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# Your Journey To Lean: Continuous Improvement Supported By Tools

by Alexander Peters, Ph.D.  
for Business Process Professionals



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## Your Journey To Lean: Continuous Improvement Supported By Tools

Wipro's Case Study Shows The Way

by **Alexander Peters, Ph.D.**

with Craig Le Clair and Andrew Magarie

### EXECUTIVE SUMMARY

Forrester interviewed the executives responsible for the deployment of the Lean continuous improvement initiative at Wipro Technologies, a global supplier of technology services. The case study shows that Lean can become an important differentiator for IT service organizations, striving to partner with their business customers and increase the stake in business transformations. Organizations embarking on the journey to Lean should follow Wipro's staged approach centered on the deployment of a Lean productivity team (or center of expertise) and unified Lean tool kit and performance measurement system. But in addition to these tangible steps, many organizations will need to push aside a few soft barriers that risk making Lean efforts stagger or stall: 1) skepticism about what Lean really is; 2) lack of leadership; and 3) silo culture.

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Forrester interviewed Wipro Technologies and 10 IT leaders for research sponsored by Forrester Leadership Boards (FLB) on driving business value with process improvement.

#### **Related Research Documents**

"What CIOs Should Know About Lean"

October 27, 2009

"Driving Value With Process Improvement"

October 6, 2009

"Lean: The New Business Technology Imperative"

September 29, 2009

## BARRIERS TO LEAN

Lean's dual focus on increasing business value and eliminating waste made it one of the most popular business performance improvement approaches of the last decade.<sup>1</sup> Lean's most famous case study, the Toyota Production System (TPS), has been broadly studied and celebrated as paradigm change from Ford's mass production to TPS' mass customization in the automotive industry.<sup>2</sup> Since its original publication in 1990, Lean's continuous improvement process and tools have been adopted across different industries as diverse as chemicals, finance services and healthcare — with different degrees of success. In particular, the sustainability of the Lean in industries with predominantly human-centric activities and/or less mature business processes has been a continuing debate. Research supported by examples from companies of different sizes and operating in different sectors — from global manufacturers to local providers of public services — has identified a few common barriers to Lean:<sup>3</sup>

- **Skepticism about what Lean really is.** Lean best practices emphasize continuous improvement at all levels of the organization. Yet case studies reveal broad skepticism about how executives and staff perceive Lean: Staff workers see it as just cutting headcounts and reducing costs. Managers and “middle” managers, busy with day-to-day operations, perceive it as a distraction from “real work”. And senior executives, instead of getting involved, delegate the responsibility for Lean initiatives to consultants and methodology experts, who often have limited influence in the organization.
- **Lack of leadership.** When the link between Lean's implementation and the organization's strategy is weak, the embedding of a continuous improvement process cannot succeed in the longer term. Case studies reveal that the goals of many Lean programs are not clear, and the basic questions that senior managers should answer upfront are not addressed: why Lean is implemented; what drives the initiative; what change to the process is expected; and what commitments management is prepared to make.
- **Silo culture and measures.** Performance management systems based on individual and departmental indicators encourage staff and managers to focus on local optimizations and compete internally, rather than collaborate for the benefit of customers and the organization. The case studies show that disengagement and attempts to undermine continuous improvement are higher in firms, which operate with compartmented structures and measures, than in organizations that encourage collaboration and improvement as the means to an end.

## WIPRO DEMONSTRATES HOW TO IMPLEMENT LEAN AND OVERCOME ITS BARRIERS

Forrester conducted research to understand how executives implement Lean-style performance improvements around the delivery of IT services. In an October 2009 Forrester report, “What CIOs Should Know About Lean,” we discussed how several CIOs approached Lean to streamline captive IT organizations and eliminate waste; however, those CIOs did not reveal any spectacular

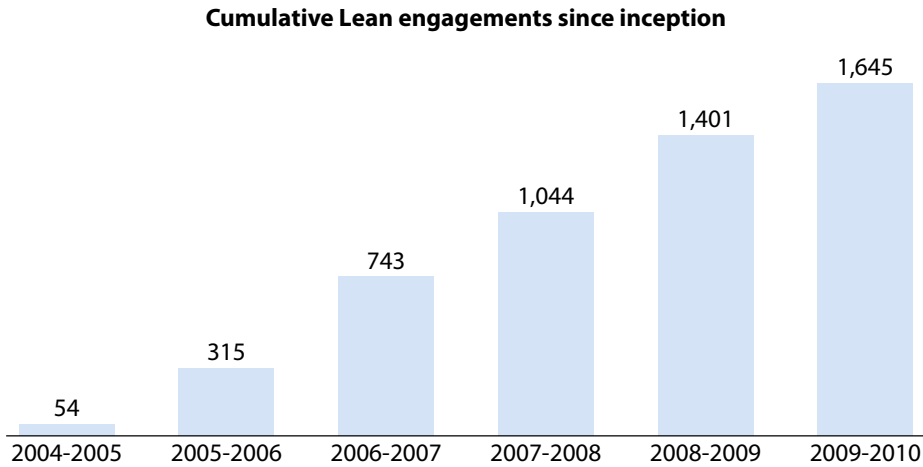
Toyota-style implementations of Lean.<sup>4</sup> But the Wipro Technologies (“Wipro”) case study presented in the next section deals with a full implementation of Lean. It is the story of a large IT services organization that adopted Lean as a source of competitive advantage to sustain its low-cost, high-quality strategy while growing rapidly.

### Lean’s Full Implementation At Wipro Supports Business Expansion

Wipro, a global company headquartered in Bangalore, provides IT services to 840 active customers in multiple verticals including banking, retail, manufacturing, healthcare, energy, utilities, and transportation. In 2009, the IT services business crossed the 100,000-employee mark, tripling the number of employees from 2005.<sup>5</sup> At that time, Wipro Chairman Azim Premji announced that the company was implementing Lean and expected to derive competitive advantage from it.<sup>6</sup> History shows that Wipro was able to fulfill its chairman’s expectation. Since 2004, the company has continuously developed its own Lean framework and has applied its continuous improvement process and tools into a strategic capability with goals to:

- **Dynamically reposition its portfolio of services for growth and innovation.** Five years ago Wipro competed as an outsourced provider of technical services, completing about 1,100 software projects yearly — about 75% of them offshore and 25% at customer’s locations. Eighty percent of these projects were performed on a time-and-material basis, and 20% were fixed-price contracts. Today the company performs more than 4,000 projects. Almost 45% of its contracts are fixed-price. But more importantly, the company is shifting its service focus from executing software projects to a consultative approach aimed to increase the share of system integration, business process outsourcing and transformational engagements, a market where the availability of Lean insights and capabilities is becoming a critical success factor.<sup>7</sup>
- **Sustain its market position as low-cost, high-quality service supplier.** At Wipro, compliance with quality assurance standards has been critical for its reputation and success. To defend its position against other Indian and international service companies competing on low wages, Wipro has constantly renovated its delivery processes and trained its staff based on the most advanced quality initiatives and control models of the time, such as ISO 9000, CMMI, and Six Sigma.<sup>8</sup> Since 2004, Wipro has continuously increased the number of Lean engagements (see Figure 1). During a recent briefing, Wipro reported that for the IT business, 30, 000 out of approximately 55,000 employees are covered through Lean, and for the BPO business, 4,000 out of approximately 26,000 employees are covered through Lean.<sup>9</sup>

**Figure 1** The Number Of Lean Engagements Continue To Increase At Wipro



Source: Wipro Technologies

57286

Source: Forrester Research, Inc.

### Lean At Wipro Supports Business Solutions Beyond Outsourced Software Development

When the members of Wipro’s senior executive team decided to implement Lean in 2004, they realized that the quality models used before, such as CMMI and Six Sigma, were very good for meeting software specifications but were less well suited for delivering business solutions. The Harvard Business School’s 2006 case study documenting the early stages of the rollout reveals that the executive team correctly assessed Lean’s potential as a management paradigm changer and envisioned its role as a sustainable process, rather than the next quality initiative.<sup>10</sup> During a recent Forrester briefing with Wipro, we learned that since those early experimentation stages, Wipro has developed Lean through several development phases into a mature framework consisting of a continuous improvement process and customized tool kit applied to projects of different size and complexity:

- **Phase zero: Experimenting with Lean.** The implementation of Lean began with the creation of the Lean productivity office (PO). The PO’s mission was to: 1) incubate the Lean concepts; 2) transcript Lean tools and practices such as Just-In-Time (JIT), Visual Control Board, Value Stream Mapping (VSM) automation, and leveling into the IT space; 3) select a few pilot projects for experimentation and help the project managers implementing them; and 4) measure the tools’ impact on performance. Only projects that could demonstrate more than 10% performance increases on prespecified metrics (schedule, effort, or quality), were labeled as Lean. From 2004 to 2006, when the HBS case study was published, the number of Lean projects at Wipro grew from 54 to more than 300.

- **Phase 1: Mainstreaming Lean.** Closed projects with Lean were more successful and set the stage for the executive team to deploy Lean on a larger and more formal basis. The staff in the PO grew gradually from 10 in 2005 to 25 today. This Lean center of excellence (CoE) is responsible for: 1) leading the deployment of Toyota's Lean practices in IT services"; 2) championing productivity, cost containment, and delivery excellence; 3) guiding project teams through the entire course of Lean deployment; and 4) providing statistical evidence of benefits accumulated. During mainstreaming, the PO mandated the implementation of Lean tools across more than 1,000 large and midsize projects involving greater than 100 man month (MM) of effort and tracked their performance.
- **Phase 2: Gathering Lean momentum.** The PO team started selecting larger and more complex projects for Lean intervention, meaning projects involving more than 200 MM. The statistic measurements showed that in spite of the increase in size and complexity of the projects, Lean continued to deliver sustained performance improvements. During this phase, the PO dedicated additional effort to: 1) marketing Lean via deliberate evangelization campaigns supported through newsletters; 2) forming communities of practice; 3) creating contextual and customized Lean workshops to address specific business needs; and 4) creating customized training modules to cover the entire organization.
- **Phase 3: Taking stock.** As the Lean intervention gained momentum and touched a large number of projects, the focus of the PO turned to cross-utilizing Lean and Six Sigma and integrating the combined approach with other established methodologies such as Agile, the Wipro Quality Management System, and other practices. The goal was to move away from silo productivity improvements to an integrated portfolio of improvement tools and correlate them through a unified improvement process as part of project execution. The solution was the development and implementation of an excellence index (EI) model consisting of a customized tool kit for various project types. The PO selected and documented the tools based on experiential data and ranked them using weightings based on the impact seen in past projects (see Figure 2).
- **Phase 4: Measuring improvement.** The PO employed the EI model to validate the coverage and rigor of implementing Lean. It introduced and started tracking two metrics across the entire organization: planned EI and actual EI. While doing so, it continued to: 1) guide project teams in selection of suitable tools (planned EI); 2) provide assistance in deployment; 3) ensure depth and rigor with frequent tenet usage reviews (actual EI). From August 2008 to December 2009, the number of Lean projects that could demonstrate performance increases by more than 10% based on prespecified metrics grew. For example, it grew in the banking sector from 51% to 83% (large projects) and in the telecom sector from 13% to 72% (for medium size projects). In addition, the PO continued to monitor the impact of different tools. A few tools, such as dependency structure matrix (DSM), statistical analysis, and orthogonal arrays contributed significantly to increasing business value (see Figure 3).

- **The next phase.** The PO plans to continue capturing insights about the usage and impact of the EI tool kit and to continuously improve the rigor of the Lean process. In addition, it plans to enhance the tool kit by experimenting with new tools and also researching new methodology for doing projects, like the Critical Chain Project Management (CCPM). Last but not least, Wipro is planning to farm out a consulting practice based on its unique Lean insights and use these insights as a differentiation factor; the company is shifting its service focus to a consultative approach intended to increase the share of transformational engagements.

**Figure 2** A Sample Excellence Index (EI) Tool Kit For Development Projects

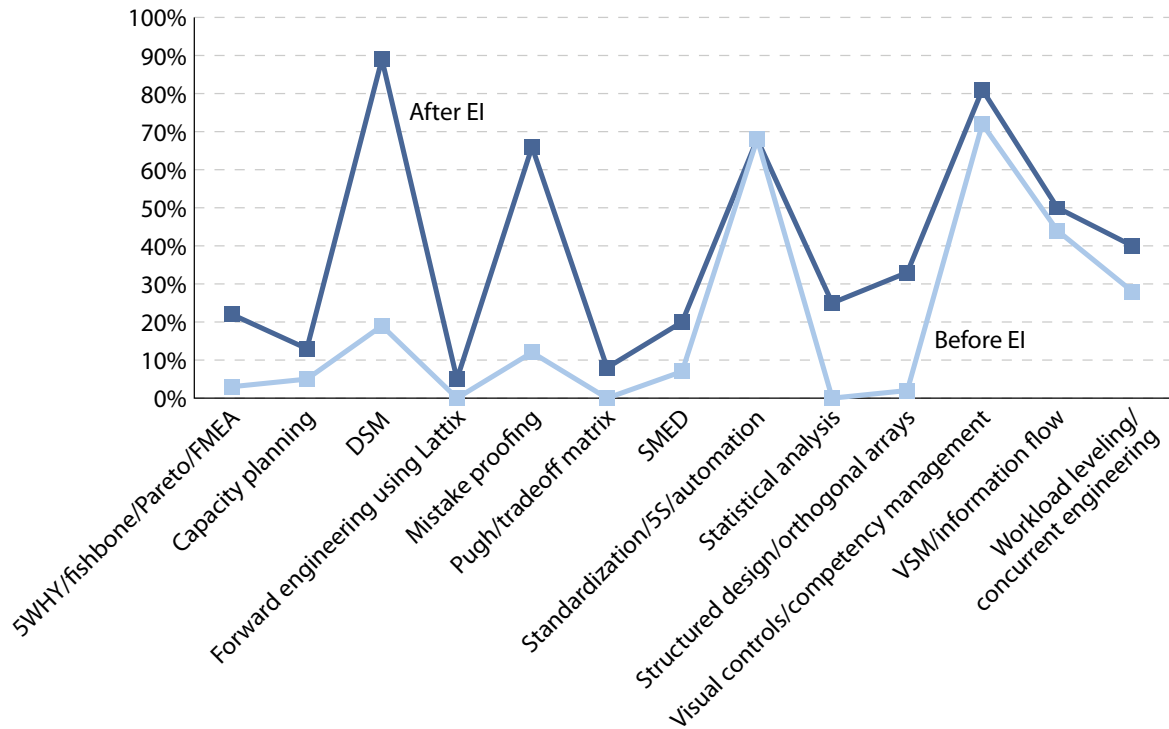
Category	Excellence tools	Weight age	Selected
Dependency structure matrix (DSM)	Requirement prioritization	0.35	Yes
	Test scenario sequencing		Yes
	Impact analysis		Yes
	Competency management		Yes
	Forward engineering		No
Waste elimination	Mistake proofing	0.25	Yes
	VSM		Yes
	Standardization/5S/automation		Yes
	Visual controls		Yes
	Workload leveling/concurrent engineering		Yes
Design selection	Pugh/tradeoff matrix	0.05	Yes
Testing optimization	Structured testing	0.20	Yes
	Orthogonal arrays		Yes
	SMED for test setup optimization		No
	NHPP		Yes
Optional tools	Statistical tools	0.15	Yes
	FMEA		No
	Paired programming		No
	Other		Yes

Source: Wipro Technologies

57286

Source: Forrester Research, Inc.

**Figure 3** Performance Improvements For A Variety Of Lean Tools Before And After EI



Source: Wipro Technologies

57286

Source: Forrester Research, Inc.

## RECOMMENDATIONS

### YOUR JOURNEY TO LEAN IS ABOUT OVERCOMING ITS BARRIERS

Wipro's example shows that Lean can work and become a critical success factor for organizations operating with projects to provide IT-based services, where substantial variability in customer demand, technology prerequisites, and human-centric intervention is common. The PO and the EI tool kit are the visible elements of Wipro's Lean framework, but equally important are the invisible parts: 1) alignment with the company strategy; 2) the top-down enablement through senior management; and 3) bottom-up employee behavior and engagement. Wipro worked on both the visible and the invisible parts. As you embark on your Lean journey, whether you are part of a captive service unit or your organization competes in the IT services market, you will very likely follow the same steps as Wipro. Your success will depend very much on the ability to push aside the barriers that make many implementations stagger or stall.

- **Establish an awareness of Lean to overcome skepticism within the organization.** Start by assembling a team of senior process professionals, motivated and multidisciplined people, to form the Lean PO or center of excellence (CoE). Teach them about Lean and help them figure out how to port it to your organization. Select promising areas for improvement and



experiment with Lean tools and carefully monitor their performance. Encourage sharing and learning through targeted education and experimentation in real-life projects and processes and encourage discussions about continuous improvement. But the most critical step remains moving these insights out of the CoE team into operations. This will require: 1) extra training and one-on-one coaching for middle managers to increase their Lean skills; 2) assignment of Lean tools to real-life projects and impact measures based on customized indicators, similar to Wipro's Els; and 3) a double-loop learning process, which allows the assessment of the Lean tools and scorings for the performance indicators based on feedback.

- **Lead through the lines.** Your senior executive team needs to actively support Lean's deployment through its whole course, starting with the earliest phase, when they must identify and communicate key goals. Consider Wipro's example that used organizational and competitive challenges to determine the goals of a new improvement initiative before selecting Lean. After articulating goals, the executive must promote the Lean deployment, support the CoE's ramp up, and keep focus on results. Most importantly, the executive team must make sure that these results are aligned with the organization's strategy and customers' expectations by keeping current on what customers want in terms of price, quality, and delivery and readjusting the performance indicators when required.
- **Develop a strong Lean CoE to break cultural silos.** The Lean CoE is the engine of your Lean initiative. Develop it through several stages into a shared enterprise capability responsible for: 1) researching and incubating new concepts; 2) translating the new concepts into best practices; and 3) replicating them across the entire organization to break silos and establish a culture of high-performance. When the Wipro leaders selected Lean as the next quality improvement initiative in 2004, they understood the limitations of Six Sigma and decided to deploy Lean to increase the acceptance of continuous improvement across the entire organization.<sup>11</sup> History They were successful in this endeavor, but it took them several years and development stages to turn Lean into a mass customization process responsible for cross-utilizing continuous improvement tools broadly across the company's IT and BPO service lines.

## ENDNOTES

<sup>1</sup> Everyone wants to be lean these days, whether when stepping off a scale in the morning or reviewing the cost of running a successful business. But just how do you define "lean" — especially in the context of business and technology? Do you think of Lean as a way to drive down costs for technology solutions? Or does Lean conjure visions of streamlined business processes that deliver ever-higher levels of productivity and quality? Or does Lean mean creating a Lean business that delivers more customer value and innovation to compete in today's Lean economy? We assembled some of our top analysts on this subject and put them to the test in a no-holds-barred roundtable discussion. See the September 29, 2009, "[Lean: The New Business Technology Imperative](#)" report.

<sup>2</sup> Source: James P. Womack, Daniel T. Jones, and Daniel Roos, *The Machine That Changed The World: The Story of Lean Production*, Harper Perennial, 1991.

- <sup>3</sup> Sources: “Evaluation Of The Lean Approach To Business Management And Its Use In The Public Sector,” The Scottish Government (<http://www.scotland.gov.uk/Publications/2006/06/13162106/0>); Steven J. Spear, “Fixing Health Care From the Inside, Today,” *Harvard Business Review*, September 1, 2005; David Fine, Maia A. Hansen, and Stefan Roggenhofer, “From lean to lasting: Making operational improvements stick,” *The McKinsey Quarterly*, November 2008, ([https://www.mckinseyquarterly.com/From\\_lean\\_to\\_lasting\\_Making\\_operational\\_improvements\\_stick\\_2254](https://www.mckinseyquarterly.com/From_lean_to_lasting_Making_operational_improvements_stick_2254)); Peter Hines, Pauline Found, Gary Griffiths, and Richard Harrison, *Staying Lean: Thriving, Not Just Surviving*, Lean Enterprise Research Centre, February 2008.
- <sup>4</sup> When applying Lean as a performance-improvement strategy, CIOs should consider four essential practices: 1) specify value from a business perspective using five principles; 2) define improvement goals top-down in terms of delivery, costs, and quality; 3) implement improvements bottom-up by eliminating waste from processes; and 4) synchronize the top-down and bottom-up levels. CIOs should apply these practices at the right time in the life cycle of the performance-improvement program to ensure that Lean outcomes can be defined and tracked against strategic business goals. See the October 27, 2009, “What CIOs Should Know About Lean” report.
- <sup>5</sup> For the fiscal year ended March 31, 2010, Wipro reported \$4.5 billion in revenue, representing an increase of 6% over the same period last year. EBIT was \$1.05 billion, representing an increase of 18% over the same period last year. Source: Wipro ([http://www.wipro.in/media/Financial\\_Reports/](http://www.wipro.in/media/Financial_Reports/)).
- <sup>6</sup> Source: Bradley R. Staats and David M. Upton, “Lean at Wipro Technologies,” *Harvard Business Review*, October 16, 2006.
- <sup>7</sup> During the Wipro Europe Analyst Day in February 2010, Wipro told Forrester that it has recruited in excess of 30 partner-level consultants with domain and industry experience to build its system integration and transformational capability. The company views Lean process optimization as one of four key building blocks for transformation, productivity, and superior financial performance. The other three are technology innovation, cost optimization, and a new generation of outsourcing/partnering agreements.
- <sup>8</sup> In 1995, Wipro was one of the first software companies certified as ISO 9000 compliant. In 1998, the company became the world’s first IT services company compliant with the Capability Maturity Model (CMM) level 5, and in 2002, it became the first IT services company to receive SEI’s new certification, CMM Integrated (CMMI) level 5. Go to <http://www.sei.cmu.edu/cmml/> for more details on the CMM and CMMI certifications as defined by the Software Engineering Institute (SEI) at Carnegie Mellon University. Around 2000, Wipro began also implementing Six Sigma. Source: Bradley R. Staats and David M. Upton, “Lean at Wipro Technologies,” *Harvard Business Review*, October 16, 2006.
- <sup>9</sup> Source: Forrester briefing with Wipro Technologies, April 2010.
- <sup>10</sup> “Quality initiatives last eighteen to twenty-four months, maybe thirty-six if you’re lucky. The reason for this is that either each initiative focused on more advanced control processes as compared to the previous or on new techniques such as the use of statistical process control in Six Sigma and these each provided diminishing returns over time.” Source: Bradley R. Staats and David M. Upton, “Lean at Wipro Technologies,” *Harvard Business Review*, October 16, 2006.

<sup>11</sup> “With Six Sigma we did it top-down. It was a big bang. We spent a lot of time coming up with a Six Sigma approach to software and then we pushed it down the organization. The ideas we had worked so the effectiveness was high, but engagement was low. It took a long time to get it accepted by the team. So with lean we decided we were going to go the other way. We knew we were opening ourselves up to the chance we’d have a smaller impact, but we hoped that we’d have higher acceptance”. Source: Bradley R. Staats and David M. Upton, “Lean at Wipro Technologies,” *Harvard Business Review*, October 16, 2006.

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