

# Integration of Six Sigma and Lean gives better results

*Lars Sörqvist*

IAQ Vice President

Sandholm Associates, Stockholm, Sweden

## Abstract

Today Six Sigma and Lean are the two most used concepts for continuous improvements and process development. Most companies are using at least one of them. More and more companies are using both. In some companies this results in two separate programs. One program for Six Sigma and one for Lean. Because of this a very important and actual question in how to integrate Six Sigma and Lean in a successful way. This paper will describe a framework for successful integration of Six Sigma and Lean based of many years of practical work and research in this area.

There are many similarities between Six Sigma and Lean but there are also differences. The most important difference between Six Sigma and Lean has to do with their purpose. Six Sigma is a program for running continuous improvements in a systematic way in an organization while Lean is focusing on building a production system for the entire business which means transforming the organization and its processes into a completely new way of doing the work. Six Sigma is best practice in problem solving while Lean is best practice in process development.

Six Sigma and Lean can be integrated in two directions. Either can selected Lean tools be integrated in a Six Sigma improvement program or can the improvement metrology and selected tools within Six Sigma be integrated in a Lean system. By integrating selected Lean tools into Six Sigma a wider and more effective improvement program is created. By complementing the traditional statistical methods within Six Sigma with tools like Value Stream Mapping, Poka Yoke, Cycle time reduction, Standard work and Theory of Constraints it is possible to handle and solve a wider range of problem. Six Sigma becomes a more complete problem solving and improvement program that can handle any problem from elimination of variations to making flows and processes more effective.

The integration of Six Sigma into a Lean production system is much less common than integrating Lean tools into Six Sigma. A Lean system can learn a lot from Six Sigma. Better understanding for and control of variations in processes are fundamental for succeeding in building a production system based on customer demands and JIT (just-in-time). The improvement metrology in Lean could be developed a lot with the more powerful tools and methods from Six Sigma. Organizational and competence aspects from Six Sigma could be brought in to Lean. The management side of Six Sigma with strong connection to overall business goals, clear leadership responsibility, reporting of financial results achieved is also of big importance to Lean.

The paper will be based on research at the Royal Institute of Technology in Stockholm and experiences from practical integration within Volvo, Toyota, SKF, Ericsson and ABB.