



Making the case for lean project management

How lean thinking enhances the PM process

BY NORBERT MAJERUS

Lean has become a popular adjective to so many things: manufacturing, innovation, startups, services, health care. So why not “lean project management”? For some, lean project management means merely creating a Toyota-like chief engineer position. But lean project management takes a framework, skills, training and often a different organization. It is the combination of lean thinking and good traditional project management practices—a powerful synergy that leads to amazing results for virtually any type of project.

By the time I retired as the lean R&D champion for Goodyear Tire & Rubber Company, the company had reached a level of project management excellence that significantly contributed to the Akron Innovation Center winning the AME Excellence Award in 2016. But project management did not come easy or fast for us. When my first big innovation received funding to build manufacturing equipment some 35 years ago, I became the default project manager—without the

skills, coaching or help that I needed. I learned PM from the costly mistakes I made, such as the late-in-the-process scope changes that led to late delivery and budget overruns.

It wasn't until the late 1990s that Goodyear developed a high-functioning project management group, which reported to its own director. That group was staffed with high-potential individuals, and they worked on important and highly impactful cross-functional corporate projects. It was around this time that an academic consultant group advised the company to eliminate the project management organization. “Companies with a strong functional organization must learn to manage projects without the help of a PM organization,” they recommended. Unfortunately, we listened and disbanded the PM group. Eventually, however, project management reemerged in the form of customer-specific, cross-functional project teams.

Seeing the various project management methods in my R&D career and since, as I work with companies in various industries, I've come to believe in these four keys to lean PM success:

1. Project management is a *function*, like finance, engineering and materials science. Project management must be learned, documented, coached, taught and improved, like every other necessary discipline in a company. For that reason, there should be a separate project management office or function, and project managers should dual report to the PM office as well as to a customer or customer representative (internal or external), such as a technical director responsible for a product and/or region.
2. For many, the Toyota-like chief engineer role is symbolic of lean project management. But grafting a chief engineer position onto a traditional functional organization without making significant adjustments won't work. A matrix or similar structure along with cross-functional collaboration—not just a chief engineer position—are necessary prerequisites for project management to be successful (see *Figure 1*).
3. If a reorganization is needed to accommodate project management, such as developing a matrix

An R&D Matrix Organization Creates Cross-functional Collaboration

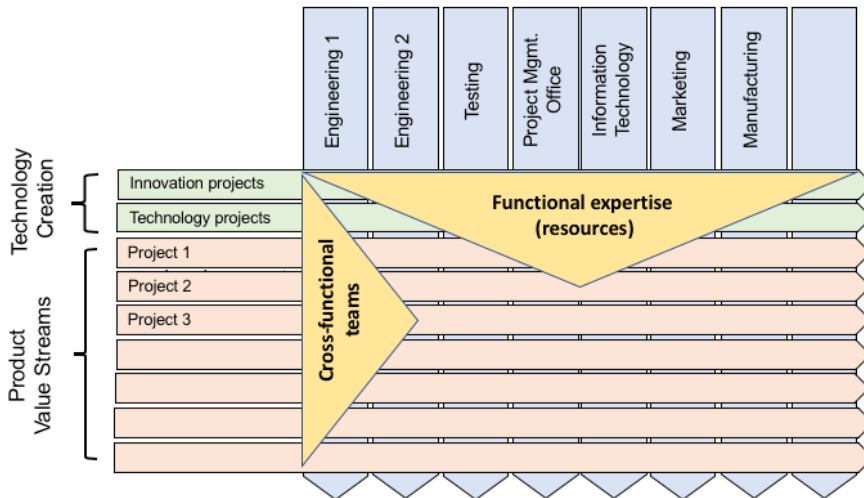


Figure 1: The vertical bars represent typical functions in an organization. Product and technology projects are managed across all the functions by managers who report both to the business and the project management office.

organization, don't lump it into the middle of a lean transformation. Changes of that magnitude can be disruptive and create uncertainty, which makes it hard to engage associates in the lean transformation. Jim Womack's advice in "Lean Thinking" is to get organizational issues out of the way first. I think Jim's advice also applies to developing a suitable project organization. Establish the PM structure, and then begin the lean transformation.

- Lean principles can create abundant synergy in a company when coupled with good, traditional project management practices. For that reason, many Goodyear project managers attended lean certification training, learning principles such as visual planning, work and problem visualization, daily huddles, standard work, flexible resources, portfolio management, cross-functional collaboration, concurrent work and many more.

In addition to the above lean principles, five specific ones are especially instrumental in guiding a company to a successful lean project management organization: Agile project management;

fast is better than slow; critical path management; late start; and lean leadership.

Agile project management

Early in my career, I was working on a team to develop a revolutionary new product. We developed the product, designed equipment, bought tooling and designed a plant. Then we realized that the product had not been tested for mandatory government requirements; everybody assumed that would be just a formality. It was not. The product did not pass the government testing, and after spending many millions of dollars, the project was stopped. I wondered why we did not run the test first and save the money.

With an Agile PM method—which works exceptionally well for projects with uncertainty—a team first identifies the highest risk and the most critical assumption or question that must be answered. In the case above, that would have been the government test. After the question is identified, the cross-functional team (often including

the customer) makes a plan to test the critical assumption in the fastest and cheapest manner. If the assumption cannot be affirmed, the project changes direction or is stopped (or at least frozen). If the assumption is confirmed, the team moves to the next most important question until the risk has been reduced to the point where investment takes place and gantt charts are drawn up.

With Agile PM, a project's scope can change based on new knowledge that is created to reduce the risk. Agile PM also provides the flexibility to adjust time and resources. I remember when our marketing department wanted to move the launch of a major product line up by six months because they projected a significant gain in revenue and profit. Our process had the flexibility to add the necessary resources, and the collaboration with the plants was good enough to make it happen. The cost of the additional resources and the plant disruption dwarfed the realized profit.

In order to make Agile PM work, projects have to be managed in small pieces, like sprints in the software industry. At each step, the project's stakeholders reassess scope, cost and time. Most project managers typically know the cost of resources, and they are aware of the consequences of missing the scope. But very few are aware of the cost of time—i.e., what losses occur to the customer or the company if the project is late, and what gains can be made if the timeline is moved up. Project managers who know the cost of time do not let the timeline slide.

Fast is better than slow

In product development, speed is critical. Those companies that are first to market with new products receive a price premium and a competitive advantage, leaving others trying to catch up. One of my former R&D vice presidents defined R&D success as being faster

“Project managers who know the cost of time do not let the timeline slide.”

in bringing new products to the market than the time it takes the competition to copy them.

Speed is equally essential for non-product development projects, like software deployment, capital projects and continuous improvement projects. The faster the project is completed, the faster the improvements can be realized and the better the return on investment. I learned early on that speed is correlated to efficiency. After all, one of the best ways to get faster is to eliminate all non-value-added activities in the project tasks (e.g., waiting, overprocessing).

Many other lean principles can be leveraged to make projects faster. For example, a focus on flow eliminates the waste of waiting and imbalance. I like to compare a project to the baton in a relay race: The runners must run as fast as possible to win, but the next runner also must be ready when the baton arrives, and the handoff has to be good. To assure that resources are ready when needed, another lean principle applies: Do not schedule resources at 100 percent—leave an appropriate buffer of at least 30 percent for projects with high uncertainty; less buffer is needed for more standard tasks (see Figure 2).

Other lean principles and methods that can be leveraged to improve speed include visual planning/management, quick problem identification, daily standup meetings and flexible resources.

Applying theory of constraints to the critical path

A few years ago, I coached a service organization that had ambitious goals to reduce the cycle time of all their services by half. They had made improvements in some of their activities, but their cycle time and delivery performance had not improved. I noticed that they bent over backward to reduce the cycle time of activities that were not on the critical path, and, in doing so, actually pulled resources needed from activities that were on the critical path.

High Utilization Leads to Waiting and Long Cycle Time

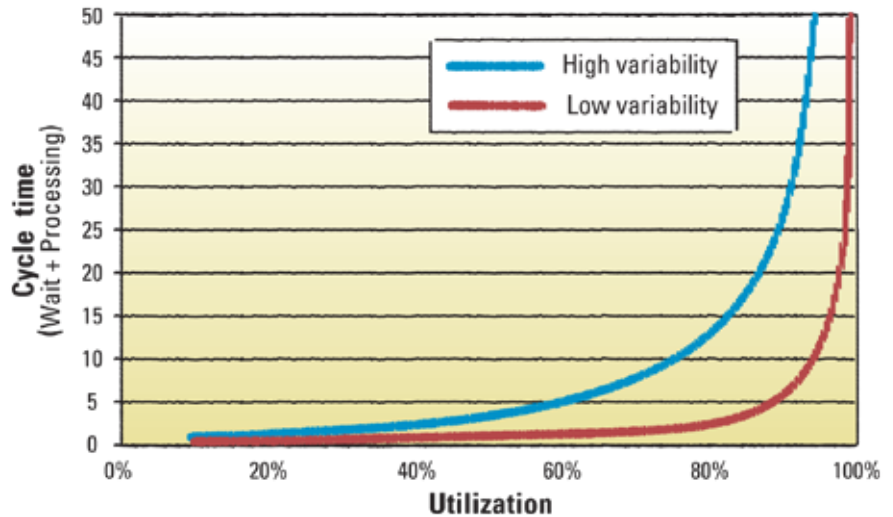


Figure 2: The cycle time increases in a non-linear fashion as the utilization of a resource approaches 100 percent. The effect is compounded by the variability or uncertainty.

I found the theory of constraints (TOC) very useful in coaching this team. TOC applies to the critical path just as it applies to a bottleneck.

1. Start by identifying all the activities on the critical path and elevate them, assuring they get all the resources and attention they need.
2. Ensure that all other activities and efforts support the critical path (i.e., make sure that no non-critical path activities are late and delay the critical path).
3. Begin to improve the speed of the activities on the critical path by traditional means (adding resources) and applying some of the lean principles described above.
4. Watch closely for when the critical path changes, and start over.

Late start

Late start sounds like a paradox. After all, I was taught a long time ago that all long lead-time items must be ordered as soon as possible. But when I was managing tire-development projects at Goodyear, early start only meant getting

in line earlier and waiting longer. And when we finally got the tools we ordered so fast, they had to be reworked based on what we learned in the meantime. After we had created flow in our processes at Goodyear, we learned that ordering a tool as late as possible had many advantages: the customer had time to make changes; we could use the latest knowledge; we had better return on investment; and no rework was required (see Figure 3).

Late start also is a remedy to the “Parkinson Law,” which says that work always expands to fill the time allocated. In addition, late start accommodates a key Toyota principle—lock in all irreversible decisions as late as possible to keep options open.

People-centric lean leadership

When I was a project manager, I had fierce competitors: my peer project managers! We all competed for the same resources. We all had to meet often impossible requirements and spent more time beating the system and blaming others than managing our projects. We were competing for the top position in the performance management system. Since happy employees accounted for a

Start Late to Deliver on Time

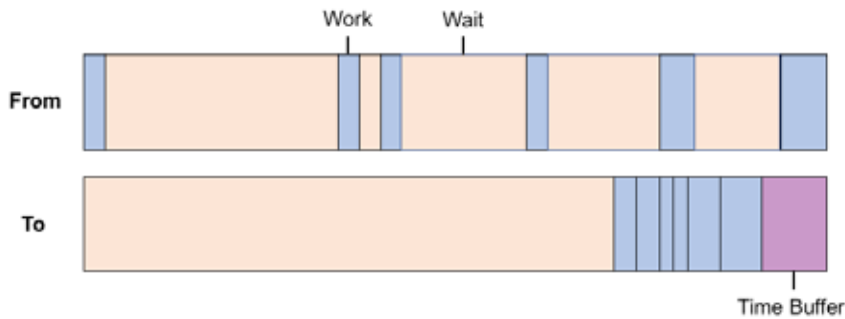


Figure 3: A late-start schedule improves efficiency, helps with cash flow and ROI, and avoids costly late changes and project interruptions.

large portion of managers' performance, customer happiness was often traded for employee happiness.

Good people-centric lean practices eliminated a lot of the wasted project-manager efforts, and they can guide all project managers to deliver results and

make team members happy. With lean leadership, people are not overloaded, and they are engaged in making plans for delivering value to the customer.

Good project managers respect and trust their team members while still holding them accountable. They lead with humility, asking questions and

empowering associates to come up with the best answer on their own. They encourage collaboration and understand that their primary role is to coach and help their team members (and even their peers) deliver value.

Good project management has been a staple of continuous improvement and traditional lean transformations in manufacturing. As lean thinking expands into new areas, like services, R&D and capital projects—where project management is even more prominent—the opportunities become more abundant. Lean thinking can effectively take good project management to excellent project management and deliver contributions to the top and bottom lines. ●

Norbert Majerus is a lean coach and consultant. He will teach a workshop on the subject of "Lean Project Management" at the AME International Conference in Chicago in November 2019.

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