Run Grow Transform

Integrating Business and Lean IT

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Foreword

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Lean Meets IT

The Evolution of Lean

This book is very timely. The coming together of the Lean, Agile, and information technology (IT) services and operations communities presents some very interesting new challenges and opportunities. This book outlines an ambitious landscape for how Lean thinking can transform IT and brings together the different perspectives of several thought leaders in the field. The big questions it raises are what IT and Lean can learn from one another and what kind of new synthesis might be seen as a result.

Our understanding of Lean has certainly evolved over time. In the past it was used to address very different activities in different sectors. It has also widened to encompass whole value creation systems and deepened through our understanding of what kind of Lean management system is needed to lead and sustain it. The core Lean thought processes have proven to be very robust over time, and Lean has turned out to be the most useful and operational synthesis of the different strands of business improvement practice.

As Lean spread across sectors, we learned that we needed different starting points to design Lean value streams for different kinds of activities. From the automotive industry, we learned the importance of establishing basic stability and standard work to achieve flow. From the construction industry, we learned the importance of correctly defining user needs and specifications up front. From the process industries, we learned to separate the high volume from the long tail of complicated or low-volume work. From retail

and distribution, we learned to design rapid-response replenishment systems. From financial services, we learned to eliminate unnecessary demand created by broken processes. From healthcare, we learned the importance of making the plan of work (admission, diagnosis, treatment, and discharge) visible to everyone involved. Every business is in fact a collection of these different types of value streams, and these insights are also relevant for designing and improving IT value streams.

From these many experiences, it is apparent that using Lean tools to make localized improvements within a department is not enough. It is necessary to look end to end at the entire sequence of actions required to create the value for which customers are paying, which usually flows horizontally across many departments and even several organizations. It also involves synchronizing many supporting value streams, including IT product development and service delivery.

The waste you see as you follow these value streams is actually a symptom of much deeper root causes, and unless we correctly diagnose and tackle these root causes we will not improve the performance of the organization as a whole. Diagnosing whole systems led to some surprises. For example, it highlighted that the place to unblock the patient flow through hospitals was by improving the discharge process and that the biggest source of delays and waste in retail distribution is in the information systems passing forecasts and orders upstream.

In addressing these system-level problems, it became apparent that management's job is actually to unblock and enable these streams of value creation to flow in line with customer demand. In fact, a Lean management system needs to be built up from the value creation process itself. This means rethinking the mental models, tasks, and behaviors of leaders at every level in an organization.

Managing Lean

The first task of Lean management is articulating what customers (internal and external) want and what the organization needs to accomplish, focusing improvement activities on the *vital few* performance gaps that would make the biggest difference in meeting these needs. Lean management is about focus and alignment, not command and control. Spending time in a structured dialogue to turn these high-level goals into concrete actions at the frontline is much more productive than gaming targets in a command-and-control environment.

The second task is to deploy the right cross-functional projects to address the root causes of these performance gaps. The related third task is to help frontline staff members to stabilize their processes by making progress visible, by repeated problem solving, and by escalating issues upward to resolve higher-level problems. These tasks are about managing the horizontal flow of value creation as well as the vertical, functional deployment of resources. A *value stream leader* has to be given the end-to-end responsibility for gaining agreement on what needs to be done all along the value stream, for defining the resources necessary to accomplish this, and for managing the improvement activities to deliver the results. This separation of the horizontal responsibility for value creation from the vertical authority over resources is not easy to grasp, but it is fundamental to managing Lean value systems.

The fourth task is to develop the problem-solving capabilities of everyone and to integrate the work through learning by doing. Leaning value streams begins by establishing stability and then, step by step, removing all the buffers. This means that every step becomes more interdependent, which multiplies the probabilities of interruptions to the whole flow. These interruptions, in turn, signal the next step in the never-ending improvement journey to the perfect value stream with no waste, overburden, or system-generated variation. Reducing lead times also makes the value stream much more responsive to changes in customer demand.

Tightening the synchronization of all the steps therefore depends on the problem-solving skills of frontline staff and those supporting them, not on experts far away from the action. This is why Lean thinkers often talk about developing people before making products and why all managers learn the importance of developing and mentoring their subordinates. The need for everyone to see progress against plan in real time and to be able to respond to deviations from the plan as they happen is why Lean thinkers also place so much importance on visual management of progress, problem solving, and improvement projects. This illustrates the fact that the real customer for IT support is the value stream itself. Integration into the value stream team is the most effective way IT support can play its true role in enabling the flow of value creation.

Challenges for IT

The pull that brings Lean thinking into any sector is frustration with the way things work today. That is certainly true with IT.

I have seen many examples of this, e.g., when helping big multinationals to set up Lean programs to realize the performance improvements that were not obtained from their huge investments in enterprise resource planning (ERP) systems based on the mental models of command and control. I have also often been asked how Lean can help to speed up the inordinately long time, often as long as a year, it takes to make changes in these systems. Several years ago, much to my surprise, I was asked to launch a series of Lean initiatives at SAP to improve the software development process and customer response systems. More recently we have observed, time and time again, the wisdom of Leaning the core processes or value streams in an organization before and not after deploying a large system such as SAP.

The natural reaction to these challenges is to "fix" current IT systems and modify and rebrand them as Lean. This effort will quickly run into the sand and will not bridge the underlying differences between traditional and Lean approaches to managing complex organizational systems. Resolving these underlying tensions—recognizing the need for flexibility and rapid change and applying Lean not as a collection of tools but rather with an appreciation of Lean as a set of principles—will determine whether IT can, indeed, become Lean and truly serve the organization and the creation of value for customers. In the end, this boils down to the mental models on which traditional IT systems were designed. IT is just at the beginning of the journey to challenge these mental models, spurred on by Lean pioneers looking for very different solutions to their business problems.

For example, I remember the IT director of a global pharmaceutical firm declaring that "all change in this organization is led by IT." This reflects the view that change is driven by technology, designed by experts, and implemented from the top through command and control. Lean questions each of these assumptions, reversing the separation of "thinking" by experts and only "doing" on the frontline to engaging everyone at every level in learning by doing as part of their daily work. In this way, change arises from within the value streams, creating new and often innovative value for customers.

And just as IT does not lead the value proposition, automation is not the right solution for every circumstance, particularly not for complex and adaptive systems in which employees are constantly improving the way work is performed and improving the ability to respond to changes in customer needs. Lean thinkers are always looking for simpler, more flexible forms of automation to help people in control of the process while liberating them from unnecessary burdens.

This reminds me of a professor once telling me that system optimization was "just a math problem." This traditional view of optimization is usually about improving the utilization of assets rather than optimizing end-to-end flows of value creation. Simulating end-to-end systems can be extremely useful in matching capacity with demand and in evaluating different alternatives. But in most complex systems, it is usually impossible to reach the levels of data accuracy needed to also use them to trigger every production batch or shipment along the value stream, particularly when you are trying at the same time to uncover problems instead of buffering and hiding them. The end result is that everyone games the system and creates even more chaos. This is why Lean thinkers often switch off material requirements planning (MRP) systems on the shop floor. This is also why Toyota retains the responsibility for overall system design and does the integration of the IT system components it purchases from IT vendors itself.

I also remember an exasperated manager telling me "We can't change the IT system because the guy who designed the algorithms is no longer here!" Until then, no one had needed to make changes to the system, but as soon as we began redesigning their supply chains, this "invisibility" became a problem. Making everything visual is the essential context for learning by doing. Gaining agreement across functions on what needs to be done is much easier when the value stream and its problems are visible on a wall rather than hidden on a project plan or in a computer. Reviewing performance against plan and spotting and reacting to deviations quickly is also greatly facilitated by visual management. We have also been able to make the status of every step along a supply chain visible at every location across the world. Problem solving using A3 sheets makes the thought process as well as the proposed solutions visible to the mentor. Learning by doing and working together spreads and accelerates when all participants understand and can see how and why their system is not working as well as it could.

The practice of Lean will only be sustained if it helps to solve business problems in a new way to deliver superior performance and if it liberates new energies in frontline staff. We have seen how turning customer support staff into problem solvers reverses the low-wage outsourcing model. I have also seen frontline staff in the back office of a bank demonstrate their ability to simplify, redesign, and automate process after process. Many project teams are freeing up time by using the *Oobeya* visual management rooms pioneered by Toyota. Translating these energies into bottom-line results for the organization as a whole takes a bit longer and requires management to rethink its work and the way it understands and uses IT capabilities.

Toward a New Synthesis?

My hunch, however, is that as the various IT disciplines (development, operations, application support, etc.) continue to embrace Lean within each enterprise and industry, we may see a new synthesis that will inspire other sectors to redouble their Lean efforts. This could be from a combination of Leaning the software development, testing, and continuous delivery processes; new opportunities to do new things opened up by the Internet; and a real focus on working with consumers to create value in their lives—in other words, a step beyond Lean product design and visual project management to a new model of Lean innovation based on very rapid experiment cycles and a rich dialogue and feedback from users. This in fact goes right back to the heart of Lean, deepening learning from very frequent *kaizen* experiments in a visual environment where feedback is immediate and clear.

As the Internet profoundly changes the way every business relates to its suppliers and customers, businesses will be challenged to rethink their products, processes, and business models. We have already seen Lean thinking inspire the Lean startup movement and begin to shift power from providers to users. For startups as well as established businesses, Lean innovation and Lean thinking will be essential in exploiting these new opportunities. This book opens this new door.