From: Tom Maloney [mailto:tmaloney@ccat.us]
Sent: Thursday, October 20, 2011 10:04 AM
To: amtech
Subject: AMTech Comments
To: AMTech Program Leadership,

From: Tom Maloney, Connecticut Center for Advanced Technology, Inc.

Please find attached the subject comments. CCAT thanks NIST for the opportunity to respond to this Request for Comments.

Sincerely,
Tom Maloney

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(Comments are included in the attachment and copied below within the text of this email)
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The Connecticut Center for Advanced Technology, Inc., (CCAT) is pleased to respond to the NIST Request for Information regarding the proposed new program titled "Advanced Manufacturing Technology Consortia" (AMTech).

CCAT is a nonprofit corporation that partners with industry, government, and academia to serve as a unique economic development center of excellence for our nation, particularly in advanced cross-cutting manufacturing technology development and workforce development. CCAT believes that several key principles of public-private manufacturing technology partnerships may maximize the return from NIST investments in AMTech and meet NIST goals, including:

Leverage Existing Manufacturing Facility and Technology Investments

A significant amount of resources have been expended by federal and state government and by industry in advanced manufacturing technologies. These include hardware, such as advanced machining centers and lasers, as well as software. These tools can assist U.S. manufacturers to improve their global competitiveness and will promote collective efforts that enable the development of key technology platforms and technical infrastructures. The AMTech should leverage these assets to the greatest possible extent such that NIST resources do not duplicate facilities but are applied to new manufacturing R&D and technology promulgation using existing facilities. Availability of existing advanced manufacturing technologies that can be shared should be a major factor in proposal evaluation criteria. Small businesses that typically cannot otherwise afford those tools can team with other organizations that have such tools.

Transition Manufacturing Knowledge to Cross-cutting Manufacturing Sectors

The lead consortium member and consortium partners must be willing and capable of disseminating the new knowledge and capabilities gained through AMTech to U.S

manufacturers in aerospace, medical, automotive, and other sectors. This includes transfer of innovative manufacturing tools and processes and instruction to the workforce that will utilize those technologies and tools. Best practices for dissemination and adoption include turnkey projects, hands-on workshops and publication of case studies that address particular challenges. Particular challenges can be defined by new product developers (e.g., OEMs) and by small-to-medium size manufacturers.

Other comments per NIST RFI are included herein

1. *Should AMTech consortia focus on developments within a single existing or prospective industry, or should its focus be on broader system developments that must be supplied by multiple industries?*
   Multiple industrial sectors should be served. Emerging, precompetitive R&D may benefit multiple sectors and some common manufacturing elements of multiple sectors already exist, such as in medical and aerospace industries.

2. *Who should be eligible to participate as a member of an AMTech consortium? For example, U.S. companies. i.e., large, medium, and/or small; institutions of higher education; Federal agencies; state, local, and tribal governments; and non-profit organizations?*
   All U.S entities should be eligible, including state and federal government agencies. The consortium lead should be a domestic, neutral organization capable of applying new manufacturing innovations, and transitioning that knowledge to the domestic workforce. Non-U.S. entities can be considered, but not as a consortium lead.

3. *Should AMTech place restrictions on or limit consortium membership?*
   No

4. *Who should be eligible to receive research funding from an AMTech consortium? For example, U.S. companies i.e., large, medium, and/or small; institutions of higher education; Federal agencies; state, local, and tribal governments; and non-profit organizations?*
   All of the above noted entities.

5. *What criteria should be used in evaluating proposals for AMTech funding?*
   a. Does the consortium/team have the necessary experience to transition from innovation/invention to fundamental manufacturing R&D, to applied/manufacturing process R&D, to implementation in a manufacturing environment?
   b. Are the cost and schedule aspects of implementing the roadmap(s) to transition from innovation/invention to manufacturing reasonable?

c. Will the results be widely and fairly disseminated to cross-cutting manufacturing industries and will the workforce be properly trained?
d. Is the consortium/team leveraging existing capital resources?

6. *What types of activities are suitable for consortia funding?*
    a. Manufacturing with new materials.
    b. New methods for machining, grinding, and use of laser processing.
    c. Improvements in end-to-end manufacturing processes, including digital manufacturing and rapid manufacturing.
    d. Laser additive manufacturing with advanced materials.
    e. Process development, demonstration projects, & training related to all of the above.

7. *Should conditions be placed on research awards to ensure funded activities are directed toward assisting manufacturing in the U.S.?*
    Yes

8. *What are ways to facilitate the involvement of small businesses in AMTech consortia?*
    Engage formal and informal manufacturing and business groups. Coordination with organizations such as Society for Manufacturing Engineers, National Association of Manufacturers, local chapters of trade associations such as NTMA (National Tooling & Machining Organization) and informal ad-hoc groups of small manufacturers would be beneficial.

9. *What are best practices for facilitating the widest dissemination and adoption of knowledge and technology through consortia?*
    a. Hands-on workshops, focused projects, and publication of case studies that address particular challenges.
    b. Particular challenges can be defined by new product developers and small-to-medium size manufacturers.

10. *While it is expected that the research efforts of AMTech consortia (including participants from the Federal, academic, and private industry sectors) will take place largely at the pre-competitive stage in the development of technologies, the generation of intellectual property is possible, and even likely. What types of intellectual property arrangements would promote active engagement of industry in consortia that include the funding of university-based research and ensure that consortia efforts are realized by U.S. manufacturers?*
    IP agreements for each project should be negotiated prior to initiating the project.

11. *Would planning grants provide sufficient incentive for industry to develop roadmaps and initiate the formation of consortia? If not, what other incentives should be considered?*
    It is believed that such grants will be beneficial. In addition, resources to help implement (underwrite project cost) the roadmaps will be needed.

12. *Should each member of an AMTech consortium be required to provide cost sharing? If so, what percentage of cost sharing should be provided?*
    Cost share should be required and use of hardware and software assets already funded by U.S. government should be heavily favored, so minimum amounts of new funds are used for duplicating infrastructure. Cost share should be measured at the consortium level and every consortium member need not provide the same rate of cost share. Cost share can include funding, access to facilities/equipment/software, and/or labor resources.

15. *What criteria should be used in evaluating research proposals submitted to an AMTech consortium?*
    a. Does the consortium/team have the necessary experience to transition from innovation/invention to fundamental manufacturing R&D, to applied/manufacturing process R&D, to implementation in a manufacturing environment?
    b. Are the cost and schedule aspects of implementing the roadmap(s) to transition from innovation/invention to manufacturing reasonable?
    c. Will the results be widely and fairly disseminated to cross-cutting manufacturing industries and will the workforce be properly trained?
    d. Leadership and Managerial Skills should be considered, as well as experience in leading consortia to conduct research, development, and technology transition activities.

17. *How should an AMTech consortium's performance and impact be evaluated? What are appropriate measures of success?*
    Each roadmap should be approved by NIST prior to implementation. The Implementation Plans for each roadmap should have project plans with deliverables, milestones, impact estimates, and (at least) quarterly reviews. Success should be measured on budget, schedule, and impact of deliverables.

22. *How should AMTech interact with other Federal programs or agencies?*
    Other agencies that have already funded hardware and software assets that can be used under the NIST program may be part of a particular consortium. In addition, other federal agencies that are conducting relevant Manufacturing R&D can be part of a consortium. Federal agencies that are considered end-user stakeholders, such as DoD, should provide input to help define requirements for new innovative

products that need to be developed such that the consortium has focused R&D goals.

23. *What role can AMTech play in developing, leading, or leveraging consortia involving other Federal agencies?*
    Other federal agencies conduct some efforts via consortia at present (such as the USAF Advanced Manufacturing Propulsion Initiative). AMTech can identify and leverage the existing federal efforts and coordinate and lead the new efforts that will be complementary or synergistic with ongoing efforts.

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