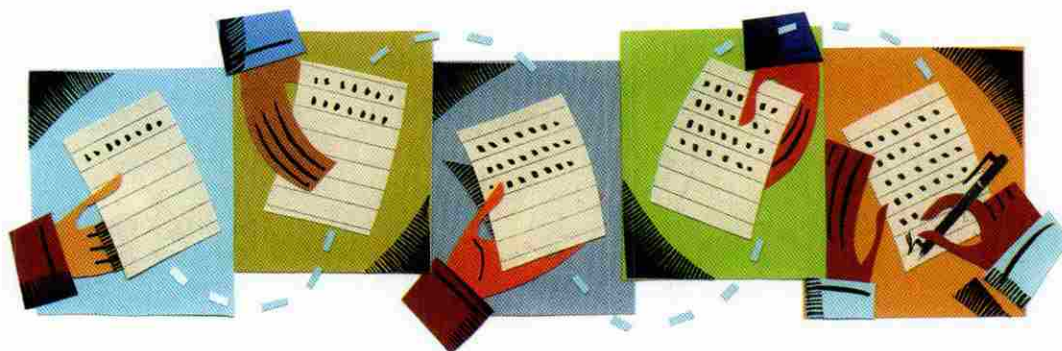


The Lean Service Machine

by Cynthia Karen Swank



The power of lean operations has transformed manufacturing. Jefferson Pilot Financial proves that service companies can use the same principles to push their performance to new heights.

JEFFERSON PILOT FINANCIAL was typical of many U.S. service companies at the end of the 1990s. After making four acquisitions that more than tripled its size, the full-service life insurance and annuities company was searching for new ways to grow in a fiercely competitive business. Rising customer expectations had led to a proliferation of new insurance products as well as an increase in product complexity and costs. At the same time, specialized niche players touting lower premiums and faster handling of policies were forcing full-service insurance providers to both improve service and reduce costs.

The top managers of Jefferson Pilot Financial (JPF) recognized that the company needed to differentiate itself in the eyes of its customers, the independent life-insurance advisers who sell and ser-

vice policies. Accordingly, in 2000 it instituted a Premier Partners program, which targeted the several hundred high-performing advisers who were delivering the lion's share of JPF's revenues. The company wanted to establish itself as the partner of choice for these advisers and motivate them to drive more and more revenue to JPF. It identified superior service to them as a key ingredient of that strategy.

To determine where improved service would have the greatest impact, JPF undertook an in-depth analysis of the operations of its New Business unit. The study unearthed considerable variation in the quality of existing services. For example, processing new policy applications that required a statement from an attending physician took from one to two months. The processing times for applications that didn't require such

a statement were even more variable (they had a standard deviation of more than 35%), which undermined the value of these policies' generally shorter turn-arounds. Because of errors, up to 10% of all policy applications had to be reworked. The problems were not limited to service quality. There was a significant cost-per-application differential between JPF's two primary locations: Greensboro, North Carolina (the headquarters), and Concord, New Hampshire.

It was clear that management could significantly increase revenue by improving operations. Indeed, the company estimated that it could increase the paid annualized premium for its Premier Partners by 10% to 15% if it could issue all policies within three weeks of receiving the applications, offer periodic application status reports, simplify the submission process, and reduce errors to 1%.

For inspiration, the company's managers looked to their counterparts in U.S. manufacturing, who 30 years ago had faced comparable challenges. Many of the firms that had survived the competitive challenge from Japanese manufacturers had done so by imitating them. They had adopted the practices and tools of "lean production," a term James Womack, Daniel Jones, and Daniel Roos introduced in their 1990 book, *The Machine That Changed the World*, to describe the production system pioneered by Toyota. By using less space, capital, and labor to make better products that more accurately met customers' demands, some U.S. manufacturers were able to double the productivity of their assets.

JPF believed that its business could benefit from lean production because its operations involved the processing of an almost tangible "service product." Like an automobile on the assembly line, an insurance policy goes through a series of processes, from initial application to underwriting, or risk assessment, to policy issuance. With each step,

Cynthia Karen Swank is a vice president at Jefferson Pilot Financial in Greensboro, North Carolina.

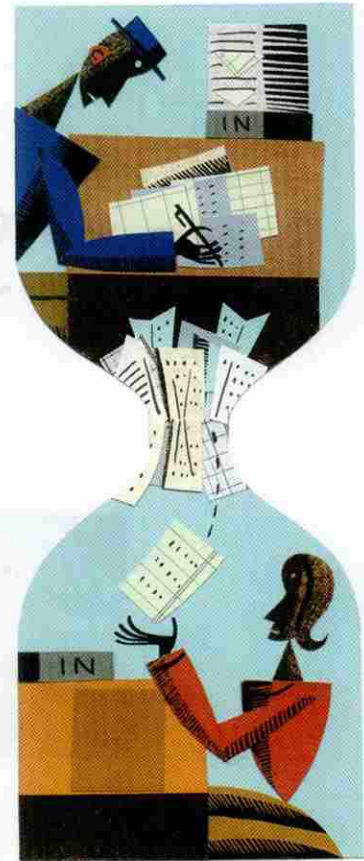
value is added to the work in progress – just as a car gets doors or a coat of paint.

In late 2000, on the advice of a consulting firm, JPF appointed a five-person "lean team" to reengineer the New Business operations according to the principles of lean production. The team included the assistant vice president of New Business administration and a special project manager who reported directly to the senior vice president overseeing New Business operations. They were supported by three lean-production experts from the consulting firm. Thus the team combined in-depth knowledge of JPF's processes with an understanding of lean-production principles.

The initiative has delivered impressive results. The company halved the average time from receipt of a Premier Partner application to issuance of a policy, reduced labor costs by 26%, and trimmed the rate of reissues due to errors by 40% (some of these results are summarized in the exhibit "Setting and Surpassing Goals"). These outcomes contributed to a remarkable 60% increase in new annualized life premiums in the company's core individual-life-insurance business in just two years. Similar results are being recorded in other departments as the company rolls out the new systems across the whole organization. In the following pages, we'll draw on JPF's experience to explain what an effective lean-production system looks like in a service context and how companies can go about building one.

Building the Model Cell

The great advantage of lean-production initiatives like JPF's over other types of business process reengineering is that companies can introduce a lean system without significantly disrupting operations. The key is to adopt what most lean-production advocates prescribe: the "model cell" rollout, in which a company sets up, in one area of its business, a fully functioning microcosm of its entire process. This approach allows managers to conduct experiments and smooth out the kinks while working



toward an optimal design. It also gets people throughout the organization excited about the process, paving the way for the broad transformation effort that will follow.

As the area for its model cell, JPF chose the section of the New Business unit devoted to processing policies that came from a specific group of JPF's independent advisers, some of them Premier Partners and some of them not. The unit, which had ten employees and handled policies that required physician statements and those that didn't, was large enough to be representative of the full range of JPF's New Business operations.

Lean production is built around the concept of continuous-flow processing—a departure from traditional production systems, in which large batches are processed at each step and are passed along only after an entire batch has been processed. At any given time, most of a batch in a traditional system is sitting waiting to be processed—in other

words, it is costly excess inventory. And errors cannot be caught or addressed quickly, because if they occur, they tend to occur on a large scale. In the model cell, the team was able to create a small-batch flow that greatly minimized the buildup of work in progress. To redesign the cell's work flow, team members applied seven design practices of lean manufacturing. They made changes in all seven dimensions simultaneously, and each improvement in each dimension was reinforced by improvements in others.

Placing Linked Processes Near One Another. It is a principle of lean production that all the steps in a process – the “value stream” – should be located close to one another. Under JPF's old system, work groups were located by function. Employees who received applications and employees who sorted them worked on different floors. It could take more than a day for a set of files to shuttle from one group to the other through departmental mail. After the team placed the application receivers next to the sorters, files were transferred between the groups in a matter of minutes. There was another benefit, too. The employees developed a more acute awareness that they were part of an integrated whole whose purpose was to satisfy the advisers and policyholders. Once they were no longer toiling in functional silos, managers and frontline workers were less likely to focus only on the activities for which they were personally responsible. The old attitude – “All I'm responsible for is receiving and inputting applications, and the more I input, the better I perform” – began to fade.

Standardizing Procedures. JPF had given employees considerable freedom in managing their work. But by doing so, the company had made it difficult for other workers to fill in when there were absences or transfers. For example, most employees chose their own systems for storing files – some did it by policyholder, others by policy number, others by date received. When employees were absent, substitutes sometimes found it hard to figure out where files were

stored, so the process was delayed. The lean team insisted that files be stored alphabetically and in the same drawer at each workstation. Similarly, the physical work space for data entry was standardized so that a supervisor passing by could easily ascertain the levels of pending and completed applications. Changes of this kind not only made it much easier for others to help when workloads were high or workers were absent, they also improved the performance of the employees primarily responsible for each job.

Eliminating Loop-Backs. A loop-back, in which work returns to a previous step for further processing, typically creates delays. In a manufacturing setting, if a machine in a stamping process is used in a subsequent step as well, two flows of work feed into the machine at once, limiting the speed of the overall process and causing inventory to build up in front of the machine. When the process involves humans, not machines, the situation may be further complicated by the employees' choices concerning which tasks to do when. At JPF, the lean team noticed that under the existing system, all the sections of each policy form were sent back to the em-

ployee who had received the initial application so that he or she could physically assemble the policy and send it to the adviser. It was possible that employees would spend extra time assembling policies, leaving teams idle downstream and delaying the flow of application processing. JPF split the receiving team in half, assigning some of the employees to assemble the policies while the rest continued to receive applications. The change required no additional space, equipment, or people, but it eliminated confusion on the part of employees about what they should be doing when, and it substantially reduced delays and waste.

Setting a Common Tempo. The team further smoothed out work flow by applying the concept of “takt” time. Takt, the heartbeat of lean operations, is derived from the German word for musical meter. It refers to pacing work according to customer demand. The team knew that to satisfy demand, New Business needed to process ten applications per hour; the takt time was therefore one application every six minutes. A worker producing at a slower rate would leave the next person in line temporarily idle and would ultimately

Setting and Surpassing Goals

Jefferson Pilot Financial, a full-service life insurance and annuities company with \$31 billion in assets and approximately 3,700 employees, applied the principles of lean production to improve operations and increase revenue. The table presents the company's performance-improvement goals and results on various metrics. The goal on policies requiring an attending physician's statement (APS), for example, was to reduce the turnaround time by 60%, but the result was even better – a 70% reduction.

Achievement metric	Long-term goal	Result
APS turnaround time (receipt of application to issuance of policy)	Reduce by 60%	Reduced by 70%
Non-APS turnaround time	Reduce by 84%	Reduced by 84%
Total labor costs for all applications	Reduce by 28%	Reduced by 26%
Reissues due to errors	Reduce by 40%	Reduced by 40%

prevent the group from meeting customer demand. The lean-team members timed each work element of the model cell, such as retrieving an application from an in box and performing the keystrokes required to get an application into the system. They established a baseline time for each element by determining how quickly an untrained person could do it, then challenged employees to make improvements and create shorter baseline times. As workers found ways to cut unnecessary tasks, the lean team determined the minimum number of employees required for completion of all steps.

Balancing Loads. Lean production systems are designed to balance work evenly among employees. Although workers appreciate the fairness of this practice, its greater value is that it eliminates unnecessary delays. JPF had always allocated incoming applications first by distribution channel and then alphabetically at each stage. An application from a customer named Burns would be allocated to the A-C team even if another team was idle. In the model cell, the alphabetical method was replaced by sequential allocation, so that every team received the same number of applications. This enabled work to flow smoothly from one fully utilized employee to the next without unnecessary delays.

Segregating Complexity. Anyone who has stood in line at a bank while a single teller assisted a customer with a lengthy transaction understands this principle. The key to successfully segregating complexity is to cluster tasks of similar levels of difficulty into separate groups with their own performance goals. Thus the model cell eventually divided into two groups, one handling cases that did not require a physician statement and the other handling those that did. Once the separation was made, the turnaround time for cases not needing a doctor’s statement fell by more than 80%.

Posting Performance Results. Following one of lean manufacturing’s best practices, JPF displayed the cell’s hourly productivity rates along with the com-

pany’s expectations. The numbers were posted on large white boards so that all employees could see when and where—and therefore why—performance was suffering. The team also set aside an area by the boards so that employees could meet quickly to discuss ways of solving performance problems that arose. Not surprisingly, the boards made a few people uneasy. Some workers feared that the posted results would be used to assign blame and punish low performers. But as employees grew accustomed to the ubiquitous boards, the displays became rallying points for celebrating successes and encouraging the team to set new performance records. Employees understood that they would be evaluated on and rewarded for ob-

jective results they could track themselves—rather than by their bosses’ subjective observations.

Setting Performance Goals

To implement lean production, a company typically must overhaul the way it measures costs, speed, and quality. Indeed, managers often find that many of their company’s favorite metrics actually inhibit productivity. For example, if the performance of call-center reps is measured by the length of an average phone call, the center may get a lot of repeat calls because customers’ concerns are not being resolved the first time. To get around this kind of problem, practitioners of lean production follow an important principle: They always measure

Posting Results for All to See

The measures for each step in Jefferson Pilot Financial’s process were tracked and posted on white boards so that if problems arose, employees could see where and why performance was suffering.

Process step	Metric	Purpose of metric
Input	Applications input per employee per hour	Individual performance
	Applications input by the staff per hour	Unit performance
Underwriting support	Number of follow-up calls for medical tests and records per week	Performance of unit supplying medical tests and records
	Phone calls answered per day	Unit performance
Underwriting	Number of new cases, follow-ups, or approvals per week	Individual performance
	Frequency of physician statements ordered from doctors	Cost management (there is a cost associated with each physician statement)
	Percentage of cases issued, declined, or rated	Individual performance
Policy issuance	Policies issued per person per hour	Individual performance
	Policies issued by the entire issue staff per hour	Unit performance

performance and productivity from the customer's perspective. For a call center, managers will usually measure the percentage of customers whose issues are addressed in a single call.

Among the metrics JPF found it needed to change was processing time. The company had traditionally measured the time from when an application arrived at the new-business processing center to when the approved policy was printed and bound. JPF switched to measuring the gap between when the application is mailed to the company and when the adviser receives a completed policy, which is how its customers assess the company's speed. Customer-focused metrics of this kind helped erode the "My work is all that matters" mind-set of JPF's employees.

Another important principle of lean production is that shop-floor goals should be linked to the metrics that are applied to the CEO's performance. Toyota calls this *hoshin kanri*, or policy deployment, and it is the best way to align an organization's activities with its strategic objectives. At JPF, the metric for the CEO's performance is the ratio of the company's total acquisition expenses to the value of new paid premiums. The cell's productivity directly affects this measure – as productivity increases, the acquisition expense eventually decreases. An employee inputting applications is evaluated by the number of applications he or she inputs per hour, and the input team's manager is assessed on the hourly number of applications the team inputs. The input manager's boss, the New Business assistant vice president, is assessed according to the productivity of the input team and all the other steps in the process. These productivity rates affect the metric for the VP in charge of New Business, a measure that is the same as the performance metric for the CEO. Thus, the CEO's success is directly linked to each frontline worker's productivity. In this way, JPF has spread accountability and rewards throughout the system, rather than concentrating them at the top.

Companies like JPF whose production systems rely heavily on third-party

vendors also need to look at their suppliers through a lean-production lens. What JPF found prompted it to establish new vendor-selection criteria such as alignment with Jefferson Pilot objectives, aggressive annual goal-setting, and the adoption of lean processes that fit well with JPF's. It replaced one of its vendors with a company that not only provided faster turnaround times at a lower cost but also was willing to commit to ongoing performance improvements.

JPF was luckier than some companies: Most of its existing frontline metrics matched lean-production requirements fairly well, and for those metrics, the team immediately established short-term (three-month) and long-term (12-month) goals. In areas where metrics needed adjustment, such as productivity by job function and certain customer-satisfaction scores, the lean team collected four weeks' worth of data in the new cell and established baselines from which cell managers could set goals for the new processes. Toward the end of the model cell's first quarter, after the new suppliers had been integrated into the system, the lean team drew on the experience of the first few months to establish more aggressive second-quarter goals. The table "Posting Results for All to See" lists some of the cell's principal frontline metrics, which were displayed on the white boards.

Rolling Out the New System

Buoyed by its successes, the lean team proposed a six-month rollout of lean production to the rest of New Business operations. The company undertook the essential work of documenting the procedures and standard operations that were by now in place at the model cell so that they could be transferred to the new work cells that would be set up in Greensboro and Concord. It then disbanded the model cell. Once the Greensboro and Concord facilities' floor plans and telephone systems were adjusted to accommodate the changes and files had been moved, the transformation went live at both locations.

JPF divided operations according to the status of the customers and the com-

plexity of the tasks. At each site there were now three cells: two handling applications that required physicians' statements (one for Premier Partner customers, the other for all the rest), and a "fast track" cell handling all applications that didn't require doctors' statements. The company changed its formal structure, which had previously been based on function and adviser type, to reflect the new system, in which employees were organized by cell.

The lean team also identified other JPF operations that could benefit from the new system, based on each operation's significance to advisers, the magnitude of the new system's impact, and the unit's strategic importance. The Exchanges and Conversions unit, for example, became an early target because its processes resembled those of New Business and, like New Business, the unit was a source of frustration for many advisers. Eventually, the Exchanges and Conversions unit was rolled into the existing New Business cells at the two sites. All in all, the rollout to other operations took approximately 18 months.

The application of lean principles throughout JPF is not only delivering direct productivity gains, it is also helping the firm make more cost-effective capital investments. For instance, all proposals for automating processes now include a lean analysis of operations, and JPF will not introduce automation in an area until lean principles have been applied and the new process has stabilized. When the company was considering the introduction of an automated work-flow-distribution system to Customer Service, the lean team first segregated the complex tasks. In this way, JPF ensured that the technology would add to productivity rather than simply pave the cow path.

Convincing the Skeptics

As the rollout progressed, the lean team worked with each business area to apply the principles of lean production. The team realized that to ensure effective knowledge transfer to operational management and frontline employees, it needed to communicate the "why"

of lean as well as the “how.” Everyone in the company needed to understand why the new process design was necessary and that it would require continual adjustment as the business environment changed and additional improvements were sought.

One standard device the team found especially successful in communicating the why and how of lean production was the airplane game. In this decidedly low-tech exercise, teams build paper airplanes to made-up customer specifications. The winner is the team with the highest profit as measured by output minus work in progress and defects. In a series of rounds, teams typically find themselves moving from batch produc-

tion to a continuous-flow process. Prior to the start of the final round, the team is permitted to redesign the construction process from the ground up and is encouraged to incorporate suggestions for improvement from all team members. (For a more detailed description of this exercise, see the exhibit “The Airplane Game.”)

In just a few hours, the game drives home lean production’s basic principles. These take-aways are then leveraged in the workplace as people begin questioning aspects of their jobs. “How is profitability measured in my department?” “Who uses my work once I’m done, and what do they do with it?” “How close do I sit to the rest of my pro-

cess team?” “Is my neighbor idle while I am scrambling to keep up the pace?” “Does work come in batches that allow a single step to become a bottleneck, or does the work move forward one piece at a time?” “Are we waiting until the end of the process to check for errors, or are we inspecting at every point in the process?” “Are there steps that can be eliminated, and am I pushing management to implement changes?” Questions like these establish a foundation for much deeper and more far-reaching changes down the line.

Despite its best efforts, the team did encounter some resistance. Managers of various functional areas were especially skeptical. How could they be sure

The Airplane Game

Getting Started

The goal is to produce high-quality paper airplanes for a demanding customer. Each team picks a manager. Workers sit together by function (designing, cutting, folding, piloting).

Digging In

Teams struggle to produce planes as a facilitator prevents innovation, hinders knowledge sharing, and pulls managers out of the room to explain how profitability will be calculated. All work must be passed along in batches of four planes.

Analyzing the Process

A debriefer challenges participants to identify barriers to speed, quality, and profitability by asking such questions as: Who is working hard? Who is waiting? How are defects handled? Who knows how profitability is calculated? What would make the process better?

Fixing the Process

Teams improve the process through two more rounds. Refinements typically include seating teams together if their process steps are adjacent, eliminating batch requirements, and building quality into the process. Productivity and profitability typically rise 30% to 50% with each round.

Redesigning from Scratch

Teams redesign the entire process and play one final 15-minute round. Profitability generally increases 200% to 300% over the first results.

Capturing the Lessons

A final debriefing reinforces lessons about lean-manufacturing techniques. The teams immediately begin applying lean principles to real-life challenges.

this new approach wasn't just a disruptive flavor-of-the-month initiative that would quickly come and go? But as the rollout advanced, performance improvements converted skeptics into true believers. JPF's managers saw that the aggressive goals were achievable. Staff members realized they were capable of performing more cross-functional work within the cell environment, and they were won over by the white boards that gave their contributions unprecedented visibility. They also liked the regular meetings with area management (daily at first, then less often as problems dwindled), which ensured they had a voice in the change process. Indeed, line leaders were the source of a number of important changes, such as modifications to the work allocation among administrators. The visible participation of senior leadership (the head of operations periodically walked through the areas where the new process was in place, and the vice presidents actively participated in the redesign) also emphasized the importance of the project.

...

Although lean production is usually seen as a manufacturing concept, many of its tools were developed in the service industries. Take the concept of the supermarket. In its lean-production sense, a supermarket is a storage area where line managers can "shop" for their required materials and components. It was a big departure from the way mass-production manufacturers had ordered and distributed materials 40 years ago, when material was essentially pushed through the production process and people at each step focused purely on their own output measures. But of course the materials supermarket was based on an old concept in a service industry, namely retailing: Customers pulled what they wanted from the shelves, which were then replenished for subsequent customers. In many respects, therefore, companies like JPF are only bringing the principles of lean production back home. □

Reprint R0310J

To order, see page 139.

#1 Executive Education
Provider Worldwide,
2000-2003



**COLUMBIA
BUSINESS
SCHOOL**

Learning that **Powers** Performance®



Columbia Executive Education

We set the **global standard** for success—for individuals and organizations. Cutting-edge program designs and an active learning approach create a **results-oriented environment** unmatched in the world. Our commitment to our clients' needs has helped us to achieve the **#1 ranking** in executive education for **four consecutive years** (*Financial Times*, 2000–2003). We give you the ideas and tools you need to **power your performance.**

UPCOMING COURSES

Negotiation and Decision-Making Strategies [November 17–18]

Creating Breakthrough Strategy [November 30–December 5]

Finance and Accounting for the Nonfinancial Executive [December 1–5]

Leading and Managing People [December 7–12]

Executing Breakthrough Strategy [December 14–19]

Leading Strategic Growth and Change [May 2–May 7]

Fundamentals of Management: Highlights of an MBA [May 16–27: Tokyo, Japan
June 13–25]

The Columbia Senior Executive Program [June 27–July 23]

WWW.GSB.COLUMBIA.EDU/EXECED
800-692-3932 | 212-854-3395

