California Manufacturing Technology Consulting® CMTC

Manufacturing Technology Acceleration Center Pilot Projects

Request for Information

Date: August 2, 2013

California Manufacturing Technology Consulting® (CMTC) is pleased to provide comments in response to the RFI on Manufacturing Technology Acceleration Centers (M-TACs).

In 2011, the Next Generation Manufacturing Study, prepared by the Manufacturing Performance Institute surveying 826 manufacturers, indicated that 72% of manufacturers believe that supply chain management is important or highly important, but only 29% of manufacturers are near or at world-class status in supply chain management. Small manufacturers face even larger challenges. Only 25% of small manufacturers (less than $10 million in revenues) are near or at world class status for supply chain management and 62.7% of these small manufacturers surveyed never or rarely get support from outside resources for supply chain development. To achieve world class status and improve their value in a supply chain, SMMs need assistance with growth strategies, implementing new technologies, workforce development and buy in. After evaluating this information, CMTC understands the need for a supply chain focused program like M-TAC.

In evaluating the deployment of M-TAC, the MEP system has the capabilities to accomplish the goals outlined in the Federal Funding Opportunity (FFO). There is a core of MEP centers that have the experience and capabilities to serve as M-TACs. They have supply chain expertise, a methodology to engage supply chains, access to SMMs, connectivity to the MEP system, partnerships to enhance the delivery of tools and services, and the process to document outcomes.

Having an MEP or a team of MEPs serve as the M-TACs will: 1) continue to provide a unified approach to improving SMM performance; 2) expand the expertise and value of the MEP system; 3) increase the number of SMMs served and the impact generated by the MEP program; 4) provide a consistent message to SMMs that MEPs are the “go to” organizations for assistance; and 5) enhance the value of MEPs to States as they consider funding advanced manufacturing initiatives.

CMTC’s responses to the questions outlined in the RFI are as follows:

Questions 1: What are the specific types of technology transition and commercialization tools and services that should be provided by M-TACs? Emphasis is on the alignment of these tools and services with the most pressing needs of small and mid-sized U.S. manufacturers.

The first role of the M-TACs is to identify the technologies that have the greatest “practical application” to Small and Medium-Sized Manufacturers (SMMs). M-TACs would collaborate with OEMs, industry experts, academia and research institutions to determine the types of technologies that meet the most pressing needs of SMMs. However, several areas of technology already lend themselves to solving not only the needs of the SMMs but those of Top

Tier companies as well. Top Tier companies are defined as OEMs, first Tier and companies with at least four tiers of suppliers. Examples of the types of technology that have immediate application are:

- **Information Technology** – Sharing of information up and down the supply chain is critical to creating a value chain. Research conducted by the MEP tCAR on Supply Chain Optimization indicated: 1) suppliers do not have direct access to manufacturing information systems; 2) very little supplier collaboration occurs with Top Tiers in new product development; and 3) Top Tiers have limited visibility down the supply chain. The tCAR Survey also indicated that Top Tiers wanted to increase supplier collaboration by increasing the effectiveness of their ERP/MRP systems. IT (Control Tower) systems would increase supply chain visibility and foster the direct, collaborative efforts between Top Tiers, customers and suppliers to improve supply chain performance.
- **Additive Manufacturing** – 3D Printing has made significant advancements in performance, use of materials and affordability. However, most SMMs, while aware of additive manufacturing, have little knowledge of how it can be practically applied to improving their company's value as a supplier and contribute to their competitiveness in the global economy. Knowledge transfer is a requirement for SMMs to fully utilize the rapid prototyping and speed to market capabilities of additive manufacturing.
- **Smart Manufacturing Technology** – The use of technology to gather and analyze performance data from inside and outside the SMMs' four walls is critical to optimizing their performance and value in their supply chain. Using technology to monitor and integrate equipment, quality, output and financial data in real time will provide the necessary information to improve performance to meet best in class supply chain standards, foster innovation, and increase supplier value.

In addition, M-TACs would connect with academia and labs to make them aware of the technology gaps facing SMMs. M-TACs would facilitate the identification, transfer and commercialization of existing and emerging technologies to meet the technology needs of SMMs.

Question 1a: How would M-TAC services complement the services currently offered by MEP Centers?

MEP Centers currently offer a broad array of services to small manufacturers, including, but not limited to, process improvements; quality systems; business systems; workforce development; product development and testing; innovation; and technology implementation. The M-TAC will provide services that complement MEP's traditional core competencies with capabilities to engage Top Tier and their suppliers in the development and optimization of their supply chains.

The M-TAC would expand MEP system capabilities to: 1) target and gain access to Top Tier companies; 2) develop relationships and credibility to secure supply chain projects; 3) collect data that focuses on the entire supply chain; and 4) engage Top Tiers in a supply chain development program leveraging new and existing MEP tools, technologies and services to improve SMMs supplier value.

Question 2: What role should future M-TACs play with respect to supply chain needs? How should OEMs participate? How can industry associations, professional societies, and other appropriate national organizations participate?

M-TACs should have a significant role in identifying the needs and challenges of supply chains as noted above. This can start by validating the needs of Top Tiers and suppliers as outlined in the "Voice of the Customer Survey" conducted by the MEP tCAR Supply Chain Optimization Team in 2011. The M-TACs can use, in conjunction with local MEPs, many of the tools and services developed by the tCAR, along with other services needed by the MEP system to meet supply chain customer demands. M-TACs, sharing the profile of a high potential Top Tier organization in need of assistance, would coordinate with MEP to conduct outreach creating demand for supply chain development which would drive Top Tiers and their local suppliers to MEP for assistance.

Industry associations, professional societies and other appropriate national organizations could participate in five ways: 1) offering assistance in identifying the needs of various supply chains, especially with a sector focus; 2) providing access to Top Tier and local suppliers; 3) developing standards to evaluate supply chain and supplier performance; 4) increasing awareness of the M-TAC capabilities to Top Tiers and suppliers; and 5) using supplier standards to create a national supply chain excellence award program.

Question 3: Is there a particular long-term scalable and financially sustainable business model that should be implemented by future M-TACs that will enable small and mid-sized U.S. manufacturers to effectively access and benefit from the technology transition and commercialization assistance and other resources they need?

A sustainable model can be developed using the existing MEP network. An MEP center led collaborative of other MEP centers and partners capable of delivering M-TAC requirements should be selected to focus the MEP system, associations and professional organizations on: 1) identifying Top Tiers desirous of developing a value chain; 2) coordinating the engagement of Top Tiers; 3) providing expertise to local MEPs to build credibility with Top Tiers; 4) facilitating the development of supply chain strategies and use of new technologies; 5) conducting supplier development workshops with Top Tiers using local MEP personnel; and 6) coordinating supplier development projects with local MEPs to optimize supply chains. Because supply chains are not

bound by states or nations, M-TACs would be the catalyst to move MEP expertise from supplier to supply chain development.

There are a number of financial and implementation efficiencies using the existing MEP Center network including: 1) existing infrastructure and capabilities to serve manufacturers and supply chains; 2) leveraging expertise and tools developed by the Supply Chain Optimization tCAR; 3) nationwide access to Top Tiers and suppliers; 4) reporting; and 5) reduction in overall start-up costs. Each of these will substantially increase the probability for a successful M-TAC program. Using a network of 60 MEPs and more than a thousand manufacturing practitioners contribute to a sustainable and scalable business model.

Questions 3a: Because of the programmatic connection to the NIST MEP Program, M-TACs may require cost share. Are there cost share models for future M-TACs that promote scale up to reach nationally dispersed clusters of small and med-sized manufacturers? If so, what are those models, and why might they be successful?

The M-TAC program should not require cost share. Cost share would significantly limit MEP center participation reducing the system's ability to conduct Top Tiers and supplier outreach, build broad base collaboratives (with industry associations, societies and national organizations), and deliver services. In addition, if the award was given to a non-MEP organization and required cost share, this would create competition between MEPs and the M-TACs for cost share from partners. The M-TACs would definitely approach existing MEP partners for cost share jeopardizing existing MEP cost share partnerships.

There is precedence to not requiring cost share. There are programmatic connections to the NIST MEP Program that do not require cost share. An example is the "T-CAR" grant program authorized in the America COMPETES Act (PL110-69). Funding was subsequently provided for this authorized program via MEP's annual appropriation without a special designation in the appropriations law. "Unless the underlying law prohibits it, the Congress may also extend the program, simply by providing new appropriations."[1] Since appropriations for the T-CAR program was not specifically included in the FY10-FY13 Appropriations bills, yet was funded, existing precedent exists to use part of MEP's overall appropriation for the M-TAC program using T-CAR authority as a basis. Through the T-CAR authorization, Centers (or collaboration of Centers), can apply to expand existing operations to provide such services using the existing infrastructure, metric system and partners in place.

[1] http://www.appropriations.senate.gov/about-budget-process.cfm

Question 4: How should an M-TAC's performance and impact be evaluated? What are appropriate measures of success for future M-TACs? Please explain your response including the value of performance measure to business growth.

M-TAC success should be based on SMMs using new capabilities and technologies, developed as part of an M-TAC engagement, to expand their business using their improved value as a supplier and their increased ability to gain access and integration into another supply chain. M-TAC engagements will lead to SMMs' growth and jobs. M-TAC performance metric categories are already included in the existing MEP client survey. M-TAC project impact would be captured via the MEP client survey including new business, investment, cost savings, and jobs resulting from SMMs performance improvements. Using the existing MEP survey would eliminate any new administrative burden and expense for a separate M-TAC evaluation process. This would allow more funding to be used for projects to improve supplier and supply chain performance.

Question 5: Are there any other critical issues that NIST MEP should consider in its strategic planning for future M_TAC investments that are not covered by the first four questions? Is so, please address those issues here and explain your response.

M-TAC Capabilities - M-TAC awards should be given to organizations that are focused on SMMs with a specialty in supply chain optimization. M-TAC recipients should have the capability to expand the program by collaborating with research consortia, institutions and/or organizations with a technical expertise in key industry clusters. The success of the M-TAC program will be driven by an organization that can successfully outreach to both Top Tiers and SMMs. The optimum M-TAC would also have: 1) experience engaging Top Tiers; 2) capabilities to develop supply chain strategies; 3) ability to identify supply chain constraints; 4) processes and tools to provide supplier development; 5) skill to source suppliers; and 6) supply chain optimization tools and technologies to convert supply chains to value chains.

Overall structure – An MEP center leading a collaboration of centers meeting the capability criteria outlined above would hold the cooperative agreement and implement the M-TAC program. These centers would reach out to gain access to new technologies and staff with expertise in an industry sector or cluster to augment skills necessary to be successful. M-TACs would operate with three goals:

1. **Improve Supply Chain Knowledge Based** – Identify supply chain needs and the technology necessary to provide solutions.
2. **Engage Top Tiers to Optimize Supply Chains** – Develop supply chain optimization strategies and implement improvements throughout Top Tier supply chains.
3. **Enhance Supplier Value to Supply Chains** – Establish pathways for SMMs to build capabilities to increase value in an existing supply chain or to enter new supply chains.