

The *New, New* Silk Road

Keeping pace with technology and the global supply chain



Ryan E. Day @ Quality Digest

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True, “Marco Polo” is a great tag game played in a swimming pool, but Marco Polo the man is probably better known in connection with the trans-Asiatic trade route known as the Silk Road. That, however, was the *old* Silk Road. Yes, there is a new Silk Road, and no, it shouldn’t be confused with the [digital](#) Silk Road, Internet drug deals, or the “Dread Pirate Roberts.”

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The U.S. State Department claims that the new Silk Road is an [initiative](#) “first envisioned in 2011 as a means for Afghanistan to integrate further into the region by resuming traditional trading routes and reconstructing significant infrastructure links broken by decades of conflict.” Just around the global bend, China indulges visions of a [“New Silk Road. New Dreams.”](#) Those efforts, however, are concerned with a new *old* Silk Road. The *new*, New Silk Road, as any modern merchant will tell you, now spans not just Eurasia, but also the entire globe.

This global supply chain is also challenged with and shaped by technological advances that may be obsolete by the time they’re identified—a point not lost on the Hollings Manufacturing Extension Partnership ([MEP](#)) program, which operates within the auspices of the National Institute of Standards and Technology ([NIST](#)). The MEP is tasked with helping manufacturers keep pace with technology.

Giving manufacturing technology a boost

Studies show that small manufacturers often lack the staff, technical expertise, and general wherewithal to stay abreast of emerging technologies and processes. This creates a gap between the technologies and technological approaches to manufacturing that constitute the innovations that drive supply chains. With this in mind, in 2014 the MEP initiated five pilot projects to explore different approaches to assist small U.S. manufacturers with accelerating their technological transformation. Each of the five pilot projects are set within the context of a specific supply chain. These Manufacturing Technology Acceleration Centers ([M-TACs](#)) bring together teams of experts in a specific technology and supply-chain arena to offer small manufacturers an array of services and deep expertise relating to technology acceleration, transition, and commercialization.

“We wanted to get a deeper understanding of the roles that technology is playing within specific supply chains,” says Mark Troppe, the director of partnerships and program development at the MEP. “Part of what the MEP is focusing on now is how important it is to get some of the new technologies out to the manufacturers up and down the supply chain.”

Considering the extent of the global supply chain, that’s a hefty undertaking.

“We’re potentially talking about the entire continuum, from raw material to end product, and then even to obsolescence and recycling, if that is appropriate for the product,” explains Mark Schmit, who manages national accounts at the MEP.

“Small companies need to do business with larger companies to be successful, and larger companies rely on their supply bases to get their products to market,” says Dave Stieren, technical and program manager at the MEP. “The M-TAC pilots are a way for us to look at how we can increase the technology adoption rate within the supply chain, wherever it makes sense to do so.”

Stieren notes that part of the MEP’s job is to take a comprehensive view of technology to better advise manufacturers. “When we talk about technologies, we’re using the term very broadly, whether it’s improved hardware or software, new products, and sometimes, whole new classes of products,” he says. “This also includes process technologies that are incorporated into the manufacturing process—anything that improves efficiency, throughput, or sustainability.”

Tech in the transportation equipment supply chain

According to a [MEP announcement](#), one of the M-TAC programs would focus on the supply chain of transportation equipment manufacturers. “The Transportation M-TAC is led by California Manufacturing Technology Consulting (CMTC), and MEP Center partners include GENEDGE Alliance (VA), the Illinois Manufacturing Excellence Center, and the Corporation for Manufacturing Excellence (CA),” according to the announcement. “The project addresses the Transportation Equipment Manufacturing supply chain, encompassing industries such as aerospace, automotive, trucking, shipping, and rail. A sampling of transportation equipment manufacturing OEMs targeted for participation in the project include GE Aviation, Bridgestone, Emerson Electric Motor Division, and Raytheon Transportation.”

Chris Buthe, a supply chain specialist at [CMTC](#), says that matching the technology to the specific link in the supply chain was a priority. “The initial discovery phase was initiated by CMTC to find a technology need that could be transferred into a supply chain,” he says. “The first project step was to identify and select an OEM that could clearly identify a specific technology it desired to be implemented into the supplier tiers. The next step was to leverage that OEM commitment in order to gain access and insight into the suppliers’ needs, from the perspectives of both the customer and the supplier.”

Automotive

“In the automotive industry, the technology called Materials Management Operational Guidelines/Logistical Evaluation ([MMOG/LE](#)) was identified,” Buthe continues. “The industry collaborator is AIAG, the Automotive Industry Action Group. The AIAG has many major OEMs and suppliers as partners, which were approached about their need to adopt this technology.”

With the seeming glut of newfangled whizz-bang innovations available, how is it that a supply-chain improvement standard, which rolled out in 2008, would head the list of “most likely to promote improvement?”

“The OEMs have identified this technology as the single strongest asset for both OEMs and suppliers to

utilize to improve supplier performance and supply chain effectiveness,” Buthe explains. “MMOG/LE is performed at the individual plant level, so each supplier plant location needs to adopt the technology, and each must transmit the results to each individual OEM. There have been many changes in the automotive industry since 2008, with plant location changes, as well as changes of ownership, mergers, acquisitions, globalization, and technological remodeling of production and distribution. The result is that many plants still need to adopt and use this technology in their continuous improvement plans.”

Aerospace

“In the aerospace and defense industry, the technology called Model Based Enterprise/Model Based Definition, or MBE/MBD, was identified,” says Buthe. “MBE/MBD is also known as the digital thread of product models based on a 3D product definition. It’s a set of related technologies that enable product data to be developed, transmitted, and reused during the entire product life cycle, including design, development, manufacturability, acquisition, operations, and maintenance, until the product is recycled. This has very significant impact on small to medium-size manufacturing as OEMs move to a MBE/MBD that extends across all tiers of production. As manufacturing technology evolves, MBE/MBD will become a requirement for manufacturers of all sizes.”

So how is the M-TAC program helping the SMEs? Chris Buthe summarizes it this way: “M-TAC is working with OEMs and small to medium-size businesses to help them determine the needed tools, resources, and talents they will need to transition from their current state to a more advanced capability level,” he says. “As a result of the pilot, we will compile and share learning about the barriers and the experiences of both the suppliers and OEM top tiers to help other companies in their future technology adoptions.”

Mark Troppe adds a humble thought to an ambitious project: “We managed to cover a wide geography and variety of supply chain types, so we’re anxious to see the lessons that we learn coming out of these projects.”

About The Author



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Ryan E. Day is a contributing editor and the content coordinator at Quality Digest. With a varied career from mechanic to artist to inventor holding a U.S. patent, but a journalist at heart, he’s produced freelance feature articles, op-ed pieces, ad copy, and display communications.

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