



Integration of SCOR with Lean & Six Sigma

*Maximizing business performance improvement
through the integrated deployment of
SCOR, Lean and Six Sigma*

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SCOR, Lean and Six Sigma

Using the best of each methodology to achieve the most with your business improvement efforts

Current State of the Art

SCOR. The Supply-Chain Operations Reference (SCOR) model was first introduced in 1996 by the Supply-Chain Council, an independent, not-for-profit global corporation of member companies. The SCOR model is now published in its fifth major revision and has gained wide acceptance by the over 750 member companies of the Supply-Chain Council as a leading edge business process reference model. The model itself builds its strength around the linkage between process elements, metrics, best practices and features associated with supply chain execution. Over the last 5 years, SCOR practitioners in a variety of industries have evolved a SCOR deployment methodology which leverages the SCOR model to identify and prioritize supply chain metrics, design material, work, and information flow changes, and scope and quantify critical improvement opportunities in supply chains involving a single company or between multiple trading partners.

Lean. Lean is an evolution of waste elimination and process streamlining techniques that were founded in the Just-In-Time, Toyota Production System, 5S, Focused Factory, TOC and Visual Workplace concepts and applications from as far back as the early 1950's. One of the mottos of Lean is to only do "what is needed, when it's needed, in exactly the right quantities, with a minimum amount of resources". The goal of Lean is to maximize process flow and flexibility in order to achieve breakthrough financial impact on the company. Lean deployment methodology had evolved over the last few decades into a highly capable, well-defined multi-step approach that can be applied to administrative processes as effectively as production processes. In a given company, broad application of Lean can drive cultural change, i.e., "lean thinking", as well as breakthrough improvements in operating performance.

Six Sigma. Six Sigma is one of the most powerful business improvement approaches to evolve in the last decade. Six Sigma is both a business improvement program AND a powerful set of statistically based improvement tools. As a business improvement program, Six Sigma emphasizes the development of a very structured and disciplined infrastructure designed to translate strategic and operational opportunities into resourced, well-scoped executable projects, to train, coach and mentor highly-skilled product and process improvement experts, and to insure project accountability and tracking of bottom-line financial results. The Six Sigma "tool set" is an evolution of the best of quality and variation reduction techniques from this century, i.e., Deming, Crosby, Taguchi, Wheeler, etc. A problem solving methodology called DMAIC (Define, Measure, Analyze, Improve, Control) structures the use of these tools to achieve optimal results and insures stable controlled processes as an outcome. The most well recognized implementations of Six Sigma started at AlliedSignal and GE in the early 90's under the leadership of Larry Bossidy and Jack Welch respectively. Over the last few years the application of Six Sigma has been heavily extended into product development and research areas (Design for Six Sigma), transactional areas and supply chain areas.

Failure Modes of Independent Deployment of SCOR, Six Sigma and Lean

SCOR. The SCOR model as defined in version 5.0 is by design only focused on supply chain processes; it is incomplete in its description of all business process. Key processes and functions missing from the scope of the model include Sales & Marketing, research and technology

development, product development, and some elements of post-delivery customer support. SCOR also assumes but does not specifically address Training, Quality, Information Technology (IT), and Administration. In the evolution of SCOR deployment methodology, the most critical failure modes associated with application of the model are tied to the following weaknesses: 1) inadequate top-to-bottom organization training and development to enable full utilization of the model within a company, 2) few formal analytical techniques that can be used for diagnosis of root-cause process problems and 3) inadequate tools, methodologies and techniques to “implement” the improvement opportunities which SCOR identifies.

Lean. Because many variations of Lean exist in the marketplace, results and experiences vary widely, but some of the most notable weaknesses in the methodology are typically related to 1) alignment of Lean improvements to strategic and operation business needs, 2) sub-optimal application of Lean with quick-hit kaizen-type approaches, i.e. failure to adequately address support system issues and transactional processes, 3) inadequate substantiation of bottom-line expectations and validation of financial impact, and 4) poor ability to resolve critical variation and defect generating bottlenecks in the process ... which impede flow.

Six Sigma. Although Six Sigma has been proven highly successful in many industries and functional applications, one of the critical weaknesses of Six Sigma is the lack of a fundamental methodology for leveraging strategic and operational opportunities to drive the selection and execution of high priority projects. This weakness becomes more obvious to a company as the Six Sigma program matures and the “low hanging fruit” or the more apparent improvement opportunities have been resolved. The Six Sigma approach also relies upon the existence of fundamental process capability and some level of organizational maturity around the process. In highly disorganized, wasteful or poorly controlled process environments it is more difficult to identify and apply the defect and variation reduction techniques on critical bottlenecks ... they are essentially buried in inefficiency.

Why an Integrated Approach? ... or perhaps Why Not?

Lean and Six Sigma Integration. Companies experienced in the application of Lean and Six Sigma techniques have for some time recognized the compatibility and power of combining these approaches under the umbrella of a single business improvement program. There is a natural linkage between Lean and Six Sigma both at the program-level as well as the project execution level (see Table 1.0 below). The strength of the Six Sigma program infrastructure, roles and responsibilities definition, top-to-bottom organization training and development, project tracking and financial accountability improve the effectiveness of Lean efforts and the speed at which they can be deployed. Six Sigma tools and methodology provide Lean the means to resolve critical process bottlenecks that impede flow – by eliminating process variability and minimizing process defects. Design for Six Sigma (DFSS) tools insure that products are “designed” to be robust to known sources of process variation and defects. Transactional Six Sigma tools insure transactional processes and systems optimally support process flow with minimal variation or defects. Likewise, Lean provides Six Sigma the necessary methodology and tools to eliminate non-value added process waste and “surface the rocks” or bottlenecks that lie underneath – ideal targets for Six Sigma.

The net effect of Lean and Six Sigma integration is an extremely powerful program that drives rapid, focused execution of projects and tremendous gains in product and process improvement – i.e., results. The results of an integrated Lean and Six Sigma program are controlled, sustainable, and validated financially to impact the bottom-line. The inherent benefit in the program is the rapid escalation of product and process improvement skills – and their use – throughout the organization.

The challenge that faces the Deployment Champions and the Management of a company leveraging an integrated Lean and Six Sigma program, however, is the lack of a specific methodology to align business goals and strategic improvement opportunities with the selection of projects and the skilled resources to execute them. This challenge is particularly critical in an organization with complex Supply Chains and significant product line diversity.

SCOR Integration with Lean and Six Sigma. Now take a close look at the strengths and weaknesses of SCOR (see Table 1.0 below). It quickly becomes clear that SCOR methodology fills a major need in a Lean and Six Sigma program – identification, prioritization and strategic alignment of project opportunities with the capability to execute them.

Table 1.0 -- Strengths and Weaknesses of SCOR, Lean and Six Sigma Methodologies.

Methodology Strengths		
SCOR	Lean	Six Sigma
<ul style="list-style-type: none"> Structured methodology for alignment of Strategic and Operational metrics and goals to identify business improvement opportunities Standardized Supply Chain process reference model and framework Standardized multi-level process performance metrics Industry and competitive benchmark data sources “Macro-level” approach for identification of improvement opportunities Level 1-3 material, work and information flow analysis Source for best-in-class supply chain management practices Can be used to identify enabling IT capabilities to optimize the Supply Chain Opportunity and project portfolio with detailed ROI analysis 	<ul style="list-style-type: none"> Structured methodology for diagnosing and <u>executing</u> waste elimination projects in any process Typically focused on a factory / cell / process level scope Focus on workplace organization (5S) and preventative techniques (TPM) Level 4+ material, work and information flow analysis Concurrent training / projects – applied skills development Best-in-class operating practices at a factory and cell level Standard Work Development Visual Controls and Cell Management Tools for Control of new processes Very effective at rapidly reducing cost – through waste elimination 	<ul style="list-style-type: none"> Structured methodology for diagnosing and <u>executing</u> defect and variation reduction projects in any process Dedicated roles, responsibilities, and Program Infrastructure Top-to-Bottom Organization training and development Highly structured problem solving approach (DMAIC) Level 1-4+ variation and defect reduction techniques Concurrent training / projects – applied skills development Customer and data driven decision making Unique methodologies for product development, operations, and transactional applications Rigid project tracking and financial accountability for results
Methodology Weaknesses		
SCOR	Lean	Six Sigma
<ul style="list-style-type: none"> Inadequate organization-wide training and development Few analytical tools for cause-effect analysis and problem solving at the “macro-level” Inadequate tools, methodologies, or techniques to focus on <u>executing</u> projects identified by the SCOR efforts Little programmatic infrastructure for organizing and managing concurrent project activities 	<ul style="list-style-type: none"> Few tools for focusing Lean efforts on strategic and operational process priorities Inadequate program infrastructure and training to drive breakthrough improvement Poor capability for addressing support system issues and transactional processes Inadequate analysis of financial expectations and accountability for bottom-line results No tools or capability to remove bottlenecks driven by process variability / defects 	<ul style="list-style-type: none"> No specific methodology for aligning strategic and operation priorities with project execution and candidate selection No methodology to develop understanding of the confounding relationships between projects Inadequate “macro-level” analytical techniques to validate projects Data dependent tools and techniques difficult to use in poorly controlled and wasteful operating environments

Conversely, Lean and Six Sigma provide SCOR the infrastructure and the execution mechanism to make good SCOR-based Supply Chain process design reality. The top-to-bottom organization impact of a Lean and Six Sigma program can be extended to include SCOR so that awareness and application of the model is threaded throughout the entire company. The program infrastructure, roles and responsibilities, training and development capability, and execution oriented tools of Lean and Six Sigma are ideal for taking the output of SCOR, i.e. the Project Portfolio and ROI Analysis, and converting it into real cost reductions, revenues and competitive advantages – profits!

Isn't this the goal of business improvement!

Interested? Join the Supply Chain Council SCOR/Lean/Six Sigma SIG!

Supply Chain Council. The Supply Chain Council is organizing a Special Interest Group (SIG) to focus on the convergence of SCOR, Lean and Six Sigma. The proposed SIG will like operate “horizontally” across all industry groups and will likely add depth and capability to the efforts of each of the existing “vertical” SIGs.

The focus of the SCOR/Lean/Six Sigma SIG is to develop the concepts of an integrated deployment model, refine the SCOR deployment methodology, add metrics, tools, techniques and capabilities through Lean and Six Sigma to address Level 4+ process improvement and integrate a highly structured Lean and Six Sigma implementation methodology with the SCOR approach.

Interested? Want to help your organization make the most of its business improvement efforts? Get involved and help us develop what we believe will be the leading edge in business improvement technology.

About the Authors

Rod Recker. Rod is an Executive Director and Founder of the Advanced Integrated Technologies Group, Inc., an industry leading firm specializing in the development of customized business improvement programs for its clients. The AIT Group was founded in 1998 based on the premise that optimal performance can only be achieved through integrated deployment of business improvement technologies – Six Sigma, Lean and Supply Chain methodologies. AIT Group programs utilize a concurrent training and project execution approach to develop highly skilled process improvement experts within their client’s organizations – and drive results.

Peter Bolstorff. Peter is President and CEO of SCE Limited, a firm formed to focus on the training and deployment of SCOR model and deployment methodology. Peter is also a member of the Supply Chain Council Board of Directors, a Six Sigma Black Belt, and an expert in Supply Chain improvement methodologies.

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