



# CONTINUOUS IMPROVEMENT IN ITIL, SCOR, CMMI, PMBOK AND ISO WORLD

*Continuous Improvement Strategy*



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## Six Sigma and Lean in the ITIL World

ITIL (Information Technology Infrastructure Library) is a framework for Information Technology Service Management or ITSM and IT Operations. The first set of best in class practices and recommendations were put together in the 1980s by the UK Government's Central Computer and Telecommunications Agency to manage the growth and dependence of IT and to establish a common set of guidelines on IT management, since most companies were creating their own management practices and these were not consistent. The basic format of ITIL is based on a process management approach and is, at times, credited to Deming's PDCA approach. This set of management practices formed the IT Infrastructure Library. The Central Computer and Telecommunications Agency later merged into the Office of Government Commerce under UK Treasury and has been managing the different versions since then. The current version in circulation is ITIL v3. ITIL is increasingly being adopted by companies as the source of good practice in service management and is applicable to all types of organizations that provide services to a business. As per the ITIL handbook, "The service lifecycle is an approach to IT service management that emphasizes the importance of coordination and control across the various functions, processes, and systems necessary to manage the full lifecycle of IT services. The Service Management Lifecycle approach considers the strategy, design, transition, operation, and continuous improvement of IT services." As we see ITIL focuses extensively on continuous improvement and calls for a separate Continual Service Improvement function as part of the Service Lifecycle. As per ITIL, "Continual Service Improvement is responsible for managing

improvements to IT Service Improvement Processes and IT services." In fact the ITIL Continual Services Improvement model is based on the Deming Plan-Do-Check-Act cycle.

The biggest challenge that corporations implementing ITIL have to face is the change management issue that arises when the company needs to restructure to meet the ITIL recommended approach. This, at times, makes it difficult to implement a continuous improvement program simultaneously because of the change management issues that could arise from managing multiple large scale implementations. However, companies that have successfully implemented Six Sigma or Lean programs in conjunction with ITIL have actually leaned on the Continual Service Improvement ITIL best practices and leveraged the streamlined functions that ITIL puts in place along with identified roles and owners for all major processes. So ITIL implementation can practically help a company in speeding up the acceptance of a structured continuous improvement program.

As per the ITIL Continual Service Improvement guide/handbook a combination of Six Sigma, Lean, and CMMI works best for IT services organizations. Six Sigma is recognized by ITIL as one of the best practices that supports Continuous Service Improvement in the information technology industry. In fact, from the list of Bloomberg Businessweek Digital Elite Top 10 IT Companies for 2010, seven have Six Sigma programs or Black Belts in their organization. Listed below are those six companies:

Apple ranked second, but there is no information readily available whether Apple has a formal Six Sigma program but they have Black

Belt certified employees; Amazon (ranked fourth); Tata Consulting Services (ranked fifth); Priceline (ranked sixth); CenturyLink (ranked seventh); Cognizant Technology Services

(ranked eighth); and Infosys (ranked ninth), all have Six Sigma programs.

## Six Sigma and Lean in the SCOR World

Supply Chain Operations Reference Model (or SCOR) is the world's "most widely accepted framework for evaluating and comparing supply chain activities and their performance." The model was established and is maintained by the Supply Chain Council which is a global non-profit organization made up of "all organizations interested in applying and advancing the state-of-the-art supply chain management systems and practices." Lean Six Sigma is recommended by the Supply Chain Council as a good fit with the continuous improvement requirements for SCOR. In fact, the Supply Chain Council provides training specifically on Six Sigma and Lean using SCOR for companies and individuals. The Six Sigma and Lean training using SCOR helps companies that are using or implementing the SCOR framework "extend the benefits of continuous improvement across their extended supply chain to create overall system improvements."

Supply chain which includes sourcing, manufacturing, storing, and delivering and returning of a physical product is one of the process areas where Lean and Six Sigma have been applied for a long time. For the last few years we also have been hearing about a new term called services supply chain. Services Supply Chain considers the value chain that produces a service for the customer. The hotel industry, IT industry, and banking industry are a few examples of companies that have a services supply chain. Lean tools like Value Stream

Analysis and Lean Opportunity Mapping can readily be applied to the supply chain and identify waste across the supply chains. Likewise Six Sigma tools like SIPOC as well as the whole DMAIC methodology fits in very well with any process improvement initiative in the supply chain delivery. A great example would be a Lean Six Sigma project focused on increasing on-time delivery to customer requested time and reducing variability to the committed time. Dell is an example of a company that differentiates itself because of its innovative supply chain that is supported by a network of Lean manufacturers. Most of the iPads and iPhones for Apple are manufactured by Foxconn in China. It is no coincidence that Apple gained the top spot as the most valuable global brand in 2011, as well as the number one supply chain company by Gartner for the fourth consecutive year in 2011. Foxconn has a well-entrenched Lean Six Sigma product to ensure that Apple's product meets the high quality requirements that customers expect. A good point to note here is that Apple focuses on innovation and developing products for the future and Foxconn is the supply chain partner to ensure that the products are manufactured and available on time with quality to meet customer demands. As we will see in other chapters, some companies struggle with the application of Lean Six Sigma or any other structured continuous improvement concepts with the innovation process, but it can become a competitive

advantage when it is applied to the design, manufacture, and supply of the product that is the output of the innovation process. However, it is important to highlight here that many companies have successfully utilized Six Sigma in the invention or innovation process as well.

We have already seen the example of Starwood Hotels in the case study in Chapter 1 where they came up with a first of its kind service to better serve their customer utilizing the Six Sigma team.

## Six Sigma and Lean in the CMMI World

Capability Maturity Model Integration or CMMI is a capability model developed by the Software Engineering Institute (SEI) along with a group of government and industry representatives and is defined as a “non-prescriptive collections of best practices that infuse quality into products through the use of better processes throughout the entire product life cycle.” This model is made up of the “best-of-the-best” practices taken from multiple disciplines. As per Wikipedia, “CMMI is a process improvement approach whose goal is to help organizations improve their performance. CMMI can be used to guide process improvement across a project, a division, or an entire organization.”

CMMI recommends grouping of business practices into four categories. These categories are Process Management, Project Management, Engineering, and Support. As per a Carnegie Mellon University’s Software Engineering Institute technical note, the Process Management process areas provide the framework for institutionalization and consistent execution of processes across an organization. The Project Management process areas cover the project management activities related to planning, monitoring, and controlling projects. The Engineering process areas cover development and maintenance activities that are shared across engineering disciplines and

apply to the development of any product or service in the engineering development domain. Finally Support process areas cover the activities that support product development and maintenance.



An article titled “Relationships between CMMI and Six Sigma” published by CMU/SEI in 2006 explores in details the relationship between Six Sigma and CMMI. The article suggests that Six Sigma can be used to implement CMMI process areas by treating them as Six Sigma projects. The key is to identify problems within a process area and go about improving the process using data-based analysis and depending on whether the process already exists, however broken, or whether it is a green field process, DMAIC or DFSS methodology can be applied in conjunction with Lean as needed. The article further states that Six Sigma can be used as a tactical tool for achieving high capability and maturity. This can be done by improving the defined processes that address the high maturity process areas and strive to drive those processes to achieve Six Sigma quality and thereby achieve high maturity.

## Six Sigma and Lean in the PMBOK World

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PMBOK stands for Project Management Book of Knowledge and Project Management Professionals (PMPs) are certified as experts in Project Management by the Project Management Institute (PMI). The PMBOK recognizes Six Sigma and Lean Six Sigma as Quality Management Methodologies. The PMBOK recommended tools for performing quality control are pretty much the tools that are used by a Six Sigma or Lean practitioner as well (e.g. cause and effect diagrams, control charts, histogram, Pareto charts, statistical sampling etc.).

The Quality Management Methodologies mentioned in PMBOK include Six Sigma, Lean Six Sigma, and Quality Function Deployment, which is used extensively in design for Six Sigma projects. In fact the PMI recognizes Lean and Six Sigma training while calculating continuing education points necessary for maintaining the PMP certification. We have come across many Six Sigma Belts who are PMP certified as well and this really helps, particularly in managing large projects.

## Six Sigma and Lean in the ISO World

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We have come across multiple companies that are ISO certified (ISO 9001, ISO 14000 and ISO 20000 are the most common ones that we have seen). And being part of multiple internal and external audits we have had the opportunity to demonstrate Lean and Six Sigma approaches that were being used to drive continuous improvement in these companies. In all cases these methodologies (and the associated process to gather data, analyze data and document and measure improvements) were always cited by the auditors as best in class approaches that supplement the ISO requirements around continuous improvement.

The bottom line is that Six Sigma and Lean not only fits in perfectly with the most widely adopted process improvement standards but is actually recommended by most of them as the preferred approach for driving continuous improvements in companies following these standards or any other similar best practice model.

