin right away.⁷ Visual management also helps keep managers and staff connected to the realities of the workplace, rather than operating on assumptions. Finally, visual management can be used to set targets for improvement. Visual management can take many forms, including: checklists, posting work standards prominently in the workplace, and displaying “scoreboards” on relevant metrics such as quality, cost, and timeliness.

Mistake-Proofing. Mistake-proofing encourages small adjustments in the early stages of a process to prevent defects later on. For example, a keyless entry system for cars prevents users from locking themselves out and needing a locksmith to correct the mistake. Mistake-proofing techniques can be designed to prevent a mistake altogether (e.g., required fields on computerized entry screens, microwaves that stop when the door is opened too early, product designs where assembly parts can only fit one way, etc.), or to detect a mistake and alert the worker (e.g., red and green underlines in Microsoft Word to point out misspelling and grammar mistakes). For example, in a public works department, outlines of tools may be drawn on the peg board where the tools are hung to ensure the tools are not put in the wrong place.

Standard Work. Standard work institutionalizes Lean concepts to prevent deterioration or backsliding after processes have been improved. Standard work could include the familiar book of standard operating procedures, but should be easily understood and absorbed by users. For example,

Historical evidence shows Lean is not a fad. It has been in use for decades and has gained attention and momentum in recent years. In fact, in many industries, Lean has become almost a standard way to operate.

a picture of how to perform work correctly is often more effective than a text description. Many of the mistake-proofing and visual management techniques described above can also be used to create standard work — for instance, a checklist is a powerful tool for making sure all necessary steps were followed in a process.

LEAN CULTURE

Though critical, Lean tools are only as good as the organizational culture in which they are used. Immersing the

organization in the Lean mindset allows the methodology to become its normal state. This section describes three distinguishing features of a Lean organization: Kaizen, Gemba, and the role of management and workers.

Kaizen. Kaizen is a Japanese word (which now appears in English dictionaries) that means “change for the better.” In the context of Lean, Kaizen refers to the process by which workers and management cooperate to continuously improve the work place. A Kaizen event is a dedicated period of time lasting one to five days, depending on the scope of the team’s work, where workers come together to focus on improving a specific process or work area. The steps in a Kaizen event typically include:⁸

- *Select a Process or Work Area to Improve.* Selection is often based on identified problems involving quality, timeliness, or cost.
- *Set a Goal.* The team should have a clear goal for the event, such as cutting the time it takes to complete a process in half, reducing defect rates by two thirds, or cutting costs by 20 percent.
- *Analyze the Current State.* The current process or work methods are examined. A critical element of Lean is to search for the root cause of problems rather than just identifying symptoms.
- *Find Solutions, Design the Future State.* With the root causes to the problem identified, the most meaningful solutions can be created. The team then designs what the process will look like in the future, based on these solutions. This could include a new process map, new work standards, specialized 5S methods, etc.

- *Prepare and Implement the Action Plan.* It might be possible to accomplish some elements of the future state during the dedicated Kaizen time. For example, workers might reorganize a file system during the event. Other improvement ideas may require more time to accomplish, in which case an action plan is developed and put into practice.
- *Measure the Impact.* The impact of the improvement ideas should be measured against the goals originally set for Kaizen.

Kaizen can happen repeatedly for a given process or work area. Each time, the Kaizen will presumably begin from an improved state, with the objective of making further process improvements.

Gemba. Gemba is also a Japanese word (also now found in English dictionaries) that means “place where the action happens.” In Lean, this refers to visiting the actual place where the work is performed in order to understand how a process operates. Performing Kaizen or any other Lean activity outside of the real setting, or without the real participants, will result in a distorted perspective of the process. Gemba also refers to the requirement for managers and analysts to regularly get out of their offices and visit the workplace on “Gemba walks” to see how work is performed and to be on the lookout for problems or abnormalities that need attention.

Role of Management and Workers. Lean methods provide different roles for management and workers, compared to the mass production model. Under the latter, workers are assumed to be poorly skilled, poorly motivated, and requiring management supervision. In Lean, workers are assumed to have unique insights into how work is performed and to be enthusiastic participants in Kaizen and associated activities, if properly empowered. In a Lean organization, the supervisor’s role is to provide proper training, communicate standards, and remove barriers (such as the eight forms of waste) to enable productive, effective work.

WHY LEAN?

Why should governments pursue Lean over other quality enhancement techniques? The GFOA has found a number of advantages to Lean practices that have the potential to be very powerful if properly adopted by governments. Below is a review of the most important benefits.

Baltimore’s Shrinking Bureaucracy

By Andrew Kleine

Since 1950, Baltimore’s narrative has been dominated by the story of post-industrial decline. The city lost more than a third of its population, manufacturing jobs disappeared, and once-vital neighborhoods became destabilized, with tens of thousands of properties left abandoned. The housing bubble gave the City of Baltimore, Maryland, a temporary reprieve from its fiscal woes, but the Great Recession and its aftermath brought the city back to reality and forced it to confront unprecedented budget shortfalls.

We’ve all heard this story before. Baltimore is tired of it, too, which is why the city is looking to define its “new normal” as an era of structurally balanced budgets, lower property taxes, increased infrastructure investment, and population growth. The city’s mayor envisions adding 10,000 new families in the next decade, and to help make that happen, she recently announced a ten-year financial plan — a first for Baltimore.

One of the themes of the mayor’s financial plan is to build on Baltimore’s existing productivity initiatives — such as CitiStat and Outcome Budgeting — to make the city a model of urban innovation and cost-effective service delivery. Lean government, here we come.

A NEW SOLUTION

Baltimore has made its mark as a performance management trailblazer, but the city has not stopped looking for new ways to promote innovation. CitiStat, Baltimore’s much-copied accountability program, is good at identifying broken business processes, but it cannot always fix them. Outcome Budgeting is good at prioritizing spending, but it is limited by the imaginations of agency proposal writers. Our Innovation Fund invests to save, but it needs an incubator to turn good ideas into “shovel ready” projects.

In Baltimore’s search for new solutions, Lean Government has been like a good penny. At a local conference, city officials heard from Grand Rapids, Michigan, about how it has used Lean thinking to streamline functions across its departments and improve customer satisfaction, and they heard similar success stories from Irving, Texas, at the 2012 GFOA conference in Chicago. Jim Chrisinger, who helped Baltimore implement

Outcome Budgeting, is leading Lean efforts in King County, Washington. When Baltimore started a Good Government Book Club, the first selection was *Extreme Government Makeover* by Ken Miller (Governing Books, 2011), which is about straightening the pipes of government systems. These examples inspired the city to give Lean a try.

LEANING FORWARD

Baltimore's Lean journey began last summer with a meeting of the city's budget, human resources, information technology, and CitiStat directors — the Fearsome Foursome of accountability and innovation. This meeting led to several more steps. The city sent five staff members to Lean training sponsored by the Maryland World Class Consortium, a small non-profit that was founded to help Maryland manufacturers become more competitive and has since branched out to serve local governments. The city set up a dialogue with local tech entrepreneurs, who are eager to use their talents to help solve problems. We consulted with Lean government leaders around the country, including the U.S. Environmental Protection Agency, which wrote a handy Lean government toolkit and has published summaries of seven years' worth of Lean events on its website (<http://www.epa.gov/lean/>). We engaged the mayor's office and put Lean government on the agenda of the Mayor's Innovative Government subcabinet. As of this writing, we will soon be reviewing proposals from Lean facilitators to help us put the rubber on the road.

Our Lean events will be held in the new Baltimore City Innovation Lab, a spacious room that we have outfitted with whiteboards, laptops, reference books, a coffee maker, even a bowl of stress balls. We have thought carefully about which business processes to tackle first. We looked around for ones with low(ish) complexity and high impact. Mission Impossible can wait. Our candidates include the Police Quartermaster Unit, ambulance-emergency rescue portal interaction, timesheet management, and refund processing.

Baltimore's New Normal: Growing population, shrinking bureaucracy. We're on our way. ■

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Lean Creates Real, Tangible Benefits. Waste leads to slower work. Slower business processes often cost more because of increased labor requirements to complete the work. When waste is removed, processes become simpler, resulting in increased speed, which allows the workforce to use their time more effectively. This makes the customer happier and engages the workforce. The City of Irving, Texas, has been using Lean methods since 2007 and was recognized for its program with the Malcolm Baldrige National Quality Award in 2012, as well as the GFOA Award for Excellence in 2011. The benefits Irving has realized include the following:

- Saved 30 minutes per work order per utility worker by performing 5S on the utility work trucks. This allowed the teams to perform more repair jobs in a single day.
- Reduced review time for commercial permits by 76 percent (15.7 to 3.7 days)
- Achieved an 82 percent reduction in the processing time of benefit invoices, saving 13.5 days a year (the city is self-insured).
- Reduced overall construction time for capital improvement/development projects by 28 percent across all steps.

Lean Improvement Is Incremental and Continuous. While dramatic, discontinuous change (like the moon landing) is very gratifying and gets lots of attention in the short term, it requires a heroic leadership effort and the confluence of other factors like money, expertise, etc. Lean change focuses on practical, bite-size improvements that can be accomplished with fewer demands in terms of budget, staff, and other resources.

Lean Is Low-Cost. Lean does not rely on massive investments in new technology to automate work. Employees can learn Lean and continue using it without the support of consultants, creating long-term value for the organization.

Lean Is Pro-Employee. Lean engages the workforce in a positive way. Many governments have experienced significant reductions in the workforce, perhaps with little potential for replacing the lost workers in the near future. Lean can help make life easier for those who are left.

Lean Focuses on Customer Value. Citizens' trust of government has declined in recent years. Lean takes a step in the right direction by refocusing government on the value it provides to citizens.

Process Is an Under-Appreciated Perspective in Public Management.

Other public management paradigms have focused on items such as budgets, strategies, and programs (instead of departments), but none have focused squarely on business processes. Process is ultimately how results are produced. If the results being produced by government are unsatisfactory, then the processes must be re-examined.

Put in the most basic terms, Lean is an evolution beyond the Industrial Age standard of mass production.

What about Technology? Lean generally looks for simple and elegant solutions to problems, be they high-tech or low-tech. However, large-scale automation of a process is sometimes the best option for improving a process. In this situation, Lean can be a great approach to justifying investments in automation by helping identify and define the waste a particular

technology could eliminate.

COMMON QUESTIONS OTHERS MIGHT HAVE

Because Lean is relatively new to the public sector, there will be natural curiosity, questions, and concerns. Here are three of the questions most often encountered by the GFOA.

Is Lean a Fad? This could be an understandable concern; public managers have seen related concepts like TQM, customer service, quality circles, and others. What makes Lean different? First, historical evidence shows Lean is not a fad. It has been in use for decades and has gained attention and momentum in recent years. In fact, in many industries, Lean has become almost a standard way to operate — not just in manufacturing industries, which one might expect, but also in fields as diverse as health care and fast food.

Lean also has distinguishing features that set it apart from the previous related concepts, such as emphasis on work flow and processes, focus on waste reduction, and a bias toward action and quick wins through Kaizen. Lean tools and methods are also fairly well defined and rather consistently understood across the field. In contrast, initiatives such as TQM were broadly defined and often not consistently described or practiced from one place to the next.

Of course, Lean could very well be a fad in any single organization without proper support from management. Lean tools must be used within the larger context of Lean thinking, and one-off improvement exercises must be traded for continuous improvement.

Does Lean Only Work for Larger Organizations? This concern is also understandable, given Lean's genesis in multinational manufacturing. In fact, Lean is scalable. It can be applied all the way down to your personal workspace or even to your home life. For example, one of the authors applied Lean principles to reduce the time it takes to mow his lawn by 50 percent!

Lean can also eliminate waste and create standardization once new technology is implemented. The GFOA's experience with financial accounting, human resources, and other support service computing systems has indicated that deliberate process improvement does not typically happen as a part of technology implementation. Rather, an organization brings in the technology with the objective of getting it up and running as quickly and cheaply as possible. For example, the City of Elgin, Illinois, purchased a new electronic content management system. Its existing document management techniques and standards were sorely in need of standardization, however, and simply moving the existing techniques and standards to a new technology platform would have produced sub-optimal results. Instead, Elgin is applying 5S principles to optimize its document management practices, making the new technology that much more effective.

HOW DO YOU GET STARTED WITH LEAN?

Because Lean is a way of working and not just a toolbox, first learn more about Lean to ensure you are comfortable and confident with the philosophy. Lean is a post-mass-production model, but the mass-production paradigm pervades our thinking about how work should be managed. Review Exhibit 1 to see if you can recognize mass production thinking in your own work and think of ways Lean represents an improvement.

Assuming you can embrace the Lean philosophy, start by identifying an area of the organization that could benefit from Lean. This could be almost anything, but something with a low variation between transactions and high volume of transactions is usually a good candidate. For instance, the City of Bloomington, Illinois, picked the cash receipting process, while Elgin picked document management. Both of these very different processes benefited from Lean, but in different ways. Bloomington used primarily process mapping to see the value of

the work flow and to eliminate waste. Elgin used 5S to remove unneeded documents and files, to develop standards for document management going forward, and to sustain the change over the long term. Also look for processes with acute problems in the quality and timeliness of their output, as those areas will get the most attention of the organization. In Elgin's case, the city initially considered the payroll process for Lean because it was perceived to be both inefficient and stressful for the payroll staff. However, checks always reached the employees on time and in the right amounts, so any improvements would have little visibility, thus making a poor demonstration project.

Then, perform an initial diagnosis of the selected area, covering questions such as:

- What is the purpose of this process? (Why does it exist?)
- Where does this process begin and end?
- What are the major inputs, and where do they come from?
- What are the major outputs, and who uses them?
- What features does the customer value in the output? To what extent are these features being delivered now?

Next, train small subsets of employees in Lean thinking and methods. This will become the core of the Kaizen team. The

size of the group can vary between 5 and 10, but the training should be close to just-in-time so it will be fresh in everyone's minds when the Kaizen starts.

The organization is now ready to perform its first Kaizen. Many of the articles in this issue provide additional detailed advice on how to implement Lean. It is critical for management to visibly support the participants' work in Kaizen and actively follow up to show that improvement ideas are valued and will be implemented. This is perhaps the biggest risk in successfully introducing Lean. If the improvement ideas languish after Kaizen, Lean will lose credibility and momentum. Generating ideas for numerous small changes, rather than targeting a smaller number of big changes, will help, but management must make it clear that continuous improvement is an expectation and a new way of life for the organization.

CONCLUSIONS

Lean may very well be the next big thing in government. It addresses important gaps in how public management attempts to improve government work, and it does not require a large budgetary investment to get started or to maintain. Most importantly, Lean can dramatically improve the results of government work for both the citizens and public servants. ■

Notes

1. See: James P. Womack, et al., *The Machine that Changed the World: The Story of Lean Production — Toyota's Secret Weapon in the Global Car Wars that is Revolutionizing World Industry* (New York: Free Press), 1990.
2. In the form of increased attendance of webinars and GFOA conference sessions on Lean.
3. Charles Pell, ed., *Delivering Public Services that Work: Volume 2* (Devon, England: Triarchy Press), 2012.
4. Based on a composite of the experiences of various writers, consultants, etc., on Lean.
5. Please note that the 8 forms of waste are not entirely standard among all Lean authors, who often make adjustments based on personal experiences and the needs of the audience. The types of waste described in this article are generally consistent with those described by other authors.
6. The five words beginning with "S" were originally Japanese terms that also started with "S." The translation into English is not always consistent between authors.
7. Masaaki Imai, *Gemba Kaizen* (New York: McGraw-Hill), 2012.
8. Adapted from: Bert Teeuwen, *Lean for the Public Sector: The Pursuit of Perfection in Government Services* (Boca Raton: CRC Press), 2011.

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