Mobility on the Factory Floor Can Power Lean, Six Sigma Strategies

ARC'S Ralph Rio Says Mobile Technologies in Manufacturing Should Cause Companies to Rethink Processes in the Value Stream

SCDigest Editorial Staff

Compared with logistics and distribution processes, mobile wireless networks have long lagged on the factory floor.

That is rapidly starting to change, offering manufacturers a number of opportunities to drive process improvements and cost savings – especially in Lean and Six Sigma programs.

"Mobility on the factory floor will enable manufacturers to build new business processes and optimize existing ones," **Ralph Rio**, an analyst at ARC Advisory Group, recently told Supply Chain Digest.

Rio recently authored a report on **Business Process Mobility for Lean Manufacturing and Six Sigma**, in which he says that "Business Process Mobility" has three key advantages for manufacturing:

- Business processes become more inclusive and responsive (real-time)
- Lean Manufacturing has new capabilities to remove waste
- Six Sigma's DMAIC process gains access to more data for analysis

Re-Engineering Processes with Mobile Applications

While thousands of companies have used the tools of Lean such as Value Stream Mapping to re-engineering business process, rarely did those analyses well-considered the possibilities of mobile, connected workers.

"Most Lean business processes were designed with static workers in mind," Rio said. "But today, direct

While thousands of companies have used the tools of Lean such as Value Stream Mapping to re-engineering business process, rarely did those analyses well-considered the possibilities of mobile, connected workers.

labor costs often represent a small percent of total manufacturing costs. Indirect labor costs for many companies are becoming even greater – and many of the workers in the indirect pool are mobile."

In addition to the opportunities for using mobility for Lean, Rio says it can also provide real advantages for companies embracing Six Sigma programs.

"Within a Six Sigma program, examine the measurement and analysis phases of your DMAIC process," Rio wrote. "Manual data collection becomes polluted with data entry errors that often exceed the real defect rate. Wireless technology improves data collection quantity and quality for the Six Sigma project teams."

Rio sees three general areas where increase used of mobility can improve manufacturing operations:

Improved Real-Time Visibility: There is often a delay between when events or changes occur on the factory floor and when they are known by systems. For example, quality issues with incoming

Mobility on the Factory Floor Can Power Lean, Six Sigma Strategies (Con't)

	Lean Manufacturing	Six Sigma
Principle:	Reduce Waste	Reduce Variation
Focus:	Value Stream	Each Operation
Methodology:	ID Customer Value Value Stream Map Flow Pull Perfection	Define Measure Analyze Improve Control
Adoption Rate in 2007	69%	52%
BPMo Benefits	Review non-value-added steps in value streams for new opportunities to remove waste Improve involvement of mobile employees particularly for standardized work and sharing best practices Real-time visibility to know when to "Go and See" Improved flexibility for Kaisen teams to move equipment for flow improvement without hardwired network connections	Improve process control and reliability with the capability to eliminate wiring and put sensors on mobile parts of equipment Improve capability to collect data for Measure phase in the DMAIC methodology With more flexibility to locate sensors for process monitoring, improve the control phase.
	Real-time information from ERP, MES, Quality, Maintenance, Automation, and other systems for fact-based decision making	

Source: ARC Advisory Group

materials often require multiple steps and paper-based forms that are subsequently keyed in to business applications. With mobile wireless terminals, receiving data (including pictures of damaged goods) could be collected in real-time in a single step.

Business Process Optimization: Think "out of the box," and re-design manufacturing processes that fully consider the possibilities for mobile communication and data collection. For example, rather than collect data and return to a central point for further instructions, maintenance personnel might be able to get real-time instructions based on intelligence from maintenance management system.

Leveraging Mobile Sensors: It's not only operators that can be "mobilized" – so can assets and tools. For example, Rio envisions a scenario in which mobile "crash carts" (similar to the auto diagnostic computers at car repair shops) are taken to areas of equipment and connected for instant diagnostics.

Rio says Toyota's sprawling automotive plant in Georgetown, KY is increasingly using mobile applications.

"To support these activities, Toyota makes production status visible in real-time to all personnel by posting key performance indicators (KPIs) on Andon boards or other types of plant floor displays,' Rio says. "This status can also be sent to people's wireless Blackberry devices."

It's finally the time for manufacturers to take a hard look at the opportunities for mobility, Rio says.

"The pain isn't always obvious," Rio said. "But the potential benefits are significant.