

# How to Make Your Firm Lean &

BY BOB WOODS

# Mean

**ADOPTING LEAN  
PRINCIPLES  
IS ALL ABOUT  
CREATING VALUE  
FOR FIRMS AND  
THEIR CLIENTS**



**For Haley & Aldrich, Inc.**, it started in 2006 as the sustainability movement—doing more with less and preserving resources—was gaining momentum. In 2010, DiPrete Engineering was in the throes of the Great Recession and implemented this new concept as a way to reorganize internal workspaces and to streamline workflow. Buehler Engineering, Inc.'s, initial exposure occurred 10 years ago when the firm became involved in a complex construction project in California.

While their respective introductions were distinct, the ACEC Member Firms were adopting the organizational concept of “Lean,” which at its core is about maximizing customer value while minimizing waste. The Lean philosophy and the array of tools for applying it originated in manufacturing decades ago and has spread widely across that sector.

Lean gradually made inroads among a few other industries, most notably health care, and in recent years gained traction in the A/E/C industry. While Lean may not be easy to implement, the firms that have done so sing its praises.

“The engineering community is starting to respond to the positive results they are seeing, that Lean is not a fad and is improving how we deliver projects,” says Ron Migliori, senior principal at Buehler Engineering, Inc.

“If you are interested in Lean as a way to create more value for your customers and to respect your people and give them greater opportunities, you will be successful,” says Larry Smith, president and CEO of Haley & Aldrich, Inc. “Furthermore, you will reduce your costs and be more profitable.”

For the curious and uninitiated, simply defining Lean is instructive.

“Lean is a culture of respect and continuous improvement aimed at creating value for the customer while identifying and eliminating waste in the processes,” says Kristin Hill, director, education programs at the Lean Construction Institute (LCI), which was formed in 1997 by Glenn Ballard and Greg Howell as a way to develop and disseminate new knowledge regarding the management of work in projects.

## BIRTHPLACE OF LEAN

Toyota is regularly cited as the birthplace of Lean manufacturing beginning in the early 1980s in Japan. What is referred to as The Toyota Way is based on many years of continuous improvements. Toyota's objective: "making the vehicles ordered by customers in the quickest and most efficient way, in order to deliver the vehicles as quickly as possible."

Based on those origins, Migliori defines Lean as a way of thinking about always adding value, which, however, can be described differently.

"Some say Lean is all about eliminating or mitigating waste," says Migliori. "I would respond that if you are always looking at adding value, then you are automatically eliminating waste. You are looking at each process step as advancing toward the goal."

According to Migliori, the Lean tenet of continuous improvement is about always questioning the ways of doing things and looking at the value proposition, no matter what. The continuous improvement mantra, based on manufacturing and The Toyota Way, is plan, do, check, adjust—or PDCA.

"If you are making continuous improvement on something, test it, look at the results, then adjust if you need to," says Migliori.

Buehler Engineering, Inc., was first exposed to Lean in 2008, when collaborating with two other integrated project delivery teams with the federal receivership on a multiyear, health care facilities construction project for the California Department of Corrections and Rehabilitation.

"They brought in Lean gurus from LCI to teach us the principles," says Migliori. "We learned together and implemented every day. It was an 'aha!' moment, and it was so obvious. Why have we not been doing this before?"

What Migliori learned has been applied across the firm's five offices. Furthermore, Buehler Engineering has used some of LCI's practical tools and methodologies for implementing Lean principles on several other health care construction projects.

LCI's essential tool is the Last Planner System, a production planning system designed to produce predictable workflow and rapid learning in programming, design, construction and commissioning of projects.

"Firms often do not plan work well, and some people on teams do not have time to do their work effectively to meet the schedule," says Hill. "That is not optimizing the whole, respecting people and flowing information. Teams need to understand everybody's process."

## A LEAN JOURNEY

Haley & Aldrich, Inc., started what Smith calls its "Lean journey" in 2006. At the time, he was the firm's COO and believed Lean aligned perfectly

with the sustainability principles Smith wanted the firm to embrace. Ultimately, he hired a consultant to help Haley & Aldrich, Inc., implement Lean.

"It was a challenge the first couple of years to make the transformation of Lean philosophy into a professional services setting," Smith says. "We have roughly 740 employees, 1,000 clients and work on up to 5,000 projects a year. It was about stepping back, thinking about the fundamentals and how to apply Lean to what we do."

The firm started out by training small groups of individuals on Lean principles. Those groups then worked with project teams to embed those principles on projects.

"The first couple of years, people were excited, but missing was a connection across the firm and more broadly the creation of standard approaches to doing things," says Smith. "We work in geotechnical, environmental engineering, and do a lot of subsurface investigation. So if you make an improvement and make something standardized in subsurface investigation, it has to be adopted by the entire firm in order for it to be of value. Then, when you innovate, you make the improvement and everyone adopts it, instead of everybody innovating independently."

The next step was to understand what value means to clients and how to meet their value expectations, according to Smith.

"It gets down to what is important to our customers," says Smith. "If your goal is to make your service offerings as efficient as possible—better, faster, cheaper than anyone else's—that will help in terms of standardization. But if you are not delivering what the customer wants and needs, all that work is for naught."

## LEAN BY NECESSITY

DiPrete Engineering's Lean journey began somewhat by necessity, says Christopher Ready, the company's CFO. Before joining the firm in 2007, he worked in manufacturing for more than a decade and learned Lean methodologies. When the recession hit, the previously booming business dropped off precipitously and half the staff had to be let go.

"But cost-cutting efforts after the recession only got us so far," says Ready. So he introduced the Lean concept to founder and CEO Dennis DiPrete, and convinced him to see it in action at a local manufacturer's facility. The boss was sold.

A Lean consultant was brought in and began implementing Lean tools. One was borrowed from the Toyota playbook about reorganizing workspaces for more efficiency.

"Everything has a place, and everything is in its place," says



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**RON MIGLIORI**  
SENIOR PRINCIPAL  
BUEHLER  
ENGINEERING INC.



"You need to focus on how you run the system and the inputs. If you get those right, then profit and growth are positive outcomes."

**LARRY SMITH**  
PRESIDENT AND CEO  
HALEY & ALDRICH, INC.

Ready. “Someone used to spend 10 minutes looking for a three-hole punch or a stapler in the common area, and now there is literally a shadow line for them like you would see on a well-organized tool wall.”

DiPrete Engineering also established a team to learn and work on process mapping, a Lean planning and management tool that visually describes the flow of work, showing who and what is involved at each step of a process.

“Lean allows you to think through the things that are not adding value to a process and to visualize it with less waste, more efficiency and with the right people performing the right roles,” says Ready.

Project teams put a workflow map on the wall, with sticky notes showing the different steps in a process.

“People can visually see something that had maybe 150 steps go down to 45 steps, and to know who is accountable for various activities,” says Ready.

DiPrete Engineering eventually applied the tool to its proposal writing process. The firm has more than 150 different activities it can perform on a given project, which were previously written out from scratch.

“We created a text library of all those activities and now have pre-written descriptions that we can drag and drop into a document, giving us standardized, DiPrete Engineering-branded proposals,” says Ready. “By the way, this did not just catch on easily. As in any organization, with any kind of change initiative, people are fighting years of habit.”

That speaks to a challenge when introducing Lean, according to Hill. “You need support from the top and to support the people who do the work,” she says. “It takes commitment from the top to support the people who do the work. Management’s critical job is to support teams through stressful times and small failures. Allow people to stumble with it and help get them back on track.”

After some initial resistance, DiPrete Engineering’s staff has bought in to Lean, and the firm has shown year-over-year growth since 2011.

“We benchmark against industry standards, and our billings per person are outperforming industry statistics,” says Ready. “And while it has not been the only one, there is no doubt Lean has been a factor.”

The bottom line results at Buehler Engineering, Inc., have been mostly positive, according to Migliori. The firm has completed eight health care construction projects over the past five years.

“We lost our profit on two, but learned the most on those projects,” he says. “Once you drive costs down, you can get up to 150 percent of the profit you put at risk. That is pretty rare, but we have been fortunate to be on several really good teams where we received the maximum profit.”



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CHRISTOPHER READY  
CFO  
DIPRETE ENGINEERING

## Four Fundamentals of Lean

The Lean journey begins by embracing the philosophy of creating value, within your firm and for your customers, by eliminating waste in processes, achieved by the use of specific tools and methodologies. While there’s no one-size-fits-all formula for adopting Lean in ACEC Member Firms, here are four fundamental principles:

### 1. Focus on Value from the Customer’s Perspective

Because each project is unique, start by sitting down with the client’s key decision-makers to ensure you understand their ultimate goals and expectations.

“One important lesson we have learned during 12 years of using Lean is that it is very dangerous to assume you know what a customer wants,” says Larry Smith, CEO of Haley & Aldrich, Inc.

### 2. Deliver Value and Eliminate Waste

Once you have embedded Lean into the proposal and design stages, follow through at each phase of a project to eliminate activities in processes that use resources but do not add value.

“If you are always looking at adding value, then you are automatically eliminating waste,” says Ron Migliori, senior principal at Buehler Engineering, Inc.

### 3. Improve Processes Continuously

Lean encourages constant innovation by always questioning processes. That means allowing people to fail and learn from mistakes. Developing a culture of continuous improvement fosters respect for people and a spirit of collaboration.

### 4. Utilize Tools and Processes to Shift Thinking

While leadership must initially buy into Lean philosophy and encourage it from the top down, implementing the various tools of Lean throughout the organization will lead to the day-to-day practice of Lean.

At Haley & Aldrich, Inc., Smith takes a Lean approach to profit and growth. “You can only achieve them if the underlying system is designed and operates to deliver them,” he says. “You need to focus on how you run the system and the inputs. If you get those right, then profit and growth are positive outcomes.”

The firm has gotten it right. Since 2010, it has averaged between 12 percent and 13 percent revenue growth every year. ■

*Bob Woods is a technology and business writer based in Madison, Connecticut.*