

going LEAN



CIOs are applying a technique originally developed for manufacturing to reduce waste from IT-powered business processes. Here's how.

| By Leon Erlanger

Acuity Brands Lighting, an Atlanta, Ga., maker of commercial lighting fixtures, relies on e-commerce software developed in-house to help boost its competitive advantage. But Pat Quinn, Senior VP of Information Systems and Technology, couldn't help noticing that the company's software development efforts were not always successful. "Each project manager followed his own process," Quinn says. "Sometimes the results were good, and sometimes they weren't. To get better results, we needed to standardize and improve our development process."

Quinn and his colleagues at Acuity Brands turned to Lean, a manufacturing methodology aimed at removing waste and streamlining processes, which was already being used in other parts of the company. When they applied Lean to the company's software-development processes, the result was a dramatic elimination of waste in both the initial software conception/definition and the later delivery phases of development. As a result, the time needed for key parts of those processes was shortened from weeks and months to mere days.

In so doing, Acuity Brands joins a growing list of companies that have applied Lean manufacturing approaches to IT operations, software development and other aspects of IT. Many CIOs and other IT executives now realize that Lean can be applied to their discipline. The Lean approach has been most successfully applied to those customer-focused business processes, such as order fulfillment, that include a large IT element. But Lean is also being applied successfully to pure IT processes, such as software development, server provisioning and equipping new employees with PCs, desk phones and e-mail.

Lean IT is one of several developments in a process of industrialization and standardization that has transformed IT departments around the world. "Ten years ago, organizations rarely challenged IT [staff], whom they perceived as wunderkinds speaking another language," recounts David Hurwitz, a VP of Product Marketing at CA. "But after the [2000-2001] tech bubble burst, senior management started holding IT to the same standards as other parts of the organization."

This development, in turn, created a need for CIOs to transform and standardize IT. This need became even more urgent as technology worked its way into an increasing number of core business processes, becoming a key component of many organizations' strategic advantages.

For example, many IT shops have adopted ITIL®, a set of best practices for defining and standardizing IT services. When companies begin to standardize and optimize organizational processes, many look for ways to increase process efficiency and eliminate waste. Enter Lean IT, whose goal is to eliminate any process step that doesn't benefit the customer directly. "Lean is simply a matter of listening to the people involved in the process," says Paul Coby, CIO of British Airways, "and then applying common sense."

Coby should know. At British Air, Lean techniques are used throughout the organization to improve business processes supported by IT. Toward that end, Coby has developed a philosophy he calls 3PI, short for Proposition, Process, People and IT. "When things go wrong with a project, it's usually because people rush too rapidly to the 'I' and don't understand the 'P's' — the business process the technology is

The Five Principles of Lean IT

- 1 IDENTIFY VALUE:** Always define value from the customer's point of view.
- 2 MAP THE VALUE STREAM:** This involves the linked set of processes, people, end-user devices, infrastructure components, networks, servers, mainframes, applications, middleware, databases and storage devices. The team should map them backward, from the point of demand or consumption, to recognize whom you're trying to satisfy.
- 3 FLOW:** Value-creating steps should follow a tightly integrated sequence.
- 4 PULL:** No step in the process should occur unless and until it is triggered by a signal from an upstream step. This eliminates "just in case" and replaces it with "just in time."
- 5 PURSUE PERFECTION:** Empower your Lean team to make continual improvements. To avoid backsliding, commit to Lean for the long haul.

SOURCE: *Smart Enterprise*, May 2009

Six Technologies for a Lean IT Environment

1 VIRTUALIZATION: Server and storage virtualization means companies can provision hardware resources in minutes or hours instead of days or weeks. These tools are key to transforming a process from just-in-case to just-in-time.

2 SERVICE-ORIENTED ARCHITECTURE: SOA simplifies software and systems integration and lets companies string together existing software components rapidly to create new software on an as-needed basis.

3 APPLICATION DEPENDENCY MAPPING: This software automatically discovers and then visualizes technology and service relationships and dependencies. This can provide valuable input into mapping the value stream.

4 HELP DESK SOFTWARE: Reports generated by service desk software can help CIOs discover process problems, document customer-wait times, and monitor process improvements.

5 IT PROCESS AUTOMATION: This management tool can automate IT processes to both respond to job-flow conditions and provision new resources automatically and rapidly when needed.

6 LICENSE MANAGEMENT: This software helps prevent overproduction waste by discovering unused or rarely used software licenses.

SOURCE: CA

being applied to,” he says. For example, when British Airways teams at the Toronto and Paris airports sought to improve their check-in processes, Coby’s team facilitated workshops that helped them examine their entire, end-to-end airport processes. The workshops covered not just the technology, but all the interactions with customers, including queuing and applying baggage tags.

There’s nothing particularly mysterious about the Lean process, according to Quinn of Acuity Brands, and that’s the beautiful part. “We brought customers from inside and outside the company into a room — including those who loved us and those who didn’t — together with the application delivery director and some project managers, developers and systems analysts,” Quinn recounts. “Together, we mapped out a typical development process, using sticky notes on two 20-foot strips of butcher paper.”

Once the Acuity team had mapped out the process, evidence of wasted effort jumped out at everyone almost immediately, Quinn says. “There were several parts of the process that made us look at each other stunned and ask, ‘Why on earth do we do it this way?’” he adds. Still using the sticky notes, the group applied red stars wherever obvious waste was found. Then they engaged in more brainstorming and sticky-note repositioning. The result: dramatic reductions of waste in both the initial software conception/definition process and the later delivery phases of development.

Doing this also shortened those processes dramatically. Acuity Brand’s software definition process, for example, was shortened from months to about a week, Quinn says. That was after Acuity’s Kaizen team discovered that the process was being clogged by the back-and-forth of numerous proposals and other e-mails [kaizen is Japanese for “improvement”]. “We all said, ‘Let’s get all the stakeholders together in a room and do a Kaizen for each project,’” Quinn says. “We also realized that we had to assign a team that would dedicate itself to the project from beginning to end.”

When creating a Lean improvement team like Quinn’s, CIOs should select team members using a policy called Half In, Half Out, advises Jean Cunningham, author and Lean consultant. “You want half the people from inside the process and half from outside the process,” she says. “That includes IT folks in on the business process, as well as some of your business partners

that may benefit from the process.”

CIOs who apply Lean to IT processes have a lot of history behind them. Henry Ford’s assembly-line manufacturing and interchangeable parts are now considered to epitomize the concept of flow, a key concept for Lean techniques. But Ford’s methodologies, though hugely successful in the early 1900s, lacked flexibility. “Any color you want, so long as it’s black,” may have satisfied buyers of the Model T, but it expressed an approach that was already passé by the 1930s and ’40s. That’s when Japanese carmaker Toyota took a hard look at its manufacturing process. The results were new methodologies that let Toyota produce a wide range of products with unprecedented speed and efficiency.

Needs-Based

Relevant to the challenges of today’s CIOs, Toyota’s Lean concepts emerged not out of choice, but from an environment of constraint and necessity. “In those days, when an American company needed to produce a new car, it could simply build another car factory,” says Dan Miklovic, VP of Industry Advisory Services at Gartner and a certified Lean Sensei (Japanese for “teacher” or “mentor”).

But at the time, Japanese land-use laws reserved huge amounts of land for rice farming, Miklovic explains, so Toyota had to devise a methodology for manufacturing several different models in the same factory space. This meant the auto maker needed to not only achieve high levels of quality and productivity, but also dramatically reduce the time needed to transition from one model’s manufacturing process to another, while also eliminating all activities that did not add value. Lean techniques made it possible, and Lean manufacturing went on to become one of the primary drivers — if not the primary driver — of Toyota’s dramatic worldwide success. Lean offers generous gains in both efficiency and cost-cutting, and Toyota made huge progress in both areas.

Toyota’s Lean methodologies have since been emulated by nearly every other auto manufacturer, as well as by companies in other industries, including Xerox, Tesco, Motorola and General Electric. Toyota’s pioneering role also gave Lean its vocabulary of Japanese words, such as sensei and kaizen, that are used by practitioners worldwide. Lean has also been applied to countless business processes beyond



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Fujitsu Services UK

manufacturing, including IT operations, order fulfillment and even healthcare-appointment scheduling.

For CIOs, perhaps the most important concept behind Lean is the goal of eliminating all non-value-added activity. In a Lean world, value is defined strictly from the standpoint of the end customer. In manufacturing, that means the consumer; but in IT, customers may just as likely include employees of a business unit, business-line leaders, partners, consumers or some combination thereof.

That’s why experts say it’s essential to precisely identify the customer in every Lean IT endeavor. Who the customer is can vary depending on the process being streamlined. For example, says Gartner’s Miklovic, “When I’m talking about Lean IT in infrastructure and operations, the

customers are generally other business units or the business itself. But when I’m talking about a process that involves an ERP implementation, I’m usually talking about my company’s customers, suppliers and regulators.”

Also, when it comes to IT processes, value is almost always defined by performance, service levels and efficiency. Fujitsu Services UK, a pioneer in Lean IT, calls this Sense and Respond. “We believe transforming good service into great service involves focusing on customer value and satisfaction (or sensing what matters to customers) and unlocking the potential of the staff and management systems within the delivery organization to do the right things (responding),” says Marc Silvester, the company’s CTO and co-author of the book *Living Service: How to Deliver the Service of the Future Today* (FT

Press, 2009). “This is very different from a traditional approach, where the result can be to keep doing the wrong things, albeit in a better and more efficient way.”

What’s important — particularly in a recession, says Gartner’s Miklovic — is that CIOs not define value purely in terms of cost. Surprisingly, that’s true even when reduced cost is a desired end product. “One of the biggest mistakes companies make with Lean is focusing too heavily on driving cost out of the business,” Miklovic says. “If you approach Lean with that attitude, you’re bound to fail. Building a huge data center may give you great economies of scale, for example, but it may also reduce agility and flexibility.”

But John Parkinson, CTO at Trans-Union, a major consumer credit reporting organization that has implemented several

Kaizen for Beginners

The 5-S process, a fundamental aspect of Lean improvements, aims to attack waste and make improvements. Here are the key components:

Original Japanese Term	Anglicized Equivalent(s)	Explanation
Seiri	Sort	Examining the workplace with the goal of eliminating unused materials and tools. Getting rid of the clutter.
Seiton	Set, Straighten, Store	Organizing the items that remain. A place for everything and everything in its place.
Seiso	Shine, Sanitize, Scrub, Sweep	Establishing a routine for cleanliness, which includes the initial cleaning, as well as ongoing, daily house-keeping activities.
Seketsu	Standardize	Making sure best practices become ingrained in the workplace. Establishing processes.
Shitsuke	Sustain, Self-Discipline	Revisiting the first four S’s on a continual basis to ensure that there is no backsliding and to continuously improve.

DATA: Gartner Report, “Q&A: Moving Lean from the Plant to the IT Organization, Part 1,” Dan Miklovic, Nov. 2008



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process-improvement initiatives, says, “If you’re smart during the bad times, you can build cultural habits into your IT operations that persist in good times.”

Adds Peter Waterhouse, Senior Principal of Enterprise IT Management Strategy at CA, “Massive cost cutting is a little like fad dieting. Six weeks later you’ll either get ill or gain it all back.” Ideally, CIOs will instead use Lean to make the efficiency improvements that will position their organization favorably for the future, he adds. (See infobox, “Eight Elements of IT Waste,” p. 37.)

After the process, customer and value are defined, the next step in applying Lean IT is a process called Value Stream Mapping. Here, the IT team maps out all the steps of a business process, but backward, starting from the point of demand and including the roles of each system, component, application and

staff member. (This is where Acuity Brands’ use of butcher paper and sticky notes comes in — a method also used by British Airways.)

There are two principal ways to arrive at the value stream map. The first and best approach is for Lean team members to go out and personally observe the process. “IT [staff] should work directly with the business owner and go out to stores to see firsthand what he values, what the customer values, what the cashiers value and, working backward, each step in the supporting processes that make the overall process happen,” says Hurwitz of CA.

For example, at Acuity Brands, the Lean teams take Gemba Walks (gemba is another Japanese word; it means “the place where truth can be found.”). “This lets us observe existing processes, take measurements and validate the value-stream map,” Quinn says.

The second approach is a helpful alternative when observing all steps of a process would take more time than the team can afford. Here, the Lean team gathers for a Kaizen improvement process, where they brainstorm the business process with butcher paper and sticky notes. TransUnion has found this approach helpful at times. “There are lots of things that have to be right to put a server into productive use, and doing them all correctly is essential,” says CTO Parkinson. “We looked back at the sequence of events for the last 50 server provisioning processes to see how many worked the first time, and for the ones that didn’t, what went wrong.”

This Lean IT improvement team should be staffed by a variety of players who are both involved with and affected by the process, including customers, business-unit representatives and IT professionals. When British Airways worked on improving customer

Ten Tips for Leaner IT

- 1 Start with a big problem, but not your biggest. You want to make sure you achieve positive results that can be applied elsewhere.
- 2 For each process, precisely define your customers. IT has many customers, including departments, executives, staff users, company partners and company customers. Different processes may involve different customers.
- 3 For maximum benefit, apply Lean to the entire business process, not just to the underlying IT systems and technologies.
- 4 Focus on boosting the efficiency of processes and cutting waste, not cutting costs. Achieving the former goals will result in the latter.
- 5 Include IT in all Lean efforts that involve business processes affected by IT.
- 6 Eliminate all unnecessary, non-value-adding activities. For non-value-adding activities that are nonetheless necessary, reduce the time and effort dedicated to them.
- 7 Empower the Lean team to make changes themselves.
- 8 Populate your Lean team using the Half In, Half Out strategy. Make half the members people directly involved in the business process. The other half should be those who benefit from the process.
- 9 Include on your Lean team IT systems experts who understand the interactions among the process’s underlying systems and technologies.
- 10 Devote entire days to the Lean process. Temporarily relieve Lean team members from their regular, day-to-day responsibilities.

SOURCE: *Smart Enterprise*, May 2009

processes at the Toronto airport, for example, its Lean Centre of Excellence was located in the IT department. But the Lean group facilitated workshops with both airline employees and front-line suppliers, including check-in agents, colleagues at the ticket desk and baggage handlers, says CIO Coby.

Getting the right mix of people can be essential. While the people and paper parts of the process may be visible, the IT parts of the process — including the interplay of systems, networks, storage devices and applications — can be difficult to pin down. “If you don’t have the people who know what all those systems are — including front end, applications and databases — then you need to go and find them,” says Quinn of Acuity Brands.

Customer Insight

IT management software can help identify areas of waste by providing insight into how well IT operations support customer needs. For instance, it can help reduce customer wait times for online applications. The software can identify which infrastructure components support the most critical business processes, then identify opportunities to optimize those resources. This could lead a CIO to, say, consolidate servers to reduce costs or clear network bottlenecks to improve service.

Once all team members agree on the process, it’s time to identify waste — that is, all activities that don’t directly support the customer. Value-adding activities need to be differentiated from those that do not add value, recommends consultant Cunningham. Next, the team should differentiate necessary non-value-adds from those that are unnecessary. “For necessary non-value-add activities, the goal is to reduce time and effort,” Cunningham says. “For unnecessary non-value-add, the goal is elimination.”

“We realized that the delays were occurring when the work was handed off between different teams,” says TransUnion’s Parkinson. “We needed better scheduling and process visibility so resource pool managers could allocate people to the task in a more timely fashion.”

Other classic Lean concepts being applied to IT are Flow and Pull. The goal of the former is to have value-adding steps flow in a tight, integrated sequence. The latter requires that no step is triggered until the right signal comes from an upstream step, the Pull. One classic example from contemporary business is Dell’s use of Pull

in its just-in-time manufacturing setup. But both Flow and Pull can be applied to IT functions, such as server provisioning and equipping new employees. “With Pull, Lean helps you make the conversion from just in case to just in time,” says Miklovic. This greatly improves organizational agility, he adds.

Next, it’s time to define the precise metrics the team will use to measure the success of its Lean efforts. The most common measures involve reduced time requirements, transaction speeds, costs and handoffs. For example, at Acuity Brands, quality improvement was measured by the number of bugs discovered prior to and after deployment, as measured by related help desk calls, explains Quinn.

The last principle of Lean is to Pursue Perfection. Going Lean is not a one-time effort; rather, it is a process of reevaluation for continuous improvement. “Lean empowers the team to look for better ways to do things on a day-by-day or hour-by-hour basis, rather than waiting until the end of each project for problems to be sorted out,” says Fujitsu’s Silvester. Adds Quinn: “You have to be in it for the long haul. Keep up the momentum, or you’ll slide back to the way it was before.”

Where to start? Consultant Cunningham advises selecting a process that is important to the organization, “kind of a pain, causing problems all the time and for which improvement will have a noticeable impact.” For IT, that often means the help desk and hardware and software deployment, she says.

“The areas where I have seen the most benefit in applying Lean principles to IT are those processes that are high-volume, resource intensive and repetitive — areas such as service desks, call centers, change requests, desktop support and provisioning,” Silvester says.

Adds Miklovic: “Don’t start by biting off more than you can chew. You want positive results that will help you apply Lean to other processes successfully.” Now that’s thinking Lean. ■

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Eight Elements of IT Waste

- 1 DEFECTS:** Application bugs, unauthorized changes, tasks that damage customer service, and wrong hardware or software.
- 2 OVERPRODUCTION:** Underutilized hardware, excess bandwidth, unused information, unnecessary software features and excess inventory.
- 3 WAITING:** Slow application response, manual procedures that could be automated, and steps that involve days or weeks of e-mail exchanges or complex approval processes.
- 4 NON-VALUE-ADDED PROCESSING:** Unnecessary reports to business managers.
- 5 TRANSPORTATION:** Excess data movement, and onsite visits to resolve systems and software issues.
- 6 EXCESS INVENTORY:** Unused and/or outdated software licenses and hardware.
- 7 EXCESS MOTION:** Unnecessary processes, software steps and troubleshooting events that occur over and over without being resolved.
- 8 UNUSED EMPLOYEE KNOWLEDGE:** Uncaptured ideas, knowledge retention problems and low morale.

SOURCE: “Lean IT: Waste Not, Want Not,” CA, Nov. 2008