

# Lean Service

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**H**ill Air Force Material Command Base is a great example of how one air force utilizes “Lean” service and manufacturing techniques to support their customers—the U.S. taxpayers and the pilots who fly missions every day to ensure a safe and strong America. Hill is one of the largest service centers in the world.

Hill Air Force Base is home to many operational and support missions, with the Ogden Air Logistics Center serving as the host organization. This repair and refurbishing center provides worldwide service, engineering, and logistics management for the F-16 Fighting Falcon, A-10 Thunderbolt, C-130 Hercules, Minuteman III, and Peacekeeper intercontinental ballistic missiles.

Hill has over 20,000 employees. They expend millions of hours annually rebuilding, refurbishing, and repairing the most critical weapons systems in the U.S. The facility itself is located on over a thousand acres and is just one of three U.S. Air Force bases providing this type of support.

Hill accomplishes this awesome task in an efficient and cost-effective way. Almost three years ago, they began their “lean” journey to excellence. They have accomplished many major improvements in critical repair and refurbishment operations with their Lean implementation program. The following are just some of the many department successes in refurbishment operations that the Hill team has realized:

- Reduction in space requirements of 35 percent.
- Reduction of WIP by 74 percent.
- Reduction in lead-time days of 67 percent.
- Reduction in walking (feet/assembly) of 99 percent.
- Over \$1 million in annual cost savings.

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*MainStream Management LLC is a full-service crisis and management consulting company with specialized expertise in crisis management, operations improvement, and liquidation/recovery of assets. For more information, visit [www.mainstreammgmt.com](http://www.mainstreammgmt.com) or [www.mainstreamlean.com](http://www.mainstreamlean.com).*

## What Is “Lean,” and How Does It Work?

Lean is a process improvement methodology that has its origins in the Toyota Motor Company. LeanService is the application of the Lean process for improvement of all services operations. Lean is neither an invention nor a strategy, but is actually the result of an evolution over 50 years that began with Japan’s reconstruction after WWII.

The fundamental principle of Lean is the improvement of processes by removing waste from the value stream. The value stream is the sum of all activities that occur from the time a customer requests a service or product to the time it is delivered with satisfactory results. Within any value stream, there are three kinds of activities: activities that are value-added to the customer’s request (e.g., providing an analysis, giving a diagnosis, writing a prescription, answering a question, solving a problem), activities that are non-value-added (e.g., unnecessary approvals, unnecessarily logging information, walking to and from offices, making unnecessary copies, any rework

caused by errors), and waiting and queue time, during which nothing happens to the customer’s request (e.g., caused by queuing many requests prior to acting, handing off from one person to another, waiting for approvals, waiting for information). See *Figure 1*.

The key Lean metric is value stream velocity, from customer request to successful customer receipt. This has less to do with how quickly people perform their value-added activities than with the amount and degree of non-value-added activities and waiting time that exists within the value stream. With the non-value-added activities and waiting time removed or mitigated, the value stream flows swiftly with less effort by the people who do the work and with higher quality and greater customer satisfaction.

There are at least three variations to any value stream: the way we think it occurs (usually the way it is perceived by management), the way it actually occurs (known only to those who do the work day in and day out), and what is achievable by Lean (requires the support of management, the effort of those who perform the process, and the in-

volvement of the customers and suppliers). See *Figure 2*.

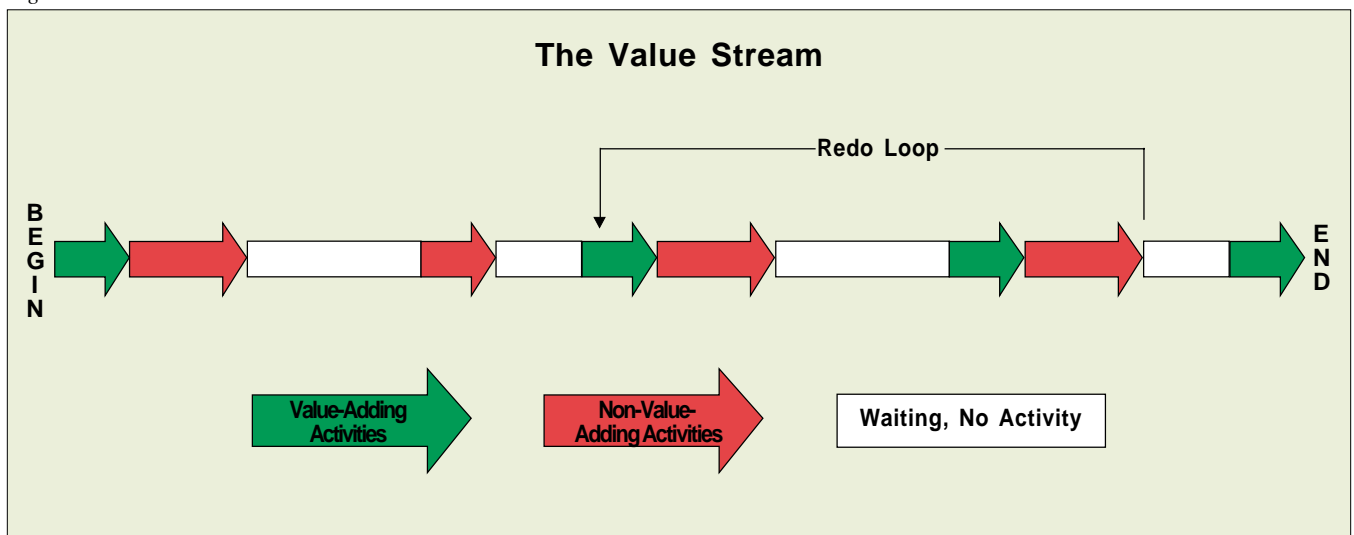
The principle of Lean is quite simple:

1. Keep the value stream moving at maximum velocity.
2. Eliminate waste that stops, slows down, or diverts the value stream.
3. Concentrate on removing waste rather than speeding up value-added operations.
4. Develop metrics and standards for consistency and sustainment.
5. Reduce defects and variation by applying Six Sigma.
6. Continuously improve all value streams as a way of policy.

There are five phases in an organization’s transformation to Lean, as follows:

- 1. Assessing.** Assess the organization’s readiness to adopt Lean and assess the value stream opportunities for improvement.
- 2. Planning.** Steer team formation, communicate and build acceptance, define mission and boundaries, and define goals. Identify teams, and prepare teams to Lean.
- 3. Learning.** Map the value stream and

Figure 1



group learning. Lean the value stream, and conduct action planning.

**4. Implementing.** Implement team engagement with the organization and project management.

**5. Sustaining.** Sustain metrics and organizational integration.

Actual results are very predictable, based on thousands of Lean projects over the past decade. Value stream velocity typically will increase 50 percent or more, required labor usually will decline by at least 30 percent, rework and errors can be reduced by 50 percent, and customer satisfaction can be improved markedly.

However, sustainment is the toughest part of any change effort, and Lean is no different.

A well-known General Electric Lean Acceleration model developed by Noel Tichy of the University of Michigan can help with progress moving forward and sustainment. The model has eight elements that must be acted upon during the transformation to a Lean culture (see *Figure 3*).

**1. Leadership.** Must begin at the top of the organization and trickle down to supervisors and rank and file through communication and involvement.

**2. Shared need to change.** There must be a compelling argument for making the change that will be agreed upon by the majority.

**3. Vision of the future state.** An understanding and communication of what “better” will look like if Lean is achieved (or not, if it is not achieved).

**4. Mobilizing commitment.** Engaging the hearts and minds of the majority to go along on the Lean journey.

**5. Preparing the Lean plan.** Col-

laborating with key stakeholders to define the Lean implementation plan through strategy deployment.

**6. Monitoring progress.** Using metrics to monitor and demonstrate both cultural change and performance.

**7. Changing systems, structures, and procedures.** Once the new value stream has demonstrated success, the infrastructure and policies must be changed in order to sustain the results.

**8. Making Lean last.** Repeating the cycle (elements 1 through 7) is a continuous improvement process, always building on prior achievements—Lean becomes the accepted way of doing business in an organization.

Services operations and their associated processes (value stream) are prime candidates for improvement by applying the aforementioned Lean principles. This process addresses handoffs, stalls, queues, out-of-department tasks, rework loops, internal dissatisfaction,

and customer dissatisfaction. The task is to determine the scope of the service operation’s value stream that can be managed effectively and to identify the key stakeholders who will need to be involved. The assessing phase will accomplish this. Planning must be collaborative with the stakeholders, garnering their buy-in and involvement. The Leaning phase will go more smoothly once the assessment and planning phases have been carried out, and it is the most exciting phase, i.e., where change can be demonstrated. Implementing the service operation’s new value stream will be the arduous task, as drudgery and resistance will replace the high of the Leaning phase. Management’s support will be necessary in order to carry the implementation through to conclusion. Sustaining is the difficult phase, as most organizations’ natural tendency will be to reject the new and persist with the old and comfort-

Figure 2

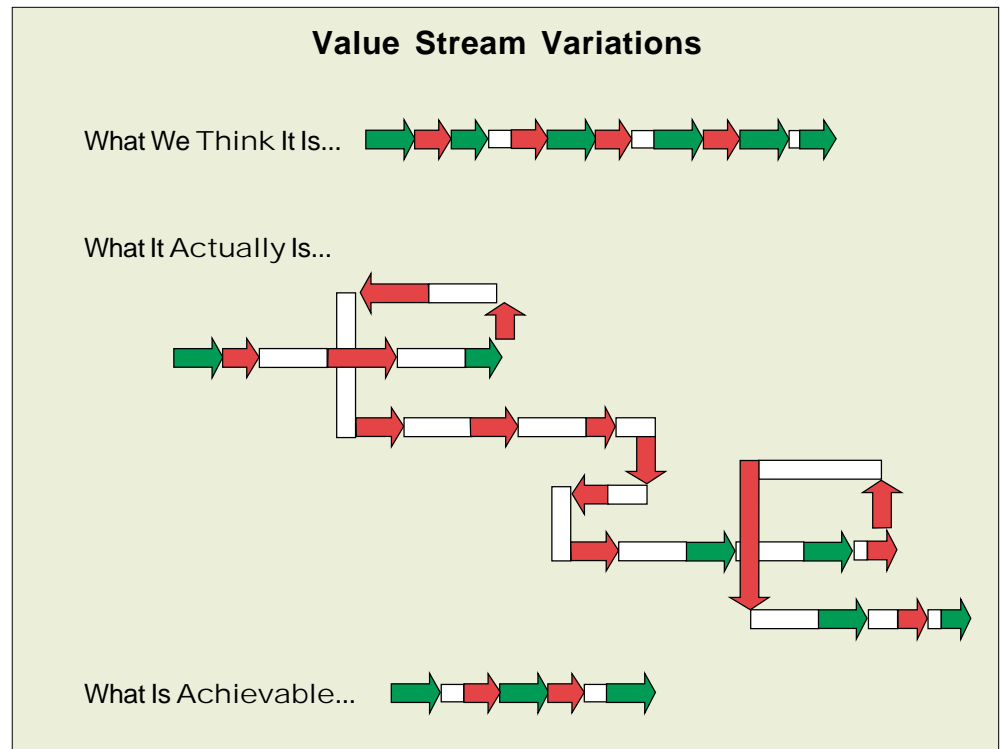
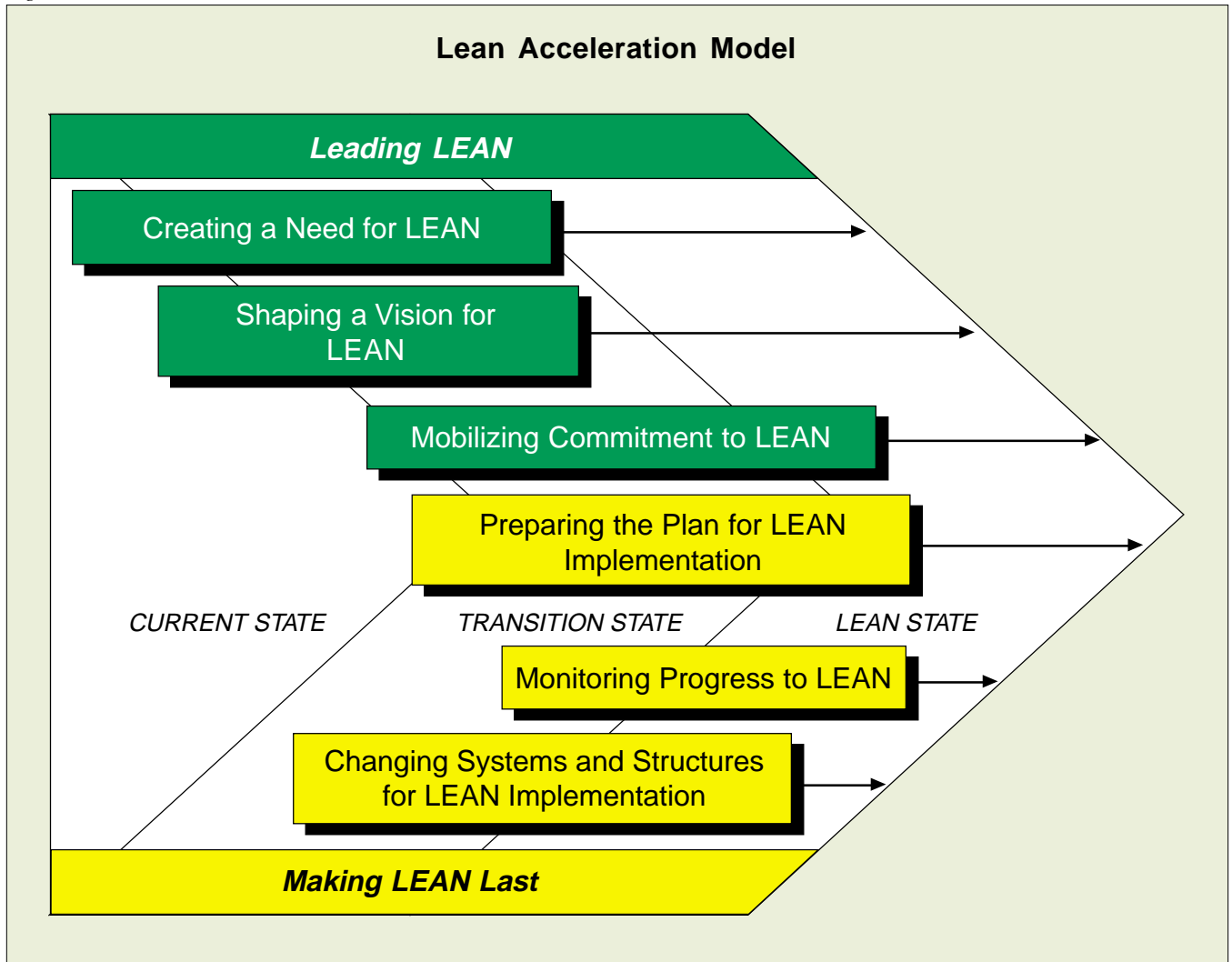


Figure 3



able. Applying the Lean Acceleration model throughout the change phases can help guarantee sustained results.

As the Lean journey in one area of an organization winds down, it is important that the continuous improvement process moves on to new areas, including upstream to vendors and downstream toward the customer. Ideally, the service, factory, and office Lean teams will maintain the momentum and empowerment that has been generated in order to sustain success.

Lean is a commitment to a new way of doing business and is not lim-

ited to any one function in an organization. It is a business model that must be embraced by every group, from order-input through manufacturing, finance, and aftermarket service. This is a journey of never-ending continuous improvement. There is no date of completion.

The key factor to long-term success is the cultural acceptance of this principle. Support from all levels of management, an atmosphere of accepting ideas, training, open communication, and promoting team participation represent the foundation of the Lean

initiative. If the commitments are strong and focused, looking for ways to improve and eliminate waste will become the norm and will be driven by those who work the processes everyday. Ultimately, the ability of an organization to accept change and make the cultural commitment that the Lean journey requires will be the true measure of its success.

If the executive and employee commitments are strong and focused, the energy will be channeled throughout the entire value stream, and sustainment will be achieved. ▼

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