

## The New Frontier For Process Improvement:

# Taking Lean Beyond the Shop Floor to Business Processes

**Frans van de Pol is not easily impressed.** In fact, you might say that the president of Fokker Aerotron, a LaGrange, Georgia, company specializing in maintenance, repair, and overhaul (MRO) of aerospace parts and part of the Fokker Aerospace Group, has been around the block when it comes to the MRO industry—a block that includes management assignments in the area of aircraft manufacturing, engineering, aircraft conversions, and MRO. Still, despite 23 years on the job, he admits to being awed by the results of a process improvement initiative that began shortly before he joined Fokker Aerotron at the end of 2008.

**“W**hen I arrived, our on-time delivery performance was unacceptable,” says van de Pol. “Today, we’ve cut our turnaround time by half, and our on-time delivery is up to more than 57 percent. In fact, I fully expect it to be at world-class performance by the end of the year.”

Needless to say, these drastic improvements in turnaround time and on-time delivery translate to a nearly priceless impact on the company’s bottom line. It’s an impact directly attributable to the application of lean process improvement techniques, which comes as no big surprise. But here is the real shocker: the lean process improvements were focused not on the shop floor, but rather on the company’s *administrative* processes.

### A New Paradigm for Lean Application

“I do not have enough words to describe how positive lean is and how huge the benefits are,” says Fokker Aerotron Director of Purchasing Stacey Russell-Karr. “At the beginning, I was skeptical, but now it’s a permanent part of everything I do, including my personal life.”

Under Russell-Karr’s direction and the guidance of Bill Peterson, lead faculty member of the University of Tennessee’s Center for Executive

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Education Lean Applied to Business Processes course, Fokker Aerotron has applied lean to six targeted administrative areas and now possesses documented proof that improvements in administrative processes have a direct impact on bottom-line performance.

For example, after two years of applying lean to administrative processes, Fokker Aerotron’s gross profit margins are up by five percent, late delivery penalties have dropped by 93 percent, warranty repairs have been reduced 50 percent, work-in-process (WIP) is down 72 percent, and inventory has been pared 39 percent. Moreover, the company now has excess capacity in facilities and staff, which enables future growth and expansion without additional capital outlay.

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— Bill Peterson  
The University of Tennessee  
Center for Executive Education

we had a lot of processes that existed simply because we had always done them that way,” describes Russell-Karr. “When we sought to improve our on-time delivery, we typically looked to the manufacturing end—how could we push our technicians to turn the wrenches faster? It had never occurred to us that we could improve the entire operation by improving things in the office.

“What Fokker Aerotron has shown,” expounds Peterson, “is that applying lean to an organization’s business processes—such as invoicing, cost capture, purchasing, shipping and receiving—can amplify benefits across an entire operation and positively affect profitability.”

### Long-Awaited Proof

Peterson, a 30-year veteran of the aircraft maintenance, repair, and overhaul industry, has been on a quest to document the applicability of lean to business processes since discovering its positive affects while working at Delta Air Lines.

From the outset, the roots of lean have been grounded in manufacturing processes—from as far back as Henry Ford’s production of the Model T to Taiichi Ohno’s modern-day Toyota Production System (TPS). Coined “lean manufacturing” in the 1990s, the concept revolves around eliminating waste, with waste defined as anything that consumes resources without adding value for the customer. Basically, lean aims to create more value with less work by optimizing flow, increasing efficiency, and decreasing waste.

Given its origins, it is no wonder that the preponderance of lean application (and documented success) has been

focused on the shop floor. Nevertheless, in the early 2000s, lean made its way to a few non-manufacturing venues such as call centers, software development, and, to a certain extent, the service sector. Still, the storehouse of success stories beyond the manufacturing arena is woefully lacking.

Yet, the administrative expenses of running a business are a large part of the cost of an organization. In fact, average overhead expenses of manufacturing organizations have risen from 10 percent to more than 50 percent since the early days of manufacturing. Those same administrative processes are often a huge source of inefficiency and waste, not to mention a hindrance to the revenue-producing components of the business.

“Overhead activities are supposed to enable the production side of the business to more easily lift the heavy weight,” says Peterson. “Unfortunately, in many organizations, the administrative processes bog everything down. If we make those administrative processes better, all other operations also will improve.”

That was the promise that piqued the interest of Stacey Russell-Karr at Fokker Aerotron.

### Same Tools, New Venue

Fokker Aerotron is no stranger to process improvement techniques. With its sights set on being an industry leader, the company embraces a variety of improvement programs such as lean, six sigma, and 5S as a part of its “World Class Performance” initiative. Historically, these efforts have been focused on the shop floor.

Fokker Aerotron’s adventure in applying lean to business

processes began when Peterson was invited to consult with the company about improving invoicing and inspection processes. Shortly thereafter, Russell-Karr attended the Lean Applied to Business Processes week-long, non-credit course at the University of Tennessee.

“The Lean Applied to Business Processes course emphasizes practical application, so the entire week I was experimenting with applying lean techniques to our purchasing activities. The more I learned, the more applications I could envision,” says Russell-Karr. “I couldn’t wait to put the concepts in action.”

Back at Fokker Aerotron, Russell-Karr assembled a team that included her purchasing staff and upper management; she launched the first “event” in August of 2008. The process comprised the following three phases:

- 1 Identify key administrative wastes and the constraints limiting performance**
- 2 Analyze potential root causes**
- 3 Apply the proper continuous improvement countermeasures**

“Our first meeting was rather quiet,” recalls Russell-Karr, but van de Pol encouraged Russell-Karr to forge ahead. “Sometimes employees are very skeptical about these projects because they think that they have to work harder, but ultimately it is about working smarter, sometimes even eliminating unnecessary tasks,” van de Pol explains.

Russell-Karr says “buy in” by the staff came rather quickly. “As we worked through the process, our meetings got very animated and productive. Now, my group is so good that they often work through the process and use the tools on their own, which frees me to manage additional lean events.” (In fact, Russell-Karr soon will earn her Green Belt Certification in Lean Applied to Business Processes from the University of Tennessee Center for Executive Education.)

**Inarguable Results**

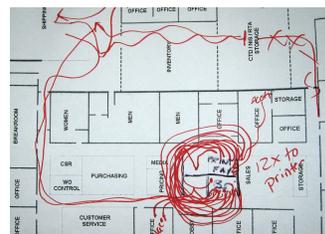
Buffy Smith, senior buyer, has served as project lead on two events and eagerly shares the impact lean has made on her professional life. “I used to spend a good part of my day literally walking paperwork around in circles, not being as productive as I could have been, because we had so much

wasted motion in our processes,” says Smith. She cites the path of an invoice as an example: 3.1 days of processing; 80 steps in the invoicing process, including 30 handoffs among employees and 12 trips to the printer; 1,080 feet of travel per invoice.

That was then—before the company applied lean improvement techniques to its administrative processes. This is now: one day to process an invoice, requiring one-half the steps and one-third the number of handoffs. Moreover, Fokker Aerotron discovered that 30 percent of the total invoicing paperwork volume for customer parts was not needed at all.

The new flow of work has eliminated altogether the paper copies of purchase orders, likewise removing the need for a four-drawer filing cabinet and an entire warehouse of paper files. “Our joke used to be that we needed roller skates because of all the running around we did all day long,” says Smith. “We’ve now eliminated wasted motion; I have time to focus on things that really add value to this company, such as preplanning and negotiation.”

Another lean event honed in on “the cage” (the company’s spare parts inventory) and the process of ordering not-in-stock (NIS) parts. Through the efforts of the lean team, the number of NIS orders was pared by 34 percent, the turn-around time on ordered parts fell by more than 50 percent, and the stock-out rate improved from 30 percent to less than three percent. Moreover, the team eliminated more than 100



**Spaghetti diagram (left):** physical movement associated with a purchasing activity.



**Value-stream mapping (below):** all the activities involved in a purchasing process



shelves of no-longer-needed parts and reduced its inventory of spare parts by 39 percent. This, in turn, freed up 2,375 square feet of floor space, so an expensive warehouse addition once thought to be a necessity is no longer needed!

Wouter van Dis, director of operations, cites an additional impact, albeit indirect, of Lean Applied to Business Processes that perhaps is its most significant contribution to Fokker Aerotron. “What we were really able to do on the work floor because of the administrative improvements was to put in lean cells, where our technicians have every tool and component at their disposal to fix the exact component they are working on at the time. If we had not ‘leaned out’ our purchasing processes, lean cells would have failed. Instead, because our purchasing processes are so efficient, we’re using lean cells successfully, and the impact on turnaround time, on-time delivery, and customer satisfaction is enormous. Lean Applied to Business Processes is excellent, and it’s working!”

### Improvements that Keep on Giving

There is another “indirect” result of lean that has had a profound effect on the company, according to van Dis.

“Despite the hardships imposed by a very difficult economy, we’ve actually seen morale improve at Fokker Aerotron,” explains van Dis. “People appreciate efforts to make their jobs easier. They have seen firsthand the way Lean Applied to Business Processes has eliminated wasted motion and

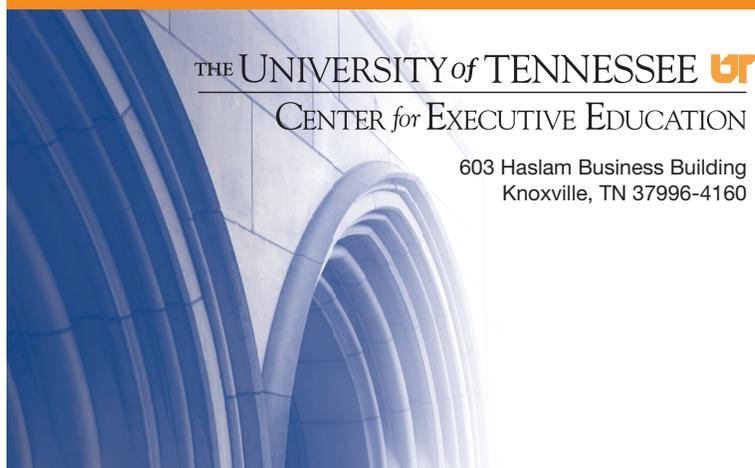
**“Our quality has improved, our service has improved, and our attitude has improved—what’s not to love about that?”**

—Scott Whitaker  
Director of Business Development  
Fokker Aerotron

inefficiencies that have slowed them down, so our staff embraces the improvements wholeheartedly. They love having more room, more time, and a more organized work environment. It’s made us a much better place to work.”

Scott Whittaker, Fokker Aerotron director of business development, says customers have noticed that something wonderful is going on at the company. “Our quality has improved, our service has improved, and our attitude has improved—what’s not to love about that?” Continues Whittaker: “Without a doubt, Lean Applied to Business Processes has made my job immensely easier because I have a quality product to sell and a quality company standing behind it.” ■

*Bill Peterson is the creator and lead faculty member for the University of Tennessee’s Center for Executive Education (CEE) Lean Applied to Business Processes course as well as a lecturer in CEE’s Supply Chain Management and Lean Enterprise System Design Institute courses.*



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