

Get Ripped! 20 Steps to a Lean, Mean Supply Chain Machine



Written by Doug Barney

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Fast Fact:

Over 50 years ago, Toyota's Taiichi Ohno defined seven forms of manufacturing waste: overproduction, excess inventory, unnecessary processing steps, motion without value add, defects, waiting, and unnecessary transport or handling.

Follow this healthy regimen to shed those unwanted pounds from your supply chain.

There are two kinds of companies, those that haven't gone on a supply chain diet, and those that think they are already lean—but still have hidden pockets of fat. Either way it pays to start fresh, and look at every aspect of your chain to see where you can eliminate waste.

The concept of lean, at least in manufacturing, isn't exactly new. It was an unintended benefit from the destruction of the Japanese industrial base in World War II. When the U.S. and allies helped rebuild Japan, it was an opportunity to replace obsolete inefficient factories with the latest in technology and processes. Oftentimes it is more efficient to tear down the old, and start from scratch with the new.

Toyota executives took the post-war reparations-fueled bait and, after picking apart the wasteful methods of American manufacturers and working closely with partners and suppliers, created a highly efficient style of manufacturing that remains a worthy blueprint today.

Lean is tantalizing simple in concept, but exceedingly complex and terribly time consuming in execution. It calls for the elimination of any steps that do not directly create value, and the

relentless optimization of those elements that do create value. You are also speeding the chain—what Jim Tompkins, president of the operations consulting firm Tompkins Associates, calls “velocity,” the ultimate stage of supply chain excellence. Here are the steps your company can take to eliminate inefficiency in its supply chain.

Two Quick Tips:

Set Goals

What do you want to achieve? Better customer service, more profits, reduced costs? Focus your efforts on achieving your top goals.

Set Priorities

As much as you might like, you simply can't do everything at once. Determine your deepest, most achievable needs, and work on them first, and with the most vigor.



1. Get Solid Executive Buy-in

Before doing any heavy lifting, your company needs to make a commitment. Let's assume you are the ringleader (not a bad role to have). Your job is to lobby for lean. The most important constituency is at the very top—company executives. It is crucial to get the CEO to believe in lean, and this means speaking his or her language—dollars and cents.

It is pretty simple at the most fundamental level—eliminating waste reduces costs and boosts efficiency. Getting lean has a number of more specific benefits. It shortens lead times, increases inventory turnover and reduces write-offs, shrinks or even eliminates the need for warehousing, reduces labor, frees up working capital, creates capacity for new products, makes more efficient use of resources, supports faster delivery, increases market responsiveness, and leads to greater profitability.

But there's a lot more to it. Lean also positions your company for growth, as unused capacity can be allocated for profitable high-growth new products. And it creates the less measurable but unimaginably important competitive advantage.

2. Talk About the Bottom Line

Lean drops straight to the bottom line, according to 2think, a supply chain consulting firm. The company points to the example of a \$100 million manufacturer that cuts costs by 3 percent. Assuming a 7 percent net profit rate, to get the same benefit from increasing revenue, the company would have to bring in an extra \$43 million. There is a compounding effect, 2think also argues. If this now lean company increases revenue by \$20 million, there will be \$12 million in profits, some 70 percent more than the previous profit picture.

2think believes this revenue growth is not unreasonable, since a lean company is nimble, and can attain top line revenue growth more easily.

Use all this to lay out the business case. Executive buy-in can help create a culture of lean, as you need all levels of the organization to believe in this way of thinking. What you are seeking is a holistic, integrated approach to leaning the chain, which is highly complex and involves many constituencies, but is well worth the effort.

Don't expect to get lean overnight. Instead, get prepared for what could be a long, hard slog.

3. Partner Up

Just as you work internally on corporate-wide buy-in, so must you bring in partners. You can't mandate lean, especially with a wide array of suppliers that change from year to year, month to month, and sometimes, in the case of commodity goods, day to

Six Lean Mandates

- 1** Involve the makers of your production gear in lean efforts.
- 2** Pick the brains of front line workers for efficiency ideas.
- 3** Train partners in lean.
- 4** Provide suppliers the right tools they need to be lean: They need to be as responsive as you are.
- 5** Base your plan on facts, not conjecture or opinion.
- 6** Show partners how lean can save them money and boost profits.

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day. Partners must have an incentive, not just a mandate. Long-term business is one. If they commit to your lean program, chances are they'll have your business for years to come.

Producers can reduce supplier costs by giving solid direction and advice, and by being consistent. Suppliers and producers should also work closely and early on quality.

There should also be financial incentives. Lean partners aren't necessarily the cheapest, but they should be the most flexible, innovative, and high quality. You can help improve their business, and improve their company, by supporting their growth as a quality efficient supplier. And top quality increases speed by reducing steps. Suppliers who consistently deliver quality products require fewer inspections and less rework.

And of course, there's always the cash. Contracts can be written that explicitly reward lean supplier behavior.

4. Don't Go So Fast

Okay, you've convinced the executives, and now the whole company is thinking lean. Your partners are clued in and awaiting instructions. Maybe you've even scoped out a new software package or two.

Slow down! You can't just toss a bunch of software, servers, and switches at your supply chain and expect miracles.

First commit to a demand-driven production and continuous

replenishment process, then commit to seeing it through to completion. And that takes planning, strategy, and a methodology.

5. Parse the Paradigms

Just as with any diet program, it is tough to lose supply chain fat without a solid plan. There are several starting points.

Answerthink Inc., a business and technology consulting firm, suggests examining the five basics of supply chains: plan, source, make, deliver, and return. The idea is to examine each of the five aspects looking for inefficiency and waste—and thus gaining a holistic view of the chain.

Decades ago, W. Edward Deming, the great statistician, consultant, and quality guru, created a popular four-part approach that focuses on actions: Plan, Do, Check, Act. First you “plan” by finding and analyzing a problem and figuring out a solution; then “do,” taking different approaches to carrying out the plan. To “check,” you use metrics to figure out if the “do” actually worked. Last, you “act” by implementing the process if the metrics check out, or modify and then implement based on the lessons from your measurements.

There’s a more general, though still applicable, reengineering framework— the Rummler-Brache Process Improvement Approach—where you:

- Pick a business concern and related process.

- Build and educate a process improvement team.

- Map that process.

- Look for waste and inefficiencies in the process.

- Build an ideal process map, what some call a Future State Map.

- Create a process based on the new map and measure its success.

And of course, there is always Six Sigma, a thoroughly-proven guide to quality and efficiency.

Don't craft a supply chain to suit your old inefficient processes. Instead, envision the ideal chain and change your processes, people, and culture to adapt to it.

To Be Lean, You Must:

- Reduce excess process steps.
- Shorten the wait for orders, information, and parts.
- Eliminate extra material handling steps.
- Stop defects early.



6. Stream that Value

The goal of a lean chain is to create an effective value stream, which is nothing more than wringing value out at every step of the supply chain. A value stream is a chain that totally integrates all relevant partners. With these value streams, all parties and partners help to create value. This is best accomplished with a small number of committed and efficient partners. But suppliers can't do it on their own—the manufacturer must push them every step of the way to reduce costs, increase flexibility, and improve quality.

7. Map the Present

Just as you can't buy a suit until you know your shoulder size, you can't put your supply chain on a proper diet and start building a proper value stream until you know exactly what your chain already looks like.

This involves researching every aspect of your manufacturing, and every facet of your supply chain. Doing so means building a multidisciplinary team that understands each and every element of the chain, and then creating detailed documentation. Once this

is in place, you can begin creating your Current State Map, which shows how things currently flow. This is the basis of your analysis and ultimate diet plan.

There are two sides to this mapping, which some call Value Stream Mapping. Many start with relationship mapping, which looks at how all the groups communicate, make decisions, and sign off on processes. This is the people and organizational aspect of the map. The first relationship map is internal, then it can build out to include partners.

Next is process mapping, which looks at how actual work gets done and products get designed, sourced, built, and shipped. Like the relationship, you want to start internally, then detail the more complex set of external relationships.

You should be looking at the overall flow of a product, including the time it takes for each step and between each step.

Whether relationship or process, internal or external, the maps are best built by a multifunctional team—essentially a bunch of mini maps are combined into the master map.

Tompkins, president of Tompkins Associates, suggests building your map around a specific product. Detail all processes, then sequence all the steps and map the flow of information. Key issues to map and consider include product flow, delivery steps and timing, and transportation.

Once the mapping is done, look for flaws. For instance, how much time is spent simply waiting? How many processes are repeated because they don't work the first time? Are there too many nonvalue-creating intermediate steps? How many defects, on average, do you find? Does an overload of policies, procedures, and approvals (useless paperwork/busy work) slow down the chain, and by how much?

8. Map the Future

The Future State map is where the real work gets done. Here you envision your ideal, highly efficient, value adding supply chain. This document should not be taken lightly, and should only be signed off on after every ounce of fat has been wrung out.

If the members of your group have the expertise, and are true students of lean, go ahead and go it alone. If not, there are plenty of analysts, consultants, and integrators that can help build the ideal map—just be sure to check references and make sure the people you hire can deliver results.

It would be great if this map could magically turn into a brand new supply chain, but that's just not the way things work. Instead, your team has to see if it is even possible to craft such a chain, how long it would take, how much it will cost, and whether your shop has all the core competencies to get the whole job done.

9. Source Strategically

Lean chains tend to use a low number of lean suppliers who can produce quickly and in high volume. Many lean manufacturers, for instance, use a single supplier for multiple related supplies that play to the partner's strengths. Having fewer suppliers that are more strategic reduces the overall complexity of your chain. Because these suppliers are so critical to your success, choose them based on their strengths, not only location (of course, all other things being equal, closer is better).

Because you do more business with each supplier, you can get more out of them, such as demanding they adhere to your lean supply chain mandates and constantly improving quality.

Lean also leads to a different way of negotiating with suppliers. It is no longer a bidding war, and the relationship with suppliers is

no longer arms-length and hands off. You aren't necessarily just going for the lowest bidder, but are looking for a long-term relationship where suppliers don't change nearly as frequently.

This is the whole notion of strategic sourcing where the name of the game is on-time delivery, top quality, low cost, and mutual trust. In short, you must demand true supplier excellence.

You can't get lean all on your own: your suppliers, transportation firms, and outsourcers must all think lean.

Measure progress through metrics and gut-level reactions—and the bottom line. You need to choose metrics to track lean progress, and build a system to track them. There are even sourcing software tools to track how well these suppliers are performing.

10. Keep Communications Open

Lean requires close communication between internal and external partners. You can set the stage by being open. First step, eliminate silos within your own organization. The mandate from the CEO is a great place to start. Once everyone agrees on going lean, they're sure to agree to talk to one another. But you need to implement rules of engagement and then install and train employees on the communications technology.

The same has to happen for partners, through cultural indoctrination, incentives, technology, and training—in that relative order.

Engendering and maintaining trust is also critical. Lead by example, by letting partners, under nondisclosure of course, see what you are up to and participate in new product development.

Many companies solidify these relationships through face-to-face meetings, sometimes in the form of annual supplier enclaves

where suppliers contribute to your strategy. That's great, but the real communication happens day to day, based on solid current data—so that's where your real focus should be.

11. Get Techie

Philosophy and technology are both fundamental to a lean supply chain. The right philosophy fuels lean thinking, while technology helps realize those lean goals.

Technology supports two key tenets of lean—collaboration and visibility. Collaboration means that you and your partners can communicate quickly and easily and that internal groups have the same ability. The phone, while a wonderful tool, is woefully inadequate for efficient, rich, and constant supply chain communications. By the time your partner gets back from lunch, rings you back, and hopefully reaches you instead of voice mail, inventories, demand, or whatever else was on your mind has changed. What's needed for lean is instant notification and instant reaction.

Visibility is just as critical, and also must cut across partners and all internal constituencies. Like collaboration, visibility requires technical solutions. The manufacturer must know demand from customers, and production rates and partners must understand required materials.

Connectivity is the key to visibility, and visibility is how one responds to subtle fluctuations in demand.

A truly lean chain embraces all partners, something difficult if not impossible to accomplish with older proprietary technology. You simply can't expect all your partners to buy the same expensive bits of proprietary supply chain and transaction software and integrate that with yours. That's where the Internet, open protocols, and standard file formats come in.

According to a Stanford Global Supply Chain Management Forum white paper on information integration, partners should share information such as the status of inventory, demand, and schedules, and have it available on-demand in real time.

One approach to this is the so-called Web-based supply hub. Here information is gathered centrally and distributed to relevant parties over the Internet.

This type of rich sharing supports the concept of synchronized planning. Because information is common to all parties, it can form the basis of cooperative planning.

Fortunately, there are frameworks to guide you in this endeavor, such as the Collaborative Planning, Forecasting and Replenishment initiative (CPFR), which supports a “common forecast and replenishment plan.”

The CPFR standard is a “framework for the collaborative aspects of planning, forecasting, and replenishment processes,” where “a buyer (retailer) and a seller (manufacturer), as Collaboration Partners, work together to satisfy the demands of an end customer,” according to the Voluntary Interindustry Commerce Standards group that spearheads the effort.

The six-year-old CPFR standard is in use by over 300 companies, and is backed from everyone from Accenture to Microsoft to West Marine. So far, so good, as CPFR case studies point to inventory reductions of up to 40 percent.

While technology is not absolutely necessary for the adoption of CPFR, electronic commerce technology and “synchronized product data” supported by software can clearly support deeper levels of CPFR-style collaboration, including the sharing of forecasts, historical data, and business plans.

In an ideal world, CPFR systems are closely integrated with whatever back-end systems house supply chain and demand data. These CPFR apps can then be delivered broadly via a third-party host or through an extranet.

Throughout this article we've been suggesting that fewer more strategic suppliers form the basis of a lean chain. Now here's a little wrinkle—the Internet makes it possible to tap into and work with a far broader base of suppliers, saving you money and tapping into deeper areas of specialization and expertise. Don't go nuts with this. Use the freedom of lean to tap into some of these opportunities, but don't undo all your efforts by using the Internet to multiply the number of suppliers you need to manage.

According to a QAD Inc. white paper, the auto industry is heavily dependent on suppliers and more than half the value of a car comes from these suppliers. Therefore, there are huge potential savings in making the suppliers and your relationship with them more efficient. QAD, a supply chain vendor, claims that organizations with the shortest cash-to-cash cycle times use more packaged supply chain software and exploit e-business connections far more than those with longer cycles.

QAD takes all this a step further and promotes software that supports Just In Time (JIT) Sequencing, where components are supplied in the precise order in which they are needed for manufacturing. QAD does so by linking ERP planning to actual customer demand. This technique is particularly good for products whose configurations change, such as custom PCs or autos with lots of options.

12. Reveal ROI

Going lean can cost gobs of money, as technology that increases visibility and fosters communications can be complex and

expensive. For example, Nucleus Research, a technology research company, found the average three-year cost of an i2 installation is over \$7 million and takes over 2 years to deploy.

Supply chain vendors can help cost justify their solution, but don't just take their word (and spreadsheets) for it. Hold their feet to the fire, and make sure any ROI models they create exactly match your scenario.

Vendor ROI studies are often hopelessly overoptimistic. Nucleus Research studied i2 customers and found that users generally shortened order-to-fulfillment times and planning cycle times, and reduced inventories, but not always enough to justify the cost of the software and the implementation. And because license costs were often based on i2's ROI projections, these inaccuracies cost customers real dollars.

Nucleus suggests always independently evaluating ROI before purchasing supply chain software.

And never feel locked in. If there is something better with a quick provable payback (say 6–12 months), if possible, go for it, even if you are already committed to something else.

13. Push JIT to the Hilt

If there are three words to describe the essence of lean they are Just in Time. If you operate in a JIT fashion, you are by definition lean.

JIT isn't just a way of producing only what is needed when it is needed—JIT informs every aspect of your chain, especially planning. Instead of forecasts, JIT adherents use actual customer demand to drive production. True JIT replaces planning with doing.

And through e-JIT technologies, you can broadcast actual

demand instantly through EDI, fax, e-mail, XML, or other means.

JIT reduces inventories, and smaller inventories put money in your company's pocket. Consultancy LeanManufacturing.com gives a simple example of how increasing inventory turns and reducing inventory can free up cash. An inventory turn, of course, is the cost of products sold divided by your dollar investment in inventory.

The impact on working capital is a simple equation: smaller inventories = more capital. Let's say your organization sells \$10 million worth of goods with \$2 million worth of material sitting in inventory. If you double these five turns to ten, inventory is cut in half and the firm has an extra \$1 million to play with, the consultancy points out.

Lean can also dramatically reduce your cash conversion cycle time, the consultancy argues.

There's an even more radical approach that requires the financial cooperation of your leading suppliers—consignment inventory where the manufacturer is not considered the owner of the material until it is actually consumed. This is the near ultimate way to reduce inventory, increase turns, and maximize working capital.

14. Flow Continuously

Lean can also make production more efficient. Continuous flow, otherwise known as single-piece flow, is one approach to lean that involves producing a piece at a time with continuous processes. The opposite can also work—purely parallel processes.

In either case, the goal is to eliminate the inefficiencies of the old batch and queue technique. Not only are you smoothing and perhaps hastening production, but by pulling in materials when needed you improve quality because problems are discovered

sooner, instead of after an entire batch has been consumed or produced.

15. Forecast Faster

Rate-based planning and execution is a more efficient, leaner form of forecasting than older long-term approaches. With this technique, a company calculates the average rate of demand, which drives production, and the average rate of replenishment. This replaces the less precise long-range forecasting because it is based on current needs, not predictions made in the past.

Of course, the rate changes all the time, based on circumstances, and production is adjusted accordingly. So while you may still forecast, the focus is more on adjusting rates or production, rather than having a static forecast serve as the entire basis of production.

16. Outsource What You Can't Do Well

Companies today outsource for a variety of reasons—most prominently to tap into the special expertise of the outsourcer, or exploit their economies of scale.

Supply chain vendor Freemarkets suggests outsourcing functions that could be considered non-core and commodity and thus are easily handled by third parties, and keeping the core strategic functions closer to the vest.

Supply management outsourcers (SMOs) can often perform these commodity functions cheaply and efficiently due to expertise and economies of scale. Handling them yourself may be overly expensive, especially for those commodity functions that aren't done all the time. Areas to outsource include benchmarking, managing inventories, and handling transactions, Freemarkets argues. Other possibilities include transportation/trucking, warehousing, and on the technology side, software development,

customization, deployment, and hosting.

But outsourcers don't know your business as well as you, so your team should make the tough decisions as to what is core and what isn't, and where your own expertise lies.

There is a downside to outsourcing, as parts of your hopefully fully-integrated supply chain are in the hands of others, potentially leaving you with less control and less integration.

Outsourcers have to back your lean efforts, and not thwart them. Anything you outsource must be defined to a T, and contracts should set specific lean standards.

17. Rethink Manufacturing Outsourcing/Offshoring

It is common wisdom that offshore manufacturing, with its lower labor rates, is the path to low-cost production nirvana. But lean supply chains and lean manufacturing changes that equation. Lowering overall costs through lean practices cuts that differential.

But all that misses the whole point of being lean. Lean means flexible, and fast. There are perils of stretched out supply lines. It may be cheaper to make in China, but also takes longer to arrive by sea, and costs more to ship if you ship by air.

There are other concerns. Lean means an unceasing focus on improving quality. It can be difficult to achieve this with remote manufacturers—for instance it is tough to do spot inspections to ensure quality before more are produced.

The Lean Institute points out that overseas producers must have additional inventories as a buffer, in case demand spikes. And of course, communication and collaboration are more difficult so far away.

Products manufactured thousands of miles away, needing materials, and facing thousands of miles of transport to the point of sales by definition rules out a perfectly lean chain. Or does it?

The fact is, the proper use of technology can make remote partners seem local, and let you fully tap those overseas economies. But to do so requires some serious supply chain integration, goal setting, communication, scrutiny, and relationship management.

18. Contemplate New Business Models

New technologies and lean chains can fundamentally change your business—earlier we suggested looking at all these changes in the process of reinventing your chain, and only automating old processes that work or new processes in which you have faith.

But a lean changed chain can offer new ways of looking at and

Resources

[Ariba Inc.](#)

FreeMarkets Center
Pittsburgh, PA
412.434.0500

[2think](#)

Holland, MI
616.546.5483

[Answerthink](#)

Miami, FL
877.423.4321

[LeanManufacturing.com](#)

Lexington, KY
859.543.9090

[Nucleus Research](#)

Wellesley, MA
781.416.2900

[QAD](#)

Carpinteria, CA
805.684.6614 or
888.641.4141

[Stanford Global Supply Chain Management Forum](#)

Stanford, CA
650.723.2300_

[Tompkins Associates](#)

Raleigh, NC
919.855.5461

doing business. For instance, you can create new products cooperatively with suppliers, expand more quickly, or transform your partners through for-fee supply chain consulting. Another option is to offer customers specialized, pre-built e-Procurement solutions. You can also use techniques such as Sequential JIT to craft radical new approaches to customization.

19. Manage and Monitor Demand

A lean chain means that you understand what is happening when it happens. Perfection may never be possible, so there will still be some overproduction. But you'll know quickly that you overproduced, and exactly how much.

With that information in hand, your company can make plans and decisions that manipulate demand to match what is happening in the supply chain. For instance, promotions can be set up to sell excess inventory, and sell it in locations with the biggest surpluses.

20. Make Lean a Continuous Process

You can never be too rich, or when it comes to supply chains, too thin. Lean is all about learning and experimentation—it's a never ending process. Today's top companies are already lean, but they have teams of execs, supply chain gurus, engineers, and frontline workers constantly looking for new ways to drop some supply chain weight.

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