
Integrating Lean and ISO 9001:2000 for Continual Improvement

Managers seek answers to their questions about how best to achieve breakthrough levels of process improvement and satisfy the requirements of ISO 9001:2002 and ISO/TS 16949:2002. The new direction in quality systems standards (i.e., moving toward a process improvement model) means that organizations will increasingly be required to design, develop and deploy a management system for achieving continual process improvement. Value stream mapping and linked scorecards can help companies establish such a system.

Value stream mapping

Before value stream mapping, lean practitioners used a technique-oriented approach to implement the process. First it was cells, then *kanbans*, then the "Five S's" and, finally, quick changeovers. Organizations attempted one improvement technique after another with no real vision that lean is a management system rather than a collection of disparate techniques.

Lean practitioners now use value stream maps to plan and organize the transformation from mass producer to lean producer. Value stream maps document the flow of information and material from customer order through delivery of completed product or service. A "current state" value stream map is drawn to describe the flow of information and material under current process conditions. A "future state" value stream map is then created that describes how this process will be improved by applying lean thinking concepts and lean manufacturing practices. The gap between current- and future-state performances provides a means for measuring the affect of the transformation on critical process performance measures. Measured process efficiency improvements such as increased percentage of value-added work, reductions in dock-to-dock lead time, and reductions in inventory and labor costs can be determined from this gap analysis.

The gap analysis between current and future state also identifies the specific projects that will be necessary to move from current to future state. These continual improvement projects can then be prioritized and scheduled within the framework of the overall lean transformation project.

Value stream maps provide the blueprint for developing lean processes. Linked scorecards provide the measurement and monitoring processes that drive continual improvement.

Linked scorecards

Managers interested in measuring, monitoring and driving continual improvement of process effectiveness and efficiency must develop a set of measures (i.e., scorecards) that translate the continual improvement strategies into actions (i.e., projects) and align those improvement projects with company goals and objectives (i.e., profits).

One set of scorecards balances and links lean improvement projects with overall company goals and objectives. These scorecards are called the "Five P's": profitability, products, processes, projects and people.

Example of the Power of Value Stream Mapping

Case:

DCI Mfg. produces storage products for the automotive aftermarket. The value stream under study is the large toolbox for pick-up trucks manufacturing process. Annual sales are \$20 million. The value stream maps for the current state and future state of the manufacturing process for this product line are prepared with the following results:

Process Scorecard For: DCI Manufacturing

Measure	Current State VSM	Future State VSM	Savings
Raw Inventory Days	9.5 days	2 Days	\$147,100
WIP Inventory Days	16.5 Days	1 Day	\$313,404
F.G. Inventory Days	11.4 Days	2 Days	\$185,484
Process Lead-time	37.4 Days	5 Days	
Value add time	180 seconds	99 seconds	
Process Efficiency (Value add/Lead-time)	.02%	.08%	
Rolled Throughput yield	88%	99.9%	\$2,387,045
Floor Space	2300 sq. ft.	875 sq. ft.	\$49,875
Labor Productivity	105 units/operator	420 units/operator	\$270,000
Availability (uptime)	90%	99%	\$1,034,208
Total Savings			\$4,387,116

Note the magnitude of the operational improvements when moving from the current to the future state.