

Lean Project Management
Slashing Waste to Reduce Project Costs and Timelines
Todd MacAdam, President, Lean Solutions Limited

Abstract

Just as Lean manufacturing has been driving waste out of operations, so too can this business strategy drive waste from the project management process. By following a systematic approach that eliminates waste, and focuses on creating value for the customer, organizations can dramatically reduce project timelines and costs.

This paper serves as an overview of this improvement strategy as it applies to project management and discusses different applications of the Lean Principles for each phase of project management. Organizations require a systematic and disciplined approach to reap the full rewards of a Lean implementation, and this paper identifies several ways that organizations must adapt their approach if they wish to excel at project management.

Introduction to Lean

“Lean” is a very familiar word these days, especially to anyone working in manufacturing. Although its roots go back as far as the days of the Ford Model-T, the term “Lean” was not coined until the 1980s and did not become well known until 1996, with the publication of *Lean Thinking* by Womack and Jones (1996). This book was North America’s first introduction to the business philosophy that has made Toyota the world-class car manufacturer that they are today.

Wikipedia defines “Lean manufacturing” as:

“...a production practice that considers the expenditure of resources for any goal other than the creation of value for the end customer to be wasteful, and thus a target for elimination.”

By simply removing the word “production,” we have a definition that can and should be applied to every process in an organization.

With *Lean Thinking*, Womack and Jones introduced the world to five “Lean Principles” that are the foundation of the Toyota Product System:

1. Specify value,
2. Identify the value stream,
3. Flow,
4. Pull, and
5. Perfection (Womack & Jones, 1996, p. 16-26)

The brilliance of these five principles is that they are not phrased in such a way as to imply they are only applicable to manufacturing (even though the vast majority of the examples are from manufacturing). As such, the Lean Principles are now being applied to a wide variety of value streams including product development, accounting, transportation, administration, sales, hospitals, vehicle repair, and many others. Lean is not exclusive to just manufacturing any more, and non-manufacturing companies are reaping huge rewards by driving waste from their processes.

In *Learning to See*, Rother and Shook (1999) define a value stream as:

“...all the actions (both value added and non-value added) currently required to bring a product through the main flows essential to every product: (1) the production flow from raw material into the arms of the customer, and (2) the design flow from concept to launch.” (Rother & Shook, 1999, p. 3)

Learning to See describes how to create a future state value stream that dramatically reduces waste and shortens lead times. Although this book uses only manufacturing examples, their definition indicates that value streams (and the waste inherent within them) exist in other parts of an organization as well. If Lean can be applied to reduce waste in the product design process, then it is hardly a stretch to apply these same concepts to any project. Less waste in project management means that projects can be completed faster, with improved results and lower costs.

Applying the Lean Principles to Project Management

The longer a project takes to complete, the more money it will cost. When you factor in lost revenue (or lost benefits from having the project completed), the cost of delays in project completion are more than significant. The goal of Lean Project Management (LPM) therefore is to reduce the time required to complete projects.

Every task completed in an organization can be grouped into three types:

1. **Value-Added** tasks are those activities that generate value for the customer. That is, these tasks advance the completion of the project, and the customer is willing to pay for them. All value in a project exists within the project's deliverables. Thus, if an activity is not taking a deliverable closer to completion, it is not a value-added task. Laying the foundation for a hotel construction project is an example of a value added activity.
2. **Enabler** tasks either do not advance the project deliverables, or the customer is unwilling to pay for them, but they are still required to be completed. Thus, an enabler task is non-value-added, but necessary. Project planning or quality testing (if it is not specified as part of a customer deliverable) are examples of enabler tasks.
3. **Waste** occurs when a task is not desired by the customer, and the task does not advance the completion of a deliverable. Wasteful tasks are non-value-added and unnecessary. Attending a meeting at which you are not required is a wasteful activity, as is over-designing a component.

The goal of applying Lean to project management therefore is to reduce the amount of time required to complete each project by eliminating wasteful activities, and increasing the amount of time spent on value-added tasks. Doing so will create more value for the customer at lower cost, and the benefits from the project will be realized sooner.

Selecting and Prioritizing Projects

The first thing that companies need to understand is that customers value project completion, not project initiation. Despite this seemingly obvious statement, most organizations place far more focus on getting contracts than they do on completing them. After getting as many projects as they possibly can, companies are then forced to spread their available resources across each project and the typical result is that no project can be properly completed within the timeframe specified. In addition to the delays caused by understaffing each project, there are substantial delays as a result of resource conflicts and multi-tasking, which destroys a team member's focus.

Focusing all of a team's resources to complete one project at a time, will not only result in the benefits of that project being realized faster, but all projects will be completed sooner since the wastes associated with multi-tasking and resource sharing will be eliminated. Thus, instead of working on three projects each with a 10-month timeline, project teams should focus their efforts on one project at a time. The first and second projects will begin realizing their benefits long before the end of the 10 months, but even the third project will be finished sooner since the teams will not have other projects competing for their time and attention. Of course, every project has periods of inactivity (such as awaiting customer feedback or delivery of materials). During these times, project teams would begin working on the next highest priority project. However, once the highest priority project is ready to resume, all activity stops on the second project.

Most construction companies are a great example of a lack of focus with regards to project completion, and the worst offenders are typically road construction firms. In almost every state or province of almost every country, there are delays due to road construction as a very small team works on a very small section of road because the construction company bid on as many jobs as they could, and started them all at the same time. It would be far more beneficial to the traveling public if they focused their efforts on one stretch of road at a time, and completed it before moving on to the next stretch of road.

Senior managers struggle with the concept of project prioritization because they want all projects completed as soon as possible. However, without proper project prioritization (starting with strict project selection guidelines), none of the projects is likely to yield the returns anticipated. Selecting and prioritizing projects should look at both the financial as well as the strategic returns of the project. That is, a project to develop a new product to break into a new market segment may not be very profitable, but might be important for the long-term growth of the company. Projects should also be selected and prioritized on the return on both capital as well as capacity. Just as there is a finite budget for project work, there is also a finite pool of resources. Proper understanding of each project's resource requirements will ensure that those resources are put to the best use.

The most important word in the project selection process is “no.” If a project does not make the grade on any of the criteria (return on investment (ROI), strategic importance, return on capacity, profitability, etc.), then it should not be started. Likewise, if the organization runs out of resources on higher priority projects, then the project should not be started. Project selection should be about finding reasons not to do the project, not about looking for reasons why it should be done.

Project Planning

After projects have been selected and prioritized, then comes the planning phase. Although most PMs understand how to create solid project plans, they typically fail to account for the other projects that will be competing for their resources. It may seem perfectly reasonable to allocate two weeks of design time for a prototype, but if several other projects also require design work during the same time period, then that two-week task is at serious risk of delay. Thus, it is very important that during the planning phase of a project, each resource's availability be validated.

Identifying and planning for risks to the project's timeline, budget, and overall quality is an area of project management in much need of improvement. Accounting for risk does not mean adding 10% “fluff” to estimates. During the planning phase, the project team should be identifying things that could go wrong, determining the likelihood of such an event, and identifying corrective actions that could be taken to mitigate the impact should such an event occur. For example, if we discover that our two weeks allocated for some fabrication work comes in the middle of a high demand period on the fabrication department, we may need to add an additional one to two weeks to our timeline. Alternatively, we might choose to mitigate this risk by outsourcing the fabrication work, but at a higher cost.

If proper risk analysis is completed, then this means that senior managers need to respect the process. That is, they cannot assume that the four weeks added to the timeline for risk buffering is fluff, and reject it, or try to negotiate it down. The only way to reduce risk buffers is to add mitigation, and the senior management team needs to accept the impact of that mitigation, such as an increased project cost in the case of our fabrication example above.

Executing the Project

It may come as a surprise, but in numerous surveys, project team members indicate they spend only one to two hours per day performing work that is actually paid for by the customer (Mascitelli, 2002, p. 1). Since all value in a project occurs during the execution phase, we need to focus on driving as much waste from this phase as possible.

By eliminating wasteful tasks, our team members are able to spend more time creating value for the customer. Probably the greatest source of waste for most companies is meetings; there are too many, and they last too long. A very easy fix that companies can implement quickly is to restrict every meeting to a single topic, and to restrict its duration to 30 minutes. Although the person who called the two-hour marathon meeting may be interested in all six topics on the agenda, the chances are good that nobody else is! Restricting each meeting to a single topic (or several closely related topics) helps ensure that only those participants who need to be there will be invited.

Probably the simplest and most powerful tool in the LPM toolbox is something known as “time slicing.” Since project team members struggle to find time in the day to work on project tasks, the PM reserves a block of time each day for exactly that purpose. If using a calendar system to book meetings, the PM books his or her entire team into a two-hour meeting each day. The location of the meeting is each person's own desk, and the objective is very simple: Work on your project tasks. Doors should be closed, email shut down, and phones turned off for the duration of this

“meeting.” If your organization only spends one hour per day creating value for the customer, then this simple tool will double your productivity!

Monitoring and Reporting Project Status

Status reports are a non-value-added nightmare for most PMs. Most projects do not have their deliverables subdivided into manageable chunks, which makes it extremely difficult to determine a project’s status until the day after a milestone was due!

During the planning phase, every deliverable should be subdivided into value increments of no greater than two weeks in duration. These mini-milestones should have quantifiable objectives, not percent completion. This makes status reporting much easier since every two weeks the PM will know for certain the status of every deliverable included in their project.

The real power of knowing the project’s status is the ability to react when schedules or costs begin to slip. Lean manufacturing uses a term called “pitch” to refer to this management timeframe (Rother & Shook, 1999, p. 3). Essentially, if all project tasks have quantifiable value increments due every two weeks, then the PM will know the status of their project every two weeks, and is able to react to correct the problem.

Each time a pitch increment is missed, the PM needs to ask three questions:

1. What went wrong?
2. What will we do to get back on schedule (or under budget)?
3. How will we stop this problem from happening again?

The first question is meant to simply help the PM understand the nature of the problem. It is not about assigning blame. The second question is the primary reason we track pitch: To allow the PM to implement corrective actions to keep the project on schedule and under budget. The third question is the heart of continuous improvement (and the most commonly skipped of the three questions). By ensuring the same problems do not keep coming back, we reduce the risk for future projects, taking us one step closer to project completion excellence!

If a project has quantifiable value increments for all deliverables and all of the value increments have been achieved, then there is no need to report project status as anything other than “good.” Project status review meetings and reports should be reserved for those projects that are struggling to achieve their value increments. The role of the senior management is to help struggling projects get back on schedule and budget instead of interfering with projects that need no additional “assistance.” Of course, this requires a significant amount of trust, which is why the value increments need to be quantifiable.

Closing the Project

One of the most valuable and yet most poorly used techniques of project management is the lessons-learned review. Many companies do not even bother with this valuable tool, and yet that is significantly better than companies who conduct a lessons-learned review, but do not do anything with the information!

Ideally, the project team should be recording lessons learned throughout the entire project. Certainly there is a lesson to be learned each time a value increment is missed. The lessons-learned review at the end of a project should simply be a final review, as well as an identification of resources to implement the necessary changes. One of the things that should be created as part of the lessons learned review is templates for commonly used documents, as well as checklists for key steps. Templates and checklists allow for standardization during project management without interfering with creativity.

Benefits of Lean in Project Management

Although Lean originated in manufacturing, its generic approach of eliminating wasteful activities to focus on creating more value for the customer is now being applied in many other areas of business, including product

development, administration, accounting, project management, and many others. Although the tools used may be different in each function, the principles remain the same.

There are a wide variety of techniques that can be applied to project management to dramatically reduce project timelines, increase customer value, and reduce costs. Many of these tools are easy to apply, and yet can have significant and immediate results. However, the challenge lies in sustaining the improvements, which requires a disciplined approach. Rather than just applying tools randomly, they should be integrated into a LPM approach that systematically drives waste from the organization's projects.

If implemented systematically in all areas of project management, no other improvement effort will yield benefits as great as those achieved from Lean.

References

- Mascitelli, R. (2002). *Building a Project Driven Enterprise: How to Slash Waste and Boost Profits Through Lean Project Management*. Northridge, California: Technology Perspectives
- Rother, M. & Shook, J. (1999). *Learning to See: Value stream mapping to add value and eliminate muda*. Brookline, MA: The Lean Enterprise Institute, Inc.
- Womack, J. P. & Jones, D. T. (1996). *Lean Thinking: Banish Waste and Create Wealth in Your Corporation*. New York: Simon & Schuster