From: Carla Collins [mailto:Carla.Collins@teexmail.tamu.edu]
Sent: Tuesday, September 20, 2011 2:45 PM
To: amtech
Cc: Lambis, Barbara; bharani@entc.tamu.edu; Hill, Lesa; LAWRENCE, Dr. Barry; Walsh, Michael D
Subject: AMTech Comments

To: Department of Commerce
National Institute of Standards and Technology

On behalf of the Global Supply Chain Laboratory (GSCL) and Texas Engineering Extension Service (TEEX), at Texas A&M University, attached is our response on structure for the proposed Advanced Manufacturing Technology Consortia (AMTech) Program.

Please feel free to contact us for questions, comments or information.

Sincerely,

Carla Collins

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Workforce Dev Director - TEEX
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DEPARTMENT OF ENGINEERING TECHNOLOGY
AND INDUSTRIAL DISTRIBUTION

TEXAS A&M UNIVERSITY

September 19, 2011

From: **Dr. F. Barry Lawrence,**
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Program Director, Industrial Distribution Program,
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3367 TAMU, Texas A&M University,
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Gary Sera,
Director,
Texas Engineering Extension Service,
Texas A&M University System,
301 Tarrow, College Station, TX 77840-7896

To: **Dr. Patrick Gallagher**,
Director, National Institute of Standards and Technology
Under Secretary of Commerce for Standards and Technology,
100 Bureau Drive, Stop 1070,
Gaithersburg, MD 20899.

Re:

Greetings from Texas A&M University. On behalf of the Global Supply Chain Laboratory (GSCL) and Texas Engineering Extension Service (TEEX) at Texas A&M University, attached is our response on structure for proposed **Advanced Manufacturing Technology Consortia** (AMTech) Program.

The Global Supply Chain Laboratory and TEEX have worked together on multiple industry led consortia for over 15 years at Texas A&M University generating several million in funded research, applied tools, books and industry educational programs. All of the consortia are funded by industry to develop joint solutions to common industry challenges. These activities have resulted in tremendous value for participating companies to improve their operations, increase supply chain efficiency and financial performance. We would be happy to provide additional information and/or presentation on our experience and details of Texas A&M consortiums.

Please feel free to contact us for any further question, comments or information.

GLOBAL SUPPLY CHAIN LABORATORY
TEXAS A&M UNIVERSITY

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Comments on

Advanced Manufacturing Technology Consortia (AMTech) Program

to

National Institute of Standards and Technology

GLOBAL SUPPLY CHAIN LABORATORY
TEXAS A&M UNIVERSITY

TEEX
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NIST
National Institute of Standards and Technology
U.S. Department of Commerce

Comments on

Advanced Manufacturing Technology Consortia (AMTech) Program

to

National Institute of Standards and Technology

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?

AMTech consortia should focus on the following five broad industry sectors according to NAICS classification. These cover a broad range of manufacturing, distribution and related service industries.

NAICS Sector	Description
21	Mining, Quarrying, and Oil and Gas Extraction
23	Construction
31-33	Manufacturing
42	Wholesale Trade
48-49	Transportation and Warehousing

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?

AMTech consortium should be led by institutions of higher education and state agencies with the participation of U.S. companies of all sizes. Higher education institutions and state agencies will provide bias-free applied research as well as the ability to disseminate the resulting knowledge widely for public benefit. Participation structure is described in question 4.

3. Should AMTech place restrictions on or limit consortium membership?

Based on Texas A&M experience in managing multiple successful consortia, consortium membership should be open to all eligible companies regardless of size, to bring together a wide range of membership to enhance the research discussion and resulting solutions.

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?

Institutions of higher education and state agencies should administer the consortium research funding from the AMTech program. We propose a consortium structure of 5 to 50 companies with a shared problem or challenge to join forces as a consortium to shape the research, provide input, evaluate solutions and provide feedback on research conducted jointly with the institutions of higher education.

5. What criteria should be used in evaluating proposals for AMTech funding?

The following criteria should be considered in evaluating proposal for AMTech program:

a. Industry needs and support for the consortium
b. Impact of the resulting research, solutions and education
c. Potential advancements in efficiency and productivity
d. Value to the industry and resulting impact on profitability
e. Direct and indirect impact on industry growth for involved communities

6. What types of activities are suitable for consortia funding?

Research, development and training for new technologies and innovations in manufacturing, distribution, supply chain, logistics and related services that enhance U.S competitiveness in the global marketplace through advanced manufacturing, efficient supply chain and effective services.

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

To remain competitive and double exports in the next five years, the US must focus on more than basic manufacturing research. Distribution and Supply Chain Management are key components in getting U.S products to markets around the world. Distribution and Supply Chain research and development helps provide manufacturing sectors with both efficient raw material supply and effective distribution of finished goods. Advancements in inventory management, warehousing, network optimization, pricing methodologies, transportation and logistics are necessary to provide manufacturers' with channels to domestic and international markets. Small and mid sized US firms do not have the resources to penetrate markets, foreign or domestic, without strong supply chain and distribution partners. Equally important is the ability to access sourcing capabilities from distributors and logistics firm representing worldwide suppliers.

8. What are ways to facilitate the involvement of small businesses in AMTech consortia?

To involve small businesses in the AMTech consortia, the research topics should be designed to address the challenges of small firms as well as larger ones. Efforts should be

made to encourage regional small business associations or councils to join the consortium and bring voice of their membership to the research and facilitate in disseminating the knowledge.

9. What are best practices for facilitating the widest dissemination and adoption of knowledge and technology through consortia?

a. Consortium meetings: Consortium member only meetings for discussions, research shaping, solution validation and education.
b. Conferences: 1-2 day conference for a broader dissemination of knowledge and informing industry of research results.
c. Educational Programs for industry: 1- 5 day instructor-led and e-learning short courses on specific and applied topics. These can be open for the general admission for wider knowledge dissemination.

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?

The results of the research and the resulting knowledge and intellectual property should be available for the use of participating companies. Any technology, methodology and tools should be available for companies to adopt, implement and use. The resulting technology, methodology and tools from the consortium should be widely available to all companies to encourage wider participation. Consortium members should be guaranteed first and a more complete access to research results. Participating firms should also be guaranteed (Non Disclosure Agreements) that information they share in facilitating the research will not be shared with other consortium members or others without express permission. The research team should also formulate an IP strategy with each consortium member prior to the development of the research. In this manner, the members have a stake in the development of the IP and know what IP rights they have in advance.

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?

Planning grants would provide support to bring together a group of companies to identify consortium research areas, conduct feasibility study and formulate the consortium. These grants would pay for the cost of hosting such events, travel and support to university resources for conducting the pre-consortium activities.

12. Should each member of an AMTech consortium be required to provide cost sharing? If so, what percentage of cost sharing should be provided?

From Texas A&M experience, it is always best for the industry to contribute a portion of the cost for them to feel ownership and for active involvement. The typical contributions range from $5,000 for small companies to $25,000 for very large companies. Support from the AMTech to the universities will off-set the cost to the companies for the research endeavor.

13. What criteria should be used in evaluating research proposals submitted to an AMTech consortium?

The research proposals should be evaluated for:

a. Industry need
b. Value of the resulting research to the industry
c. Potential for improvements in technology, productivity and profitability
d. Industry support
e. Research institution capability and experience
f. Positive commercial impact
g. Inclusion of companies from multiple industry sectors
h. References from past successful consortia projects

14. What management models are best suited for industry-led consortia?

It is best for a public university or state agency to manage the research efforts of a consortium. These institutions bring third-party neutral and bias-free approach to any industry problems. Also, the research capabilities of these institutions far exceed that of any industry associations, trade groups or non-profits. The public institutions would also provide wider dissemination of research results as well as the ability to impact future industry leaders.

15. Should the evaluation criteria include the assessment of leadership and managerial skills?

Yes, the assessment should include the capability of the team that would manage the consortium and execute the research.

16. Should limitations be placed on the duration of consortia?

The typical consortium activity at Texas A&M runs between 12 -36 months. Consortia can be broken down into phases that last no more than 12-24 months for delivering timely results and maintaining industry interest and involvement.

17. How should an AMTech consortium's performance and impact be evaluated? What are appropriate measures of success?

The following criteria can be evaluated for performance and impact:

a. Number of companies involved
b. Funding contribution from the consortium members
c. Research topic and impact on industry and communities
d. Implementation of resulting tools, and methodologies
e. Sustainable educational programs and knowledge dissemination
f. Commercial impact of the Consortium

18. What are the problems of measuring real-time performance of individual research awards issued by an industry-led consortium? What are appropriate measures of success?

The challenges include the time line associated with research results. In general, research findings for industrial applications improve with time. The initial findings can be measured by continued industry interest, attendance in educational programs, and extension projects that follow. Longer-term findings can be measured by the number of direct implementations that can be traced with consortium members or attendees of educational programs. Companies are often unwilling to submit to exact measures but will provide testimonials after the research has been completed. Over many years, the research will penetrate many firms without the research team's knowledge or possibly even the firm's knowledge of the origin. The most important enhancements to research typically occur well after the consortium during implementation projects with consortium members and extension projects. Real-time performance can be measured by quarterly reporting of activities and plans for the next quarter. Also, attending the consortium meetings and workshops will demonstrate the level of industry attendance and interaction.

19. How should the NIST AMTech program be evaluated?

Evaluation of the success should include multiple criteria such as value to industry, technology and tools developed, educational dissemination and wider impact on the economy. Also, see answer to question 17.

20. What are lessons learned from other successful and unsuccessful industry-led consortia?

With more than 15 years of experience in conducting applied research and industry-led consortia in over 20 industry channels, the Global Supply Chain Laboratory has learned valuable lessons on managing successful consortia. The lessons can be summarized as follows:

a. Select a broad topic that interests a wide range of companies

b. Select a problem or challenge that most of the members encounter (challenge facing the industry)
c. Engage the companies in understanding the complexities of the problem and constraints
d. Interview / visit suppliers and customers to understand the channel, customer needs and realities of doing business in that channel.
e. Conduct scientific research with the goal of developing solutions feasible for the companies to understand and implement in a reasonable amount of time with reasonable effort and cost
f. Demonstrate the link to increased profitability and/or Return on Investment (ROI) in a believable, measurable impact
g. Educate the companies on how solutions were derived, process implementation, and assist with questions regarding their environment.
h. Develop standardized solutions and education for the wider audience and for knowledge dissemination
i. Write books, articles, handbooks, and papers for industry adoption and use

21. How can AMTech do the most with available resources? Are there approaches that will best leverage the Federal investment?

AMTech should seek publication to the greatest extent possible in mainstream publications. Educational materials should be created for programs that follow the consortium. The materials should also be made available to educational institutions (for free) and corporate training groups (for a fee). Technical schools and community colleges should be involved in the consortium to develop those materials specifically for their use.

22. How should AMTech interact with other Federal programs or agencies?

AMTech can work with other U.S. Dept of Commerce groups and Small Business Administration. The program can also seek input from trade groups and industry associations. These organizations can also be effective in disseminating results.

23. What role can AMTech play in developing, leading, or leveraging consortia involving other Federal agencies?

Every consortium has multiple opportunities for extensions. AMTech program can develop short term consortia with industry to address more specific and immediate needs research to help U.S. companies improve competitiveness. The AMTech program can partner with other federal agencies to create long-term industry specific, technology specific or service specific consortia that spans multiple years and builds on research over the years to develop and advance the body of knowledge. Leveraging other federal agencies would provide greater funding and increase the visibility of the program.

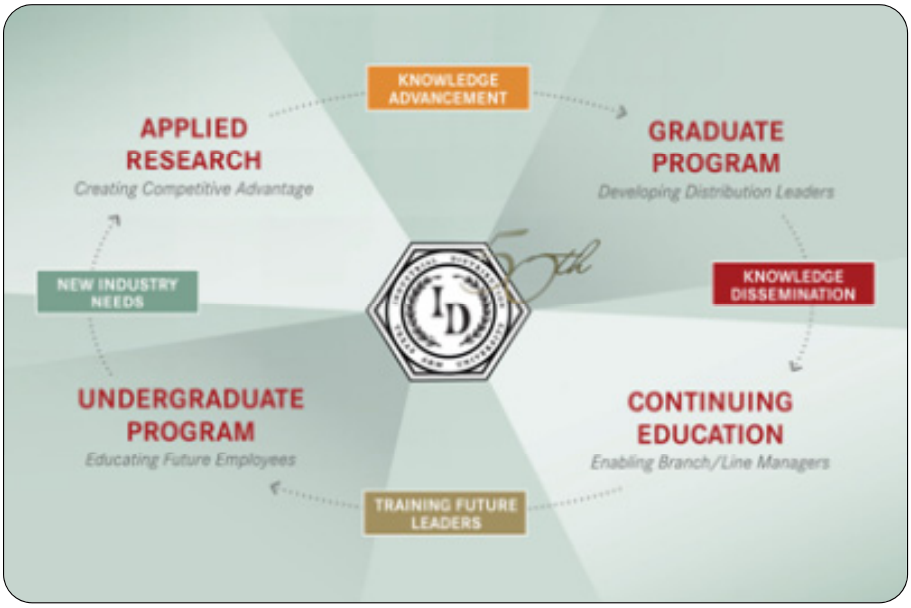
Global Supply Chain Laboratory

Leaders in Distribution Research: Texas A&M's Global Supply Chain Laboratory (GSCL) is the nation's premier distribution focused research lab that provides state-of-the-art distribution and supply chain research solutions to the industry. The research engineers at GSCL have expertise in several areas including inventory stratification, forecasting and replenishment, supply chain network design and optimization, pricing optimization, transportation and logistics, sales and marketing, distribution growth and market share and lean distribution. For more information, please visit: http://id.tamu.edu/

Sample Results from Projects

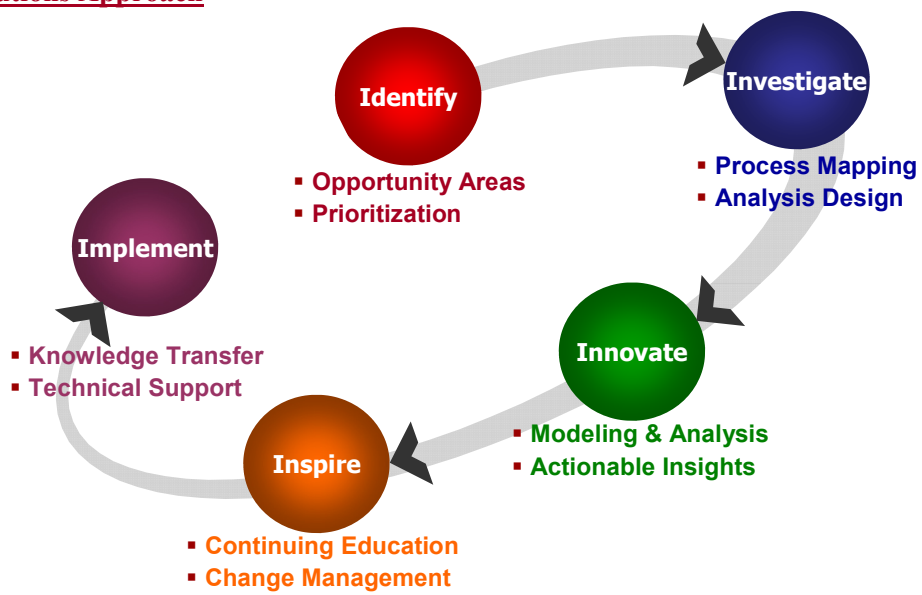
PROJECT AREA	DISTRIBUTION CHANNEL	CLIENT REVENUE	PROJECT OUTCOME		
			Inventory Reduction/ Re-deployment	Service Level	Operating Cost
Inventory Stratification	Metals	$ 1 Billion	↓ 17%		
	Pipe, Valve and Fitting	$ 1 Billion	↓ 12%	↑ 7%	
	Oil & Gas Equipment Mfg.	$ 1 Billion	↔ 20%	↑ 6%	
	Paper Manufacturing	$ 220 MM	↔ 10%	↑ 3%	
	Hardware	$ 125 MM	↓ 35%	↑ 3%	
	Fluid Power Equipment	$ 125 MM	↓ 33%	↑ 8%	
	Building Materials	$ 80 MM	↓ 22%	↑ 4%	
Network Optimization	Building Materials	$ 500 MM	↓ 20%	↑ 6%	↓ 10%
	Auto Component	$ 500 MM		↑ 33%	
	Automotive	$ 4 Billion	Strategic Facility Location - Decision Making		
	Cutting Tool Manufacturing	$ 300 MM	Strategic Facility Location - Decision Making		
Pricing Optimization	HVAC	$ 500 MM	↑ 7% Increase in Gross Margin		
	Outdoor Power Equipment	$ 75 MM	↑ 1.5 % Increase in Gross Margin		
	Industrial	$ 750 MM	Pricing Optimization Methodology - Implementation		
	Fluid Power Equipment	$ 190 MM	Pricing Optimization Methodology - Implementation		
Warehouse Management	Drilling Equipment	$ 500 MM	Facility Layout Redesign and Process automation		
	Building Materials	$ 500 MM	New Facility Layout Design		
	Metering Equipment	$ 20 MM	Facility Layout Redesign and Process automation		
Lean Distribution	Pipe, Valve and Fitting	$ 1.5 Billion	Warehouse Process Redesign / Improvement		
	General Line Industrial	$ 55 MM	Lean Process Improvement		
Global Business Feasibility	Pipe, Valve and Fitting	$ 1.5 Billion	Strategic Market Entry (CHINA) - Decision Making		
	Metering Equipment	$ 20 MM	Strategic Market Entry (MEXICO) - Decision Making		

Industrial Distribution Program at Texas A&M University



The Industrial Distribution program was founded in 1956. With more than 500 undergraduate students and 50 graduate students, it is the largest and one of the best Industrial Distribution program in the country. The executive 'Masters in Industrial Distribution' (MID) program is the only advanced degree in industrial distribution in the country. The Thomas and Joan Read Center (TJRC) for Distribution Research & Education is the nation's premier and only distribution focused research center. The center also trains more than 1000 professionals and executives in its distribution educational programs every year. The center has conducted applied research projects for distribution associations such as NAW, NEDA, IDA, ISMA, PESA, PTDA and for industrial distributors ranging from small/mid-size regional to multi-billion dollar global companies.

Research Solutions Approach



The Texas Engineering Extension Service (TEEX)

The Texas Engineering Extension Service (TEEX) has been a regional partner of the Texas Manufacturing Assistance Center (TMAC), a member of the NIST-MEP system, for over 15 years.

TEEX is a member of **The Texas A&M University System**, one of the largest and most complex systems of higher education in the United States. Through a statewide network of 11 university campuses, seven state agencies and a comprehensive health science center, the A&M System educates more than 120,000 students, conducts more than $730 million in research and reaches another 22 million people through service and outreach programs each year.

World renowned for its hands-on, customized training, TEEX offers a wide range of technical and skills training programs aimed at employed workers and those entering the labor force. During its fiscal year 2010, TEEX provided training and technical assistance to more than 194,000 people from all 50 states, five U.S. territories, the District of Columbia and 56 countries. TEEX has the ability to offer a full-range of services and delivery methods, including course design and development, online course delivery, hosting services for eLearning courses, classroom-based instruction, hands-on skills-based instruction, national certification testing, technical assistance and technology validation, and bilingual training and translation services.

Whether throughout Texas or across the globe, TEEX can be counted on for excellent training and technical expertise of its nearly 1,000 employees, many of whom are the top experts in their respective fields. Through contracts and agreements with governments and companies, TEEX provides its unique, specialized training and technical assistance to workers worldwide, ranging from the smallest companies in Texas to some of the largest companies in the world.

For more information about TEEX, please visit: http://www.teex.com

TEEX and the Global Supply Chain Laboratory

TEEX and the Global Supply Chain Laboratory have worked together on curriculum development, research and other federally funded initiatives. In 2006 TEEX worked with faculty and subject matter experts from the Industrial Distribution Program at Texas A&M University and the University of Houston to develop a suite of online courses introducing staff to key supply chain concepts; working with manufacturers, understanding distributor operations, solution-based selling and quality management. The courses demonstrate application of the concepts through real-life examples. These courses were deployed in 2008, and have been adopted by a number of industry trade associations and companies such as the National Association of Wholesaler-Distributors (NAW), the Heating, Air Conditioning and Refrigeration Distributors International (HARDI) and most recently in August 2011 by 360training.com, the premier provider of online compliance and occupational training.