

To whom it may concern:

Please see my responses below:

(1) What are the key problems and issues facing small U.S. manufacturers and their competitiveness and opportunities for growth in the near-term (1 to 2 years), mid-term (3 to 5 years) and/or long-term (more than 5 years)?

There are several key problems and issues facing our multi-tier supply chain. First, smaller companies do not have the tools and mechanics in place manage their supply bases, with very little visibility to material readiness and risks. Second, with this lack of visibility, they cannot share that status to their end customers, which limits speed and flexibility. Third, managing costs without tools and processes becomes problematic, if not impossible, without the full understanding of the cost drivers and limitations of the supply chain. All of this will lead to a loss of business to foreign suppliers.

(2) What advanced manufacturing technologies are and/or will be needed by small U.S. manufacturers for the companies to be competitive and grow in the global marketplace in the near-term (1 to 2 years), mid-term (3 to 5 years) and/or long-term (more than 5 years)?

It is essential for smaller companies to have ERP/MRP and/or other supply chain software available. Currently, many smaller companies are engaging only spreadsheets or very old software, with many limitations such as analysis paralysis due to complexity, lack of multi-country capability, lack of visibility to cost based calculations, etc. Tracking technology, such as GPS and RFID is not being utilized, limiting the visibility throughout the supply chain. Smaller companies also lack the capability to design more robust, and multi-tier supply chains due to the lack of tools and education.

(a) What would be the appropriate Manufacturing Readiness Level [6] or Technology Readiness Level [7] for those technologies in order for small U.S. manufacturers to consider adoption?

The appropriate level is probably TRL/MRL 4, where during demonstration phase, partners would work directly with technology providers to test/prototype training materials and templates, and software tools. This would progress as development matures into higher TRL/MRL.

(b) What information will be required for small U.S. manufacturers to understand a technology or related group of technologies and the risks and opportunities associated with making or not making an investment in any given technology?

This is difficult to know for sure, and I think it is specific to each management group, based on their own investment processes and risk assessments. Through partnerships in universities, community colleges, and through customer/supplier interactions, there should be common themes that can be developed.

(c) How is the information about advanced manufacturing technologies best delivered to small U.S. manufacturers and/or MEP Centers that support those small U.S. manufacturers?

It can be delivered by university executive programs for managers and MEP training for key personnel in supplier organizations. The community colleges can take a lead for the pipeline of employees.

(3) What technologies and/or business models are important to small U.S. manufacturers as they choose and participate in any particular supply chain?

From my vantage point, tools for supplier evaluation, supply chain visibility, make vs. buy, cybersecurity, sustainability visibility and tracking, regional cost calculation, and global shipping capabilities.

(4) What complementary business services, including information services, are and/or will be needed by small U.S. manufacturers and/or MEP Centers to take full advantage of advanced manufacturing technologies at the company or supply chain level?

This could be a new industry onto itself, creating jobs in the economy. However, I think this needs to be determined once this project is further along in the scoping and planning phases.

(5) Are there any other critical issues that NIST MEP should consider in its strategic planning for future investments that are not covered by the first four questions?

This cannot be an internally planned model, then to be rolled out to the masses. Stakeholders in small companies, universities, and ancillary industries need to be engaged and their voices heard to make this successful.