

**National Institute of Standards and Technology
Manufacturing Extension Partnership
Advisory Board
Minutes of the May 2012 Meeting**

Background

The Department of Commerce (DOC), National Institute of Standards and Technology (NIST), Manufacturing Extension Partnership (MEP), Advisory Board met in an open session from 8:30 a.m. to 4:00 p.m. on May 6, 2012, at the Orlando World Center Marriott in Orlando, Florida. Approximately 41 attendees, composed of Advisory Board members, DOC, NIST, and MEP participants, guest speakers, and observers, attended the meeting.

Attendees

Board Members

Denny Dotson, Chairman, NIST MEP Advisory Board, and Chairman, Dotson Iron Castings
Edward "Ned" Hill, Dean, Levin College of Urban Affairs, Cleveland State University
James Jacobs, President, Macomb Community College
Kenneth Priest, President and Chief Executive Officer, Kenway Corporation
Mark Rice, President, Maritime Applied Physics
Vickie Wessel, Founder and President, Spirit Electronics, Inc.
Edward Wolbert, President, Transco Products, Inc.

DOC Participant

Rob Rubinovitz, Deputy Chief Economist, Economics and Statistics Administration, DOC

NIST Participant

Phil Singerman, Associate Director, Innovation and Industry Services, NIST

MEP Participants

Aimee Dobrzeniecki, Deputy Director, MEP
Roger Kilmer, Director, MEP
Karen Lellock, Senior Policy Advisor, MEP
Gary Yakimov, Manager of Policy Initiatives, MEP
Stacey Wagner, Industrial Specialist, MEP

Guest Speakers

Rob Atkinson, President, Information Technology and Innovation Foundation

MEP Observers

Samm Bowman, MEP
Doug Devereaux, MEP
Kelly Dizon, MEP
Alex Folk, MEP

Holly Jackson, MEP
Heidi Sheppard, MEP
Mike Simpson, MEP
Carroll Thomas Martin, MEP
Mark Troppe, MEP
Ben Vickery, MEP

Other Observers

Lauren Bryson, Industrial Resource Center Network–Pennsylvania
Ralph Burns, Business Growth Services
Mike Coast, Michigan Manufacturing Technology Center
Ralton Emory, Society of Manufacturing Engineers
Bernadine Hawes, Delaware Valley Industrial Resource Center
Pam Hurt, Society of Manufacturing Engineers
John Karp, Maine MEP
Tom Palisin, Pennsylvania Department of Community & Economic Development
Henry Puckhaber, South Carolina MEP
Bruce Pulkkinen, Maine MEP
Ben Rand, Insyte Consulting, New York MEP
Ed Sarmast, Nevada Industry Excellence
Bob Zider, Vermont Manufacturing Extension Center

Welcome, Introductions, and Opening Remarks

***Speaker: Roger Kilmer, Director, National Institute of Standards and Technology,
Manufacturing Extension Partnership***

Roger Kilmer welcomed the Advisory Board members and attendees to the May 2012 Advisory Board meeting. Mr. Kilmer thanked Mark Rice, the outgoing Chairman of the Advisory Board. Mr. Rice, as the Chairman, was strongly committed to the Advisory Board and to MEP. Mr. Kilmer then introduced Denny Dotson, the incoming Chairman of the Advisory Board.

Speaker: Denny Dotson, Chairperson, Advisory Board, and Chairman, Dotson Iron Castings

Mr. Dotson thanked Mr. Kilmer for his introduction and Mr. Rice for his contribution as the outgoing Chairman.

Mr. Dotson stated that he manages a small iron and machine shop. Mr. Dotson noted that the foundry industry is a good leading indicator of the economy. His foundry, as well as other foundries across the nation, has been busy for the past year. He also stated that iron-and-machine-shop activities are staying in the United States (U.S.) and other iron-and-machine-shop work is returning to the U.S. This creates many opportunities for manufacturers and for the National MEP Network.

Mr. Dotson stated that he supports the current MEP direction, such as the new CORE metrics and outreach efforts.

Manufacturing is getting national attention. Bankers, accountants, and doctors are now looking at manufacturers in a new way. Now that manufacturing has the U.S. attention, Mr. Dotson wants to leverage that attention to benefit manufacturers and the National MEP System.

Mr. Dotson then summarized the Advisory Board agenda. Feature presentations include:

- The State of Manufacturing,
- National MEP System Trends,
- Revitalizing U.S. Manufacturing,
- MEP's Next-Generation Strategies: Workforce, and
- NIST Manufacturing Initiatives.

In addition, Mr. Dotson noted that there would be facilitated discussions with the MEP Centers' Board of Directors.

Mr. Dotson then asked each of the Advisory Board members to introduce themselves to the other Board members and attendees of the Advisory Board meeting.

Presentations

The State of Manufacturing

Speaker: Rob Rubinovitz, Deputy Chief Economist, Economics and Statistics Administration, Department of Commerce

Mr. Rubinovitz provided background information about the current state of manufacturing and discussed current research projects that are related to manufacturing. The data, he noted, is publicly available through:

- Institute for Supply Management,
- Bureau of Labor Statistics,
- Bureau of Economic Analysis
- Economic and Statistics Administration,
- Federal Reserve Board, and
- Census Bureau.

General Facts about the State of Manufacturing

- *Production.* Production is increasing. However, production has not yet reached pre-recession numbers.
- *Job Creation.* The economy created 16,000 manufacturing jobs in April 2012 and 489,000 manufacturing jobs since January 2010. Job increases in manufacturing are similar to job increases in other industry sectors.
- *Manufacturing Compensation.* Manufacturing-sector compensation (salary and benefits) is higher than other sectors. Manufacturing compensation is 17% higher today than last year.
- *Exports.* Export growth has slowed down. Recently, however, there has been a slight increase at the beginning of 2012.

Research Projects

DOC has completed two research projects: *Manufacturing by U.S. Counties* and *Broadband Access by Industries*.

- *Manufacturing by U.S. Counties.* DOC completed a research project in which DOC studied U.S. counties that had more than 25% of their workers involved with manufacturing. There are 209 counties that fit the criteria. The project found that Indiana leads all other States with 25 counties. Idaho, New York, Oregon, South Dakota, Utah, and West Virginia had the least number of counties, with one county each.
- *Broadband Access by Industries.* DOC's National Telecommunications and Information Administration and the Federal Trade Commission completed a research project on broadband availability. The project focused on high-speed broadband (broadband with speeds greater than 50 mbps) by industry. Mining has the lowest access to high-speed broadband while Professional/Scientific/Technology Services has the greatest access to high-speed broadband. Manufacturing-sector access to broadband rates near the bottom when compared to other industries. Approximately 44.5% of manufacturing workers have access to high-speed broadband.

Questions and Answers

Q: Do you track individual small-, medium-, and large-sized companies?

A: Not yet. However, we have the data that we need to track various-sized companies.

Q: Do you track foreign companies that hire U.S. employees versus U.S. companies that hire foreign employees?

A: Yes, we can. We have the data, but we have not yet analyzed it.

Q: Is the County Study available to Advisory Board members?

A: The data are available. The full report should be released in about 6 weeks.

National MEP System Trends

Speaker: *Gary Yakimov, Manager of Policy Initiatives, National Institute of Standards and Technology, Manufacturing Extension Partnership*

Mr. Yakimov noted that MEP measures all Centers individually in the National MEP Network against the MEP CORE criteria. His presentation today, however, summarizes the CORE criteria at an overall system or macro level.

- *Project Hours.* Center level of effort is going up. The Centers' direct hours (in-house hours) and the Centers' third-party-provider hours (contracted hours) have increased. With the economic downturn, however, there is a shift in hours from third-party-provider hours to direct hours.
- *Client and Projects.* The number of clients and projects has been decreasing. Recently, however, we are beginning to see a slight increase in the number of clients and projects.
- *Market Penetration.* Touching 30,000 manufacturers per year (6% of all manufacturers), but still only 2% of manufacturers served directly – goal to get up to 5% over the next few years.
- *Impact – Jobs.* New jobs and retained jobs have decreased. However, impact data is now beginning to pick up.
- *Impacts – Sales, Savings, and Investments.* MEP has a focus on new sales. In cost savings, there has been a little growth. This is to be expected because cost savings is not MEP's current focus. An organization can only get so Lean before it needs to grow. We are seeing organizations are continuing to invest in themselves.

Client Challenges

Continuous improvement is the highest challenge for the next 3 years followed by growth opportunities and product innovation/development.

Future Changes to Client Survey

In the near future, MEP is hoping to expand its client survey and include metrics to measure the benefits of E3 (Economy, Energy, and Environment) and ExporTech.

Discussion

- Great presentation – reflects real candor and self assessment value of CORE – should be used as evidence of real internal ability of NIST MEP to manage this program.
- The U.S. recession is driving the data. It would be helpful to understand the cyclical nature of the data.
- Total market penetration may not be the best target. Might consider using a target market rather than the universe of all manufacturers.
- Employee recruitment and retention have increased as challenges facing manufacturers.
- Minnesota does an annual study on the state of manufacturing. Workforce is a big concern for manufacturers.
- Retention is an issue for companies to consider because when economy improves, there could be a mass exodus of older employees.
- Reductions and layoffs are happening – particularly with senior people. With workforce turnover many manufacturers may not have the long-term commitment they had with the previous workforce.

Revitalizing U.S. Manufacturing: How Do We Do It?

Speaker: Robert Atkinson, President, Information Technology and Innovation Foundation

Mr. Atkinson noted that the Information Technology and Innovation Foundation has produced four reports related to manufacturing. These include:

- *The Case for a National Manufacturing Strategy,*
- *International Benchmarking of Countries' Policies and Programs Supporting SME Manufacturers,*
- *Worse Than the Great Depression: What the Experts Are Missing About American Manufacturing Decline,* and
- *A Charter for Revitalizing American Manufacturing.*

Why is there an urgency to focus on the manufacturing industry?

Manufacturing jobs have decreased by 33% since 2000. The economy has not created any new net jobs. When the U.S. loses one manufacturing job, it loses many non-manufacturing jobs. All but one State lost manufacturing jobs. The U.S. cannot have a strong economy without manufacturing.

Core Principles for Renewal

The U.S. must focus on four core principles:

- The U.S. must focus on trade sectors,
- The U.S. must embrace and reintegrate an engineering culture,

- The U.S. must move toward an economic system focused on production rather than on consumption, and
- The U.S. needs to rethink its global trading strategy and ensure that it is a trading system based upon market-oriented principles.

Areas of Focus

The U.S. needs to focus on regulation reform, analysis for competitiveness, financing, tax policy, technology, talent, and trade promotion (RAFTTTT):

- *Regulation Reform.* Regulations have an impact on innovation. Unfortunately, there is no competitiveness review of new regulations. The U.S. needs to form an Office of Innovation Policy Review in the Office of Management and Budget (OMB). OMB should perform competitiveness screening on all new regulations to determine the impact on the economy.
- *Analysis for Competitiveness.* The U.S. needs to analyze the effects of regulations on the economy. Decisions are made without studying the effects. The U.S. needs to create a trade-sector-analysis unit and an economic-competitiveness commission.
- *Financing.* The U.S. needs to focus on "production" financing rather than on "consumption" financing. The U.S. needs to transform Fannie Mae into an industrial bank and shift the Small Business Administration's focus from consumption to production. States should create a 401k-like tax-deferred-investment account for manufacturers to invest in equipment or workforce training.
- *Tax Policy.* The U.S. needs to address its tax rates. The U.S. has the highest statutory tax rate in the world. The U.S. has the fourth highest effective tax rate. The U.S. needs to expand key tax incentives, such as investment tax credits, research and development (R&D) tax credit, and domestic-production deductions.
- *Technology:*
 - The U.S. needs to have a national dialog on technology. The U.S. is not the high-technology manufacturing country that it once was. Germany now exceeds the U.S. in high technology and medium technology with help from the 59 government-run Fraunhofer-Gesellschaft Institutes.
 - The U.S. is not doing a good job at promoting the transfer of technology. The U.S. needs tax incentives to help drive technology commercialization.
 - The U.S. needs a common national licensing agreement between States, similar to the approach used in the Netherlands. The Netherlands offers a voucher to manufacturers for technical assistance from the universities. The voucher approach supports universities and promotes manufacturing.
 - The Obama Administration has suggested that the U.S. should create a National Network of Manufacturing Institutes (NNMI), modeled after the Fraunhofer-Gesellschaft model. NNMI would receive a one-time cash infusion.
- *Talent:*
 - The U.S. needs to fund engineering-cooperative programs between universities and industries, reform university-engineering curriculum towards more project-based learning and entrepreneurship, and increase adoption of industry-recognized, nationally portable credentials.
 - The U.S. does not have enough high-end talent. Unfortunately, U.S. universities are not training enough American citizens. Foreign students are coming to the U.S. for education and then returning to their homeland. The U.S. needs to provide incentives to colleges to do a better job.

- *Trade Promotion.* The U.S. needs to reauthorize the lending authority of the Export-Import Bank, support and align programs to boost U.S. exports, promote re-shoring, create global-knowledge investment zones, develop a national trade strategy, increase funding for U.S. trade policymaking and enforcement agencies, create an Ambassador-level trade-enforcement chief, fund the Interagency Trade Enforcement Center, and exclude mercantilist countries from the Generalized System of Preferences.

Conclusion

The U.S. could create millions of manufacturing jobs and eliminate the trade deficit in manufactured goods by 2020, but only with a real manufacturing strategy.

Discussion

- Manufacturers need to work with universities. Companies have changed their approach. Approximately 70% of graduate students in the U.S. are foreign students. High-school students are not prepared for college-engineering classes.
- The U.S. needs to do a better job at trade promotion. Federal programs and State programs are not aligned. The U.S. needs to do better at re-shoring. The U.S. needs to attract high-level skills.
- The U.S. is at a critical inflection point. The U.S. needs a serious manufacturing strategy.

Breakout Session

The NIST MEP Advisory Board were joined by the MEP Centers' Board members for a breakout session around the major themes presented by Mr. Atkinson, including trade, finance, talent, and technology issues. Below is a summary of discussion on the implications and recommendations for MEP in each area.

Trade

- MEP can help address concerns about export logistics or identify resources that will allow manufacturers to address these issues.
- Help protect IP as part of innovation.
- Take Expotech and move towards identifying export opportunities, such as Fedbiz for exporting.
- Quicker to market instead of defending IP.
- Coach SMEs in export documentation process.
- Perform analysis on potential export goods.
- Help decrease or identify how to decrease trade/export risk.
- Provide education on the International Traffic in Arms Regulations (ITARs)

Finance/Regulations

- MEP can help to address SME's knowledge gaps and also use tool kits to bring the necessary knowledge to SME's on how to address these challenges and opportunities.
- Banks need to have a better understanding of manufacturing and an appreciation of MEP's role in supporting manufacturers.
- EPA representatives should consider using the MEP centers to do impact assessments of the effect of EPA imposed regulations on the competitiveness of the business. This would build on

the inter-agency function to get a wider and overall perspective of the impact of these regulations (e.g., EPA, OSHA, performance standards) on small manufacturers competitiveness.

- Emphasize the theme of integration of what government actions can do in having a positive impact on small manufacturers' competitiveness.
- The State of Maine offers some lessons and examples--- for example new employees in a company can qualify the employer for a credit against state taxes. And, the administrative reporting burden on the manufacturer is relatively light in reporting and claiming the credit.

Talent

- MEP can help map out a common knowledge base that is transferable across the industry.
- MEP should drive bridge programs to address middle skills needs
- Continue to update the image of today's manufacturers.
- Promote the concept of different paths for students with different aptitudes and interests.
- Manufacturers need tactical, regional strategies. MEP should explore a role in this area.

Technology

- MEP can develop into Centers of Excellence and be industry driven more than technology driven. Focus on the industry clusters and apply the technologies to those geographies/clusters.
- There is a need to coordinate and pull together with other organizations funded by DOC, which is a common government problem that exists. MEP can act as a coordinator or hub.
- Small R&D firms need a way to commercialize without their innovation/R&D stolen. Tools/resources are needed to capture and protect R&D and then a way to commercialize the ideas.
- IP protection needs improvements to allow innovation to be easily made but difficult to copy. Overall IP awareness is limited/misunderstood.
- MEP needs to better collaborate with other resources – continue to leverage Partnerships.
- MEP needs to have a business plan on how to approach small/medium-sized firms and possibly be specific to distinct technologies.
- A technology broker model is needed to bring people together. No models exist to help with technology exchange opportunities. Also, there is no mechanism to compensate these technology brokers.
- Community colleges are involved with small companies so this relationship can be built upon.

Presentations

MEP's Next-Generation Strategies: Workforce

Speaker: Stacey Wagner, Industrial Specialist, National Institute of Standards and Technology, Manufacturing Extension Partnership

MEP is developing tools to build capacity for the Next-Generation Strategy on Workforce. MEP's workforce development tool set includes several elements: Layoff Aversion, Skill Standards and Certification, Innovation Engineering, and SMARTalent.

- *Layoff Aversion*

MEP is working with other partners on efforts to reduce the adverse impact of closing plants. Layoff Aversion is designed to be a rapid-response approach to save jobs. Currently there is no systematic approach within the National MEP Network but several centers including the California Manufacturing Technology Center have been very effective in this area. MEP is collaborating with Workforce Investment Boards, the Department of Labor, and other partners. Layoff Aversion programs in States, such as California, have been very effective.

- *Skill Standards and Certification*

MEP is working with the National Association of Manufacturers to deploy skill standards and credentials. Credentials provide a pathway for manufacturing. Credentials will help an employer to understand the skills that they are getting when they hire a credentialed employee. Currently, 7% of surveyed employers use credentials when hiring. U.S. manufacturers need a way to pre-qualify employees.

Question and Answer

Q: Are there current standards that are widely acceptable to manufacturers? I am familiar with the NADCAP (National Aerospace and Defense Contractors Accreditation Program) certification which just seems to add cost to the manufacturing process.

A: Yes. Welding is a good example. The welding industry has developed credentials that are accepted by employers. In general, the demand is not systematized nor well understood. Industries are leading the credential process.

- *Innovation Engineering*

MEP supports Innovation Engineering Leadership Institute (IELI) training. IELI is a 3-day program that is designed to help manufacturers understand innovation. IELI training gives a manufacturer the tools and understanding that they need for innovation.

- *SMARTalent*

Manufacturers need a workforce system that provides risk-benefit analysis and workforce analytics. Human capital should be considered an investment rather than an expense and should be part of the overall strategic objectives of the company.

Many small and medium-sized enterprises (SMEs) firms are reducing human resources (HR) departments and are in need of other ways to support these functions. In addition entrepreneurs need to understand that workforce development is critical to business success.

In response to these challenges, MEP is developing the SMARTalent tool that includes four modules to provide an integrated solution to HR. Several MEP Centers are testing the first module. Workforce development should be treated as corporate investments, and human resources need strategic planning.

MEP is early in the process of developing these modules. MEP has defined the needs and started developing the first module.

Recruitment Module. The Recruitment Module is the first module. It is currently in a test version. The Recruitment Module includes:

- Automated Job Profiles,
- Automated Help, and
- Want Ads.

This module will help automate the development of job profiles and job postings based on known skill set requirements.

Development and Management Module. The Development and Management Module will include:

- Work Flow Planner and
- Automated Performance Planner.

Retention and Succession Module. The Retention and Succession Module will include:

- Layoff Aversion and
- Succession Planner.

Planning and Strategic Alignment Module. The Planning and Strategic Alignment Module will include:

- Manufacturing Workforce Diagnostics and
- Competency Identification and Skill Gap Analysis.

Discussion

- Currently, the system seems to be addressing large business issues. MEP needs to ensure it addresses unique challenges faced by SMEs
- MEP needs to define an economic model and understand the return on investment and overall value to manufacturers.
- There are many talent management systems for large firms. SMEs want a talent management system specific for their needs.
- As an SME, I do most of my HR activities. I need to know how to interview candidates. I need a tool to help me analyze candidates. These need to be included in the tool.
- MEP looks at this as a strategic transformation of a company.
- MEP will work on defining soft skills and hard skills.
- MEP needs to keep an eye on scalability and entry cost.
- MEP's goal is to help SMEs know what they need and when they will need it.

Questions and Answers

Q: The vision is excellent but you may need to take a step back. I believe that 80% of SMEs do not have a strategic plan or a business plan. In general, SMEs lack the resources to develop strategic plans and HR programs.

A: MEP continues to work with companies on their broader strategic planning efforts. Building workforce development into the plans is crucial.

Q: Is MEP getting input from SMEs?

A: Yes, MEP has received information on problems faced by SMEs. Those considerations are being included as the tool is developed.

NIST Manufacturing Initiatives

Speaker: *Phil Singerman, Associate Director, Innovation and Industry Services, NIST*

Background

- MEP is the gold standard of public/private partnerships.
- President Obama mentioned manufacturing 15 times in his January 2012 State of the Union speech. This demonstrates how important manufacturing is to the Obama Administration and the U.S. economy.
- There is a connection between manufacturing and innovation. The U.S. cannot sustain its economy when products are designed in the U.S. and built somewhere else.
- R&D investments are falling behind our global competitors and investments are not balanced between manufacturing sectors and financial sectors.
- The U.S. needs a seamless public/private partnership.
- NIST is the Federal lead in advanced manufacturing.
- NIST is the host of the Advanced National Manufacturing Program Office, an interagency office on policy related to manufacturing.

Mr. Singerman provided an overview of several manufacturing initiatives:

NIST Funding Programs

- *National Network of Manufacturing Institutes (NNMI)*. Modeled after a number of programs, including the Edison Technology Centers and Germany's Fraunhofer Institute, NIST issued a formal request for information related to President Obama's proposed NNMI. Initial plans call for the NNMI to fund 10 to 15 technical institutes. Stakeholders are urged to provide comments on the structure and development of the initiative. Information on how to provide input and comments are available at: <https://www.federalregister.gov/articles/2012/05/04/2012-10809/request-for-information-on-proposed-new-program-national-network-for-manufacturing-innovation-nnmi>.
- *Pilot Institute for Manufacturing Innovation*
The President announced that the Administration would launch a Pilot Institute for Manufacturing Innovation. This will serve as a proof-of-concept for the NNMI. The pilot will draw on existing resources and authorities of the Department of Defense, Department of Energy, DOC, and the National Science Foundation with a focus on additive manufacturing.
- *Advanced Manufacturing Jobs and Innovation Accelerator Challenge*
Sponsored by DOC's Economic Development Administration, under the Advanced Manufacturing Jobs Accelerator grant opportunity, regional partnerships, across the nation, can compete to access complementary Federal resources to support advanced manufacturing activities in order to drive high potential industry clusters. NIST MEP is investing \$3M in the effort and each award requires a partnership with the local MEP center. Additional details are available at: <http://www.nist.gov/mep/26-million-multi-agency-funding-opportunity.cfm>.

Board Discussion & Recommendations

- Center management initiatives and new tools and next generation strategy are great. They will help the small manufacturers.
- Centers need to consider all funding opportunities – State programs, non-traditional programs, look for these sources of funding and connect these back to the SME.
- Development of a financial stability model for SMEs is critical and may need more focus in the program's priorities.
- Workforce development is critical and the current timeline may not be aggressive enough to meet the current needs of manufacturers.
- NIST MEP should consider rotating staff through the individual centers to maintain a sense and understanding of center perspective.
- Centers need to be engaged with the changes to the evaluation system and implementation of Center Operations Reporting Evaluation (CORE). There is still some trepidation from the Centers. The focus needs to be on the overall strategy and how to achieve it – not on the measures themselves.
- There is good interaction between MEP and the Centers' Board members. This provided a better understanding of the vast governance issues across the various MEP Center Boards. NIST MEP is encouraged to continue this outreach.
- Would like to see ROI or more analysis on MEP's growth strategy. Regular updates would provide the ability to track success.
- It may be time to re-evaluate MEP's strategic plan with a focus on how the role the program will play in the emerging national manufacturing strategy.
- The National Manufacturing Strategy needs to be a single strategy with an understanding of the crucial role of small businesses clearly articulated.
- When considering these new national initiatives, use the MEP system and existing centers of excellence rather than re-inventing the infrastructure.
- Additional SME input needs to be put into the planning of NIST's advanced manufacturing initiatives. The voice of the SME needs to be more fully integrated into planning processes that may otherwise be dominated by large corporations and universities.

Next Meeting

The next Advisory Board meeting will be held in August 2012, in Gaithersburg, Maryland.

Adjournment

With no further business, Mr. Dotson adjourned the meeting.