National Institute of Standards and Technology
Manufacturing Extension Partnership
Advisory Board
Minutes of the June 13, 2018 Meeting
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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 9:00 a.m. to 4:00 p.m. on June 13, 2018, at the University of Texas, Arlington Campus, University Center Building, in Arlington, Texas. Approximately 30 attendees, composed of MEP Advisory Board members, other NIST and NIST MEP participants, guest speakers, and observers, attended the meeting. Carroll Thomas, Director of MEP, is the Designated Federal Officer for the MEP Advisory Board.

Attendees

Board Members
Jose Anaya, Dean of Community Advancement, El Camino College
E. LaDon Byars, President and CEO, Colonial Diversified Polymer Products, LLC
Carolyn Cason, Professor Emerita, The University of Texas at Arlington
Bernadine Hawes, Vice Chair, MEP Advisory Board, and Senior Research Analyst, Community Marketing Concepts
Mary Isbister, President, GenMet Corporation
Mitch Magee, Director of Engineering, PPG's Architectural Coatings Business Unit
Matt Newman, Director of Business Management, Covanta
Kathay Rennels, Associate Vice President for Engagement, Colorado State University
George Spottswood, Owner and CEO, Quality Filters, Inc.
Leslie Taito, Senior Vice President for Corporate Operations, Hope Global
Chris Weiser, President and Owner, J.V. Manufacturing, Inc.
Jeff Wilcox, Chair, MEP Advisory Board, and Vice President for Engineering, Lockheed Martin Corporation
Jim Wright, Vice President of Operations, Proof Research

Guest Speakers
Frank Gayle, Deputy Director, NIST Office of Advanced Manufacturing
Vistasp Karbhari, President, University of Texas at Arlington
Mark Sessumes, Director, TMAC
Lisë Stewart, Director of the Center for Family Business Excellence, EisnerAmper LLP

NIST MEP Participants
Cheryl Gendron, Advisory Board Liaison, NIST MEP
David Stieren, Division Chief for Extension Services, NIST MEP
Carroll Thomas, Director of MEP and Designated Federal Officer, MEP Advisory Board
Ken Voytek, Group Manager for Manufacturing Research and Program Evaluation, NIST MEP

Observers
Tom Bugnitz, Manufacturer's Edge
Duane Dimos, University of Texas at Arlington
Mimi Hsu, Lockheed Martin Corporation
Sekou Johnson, NIST MEP
Chancy Lyford, NIST MEP

Johnny Ross, TMAC
Carol Shibley, NIST MEP
Gary Thompson, NIST MEP
Ben Vickery, NIST MEP

Welcome and Introductions
Speakers: Bernadine Hawes, Vice Chair, MEP Advisory Board; Vistasp Karbhari, President, University of Texas at Arlington; Mark Sessumes, Director, TMAC; Carroll Thomas, Director of MEP

B. Hawes called the meeting to order at approximately 9:00 a.m. and made introductory remarks. V. Karbhari welcomed the MEP Advisory Board to the University of Texas at Arlington and expressed the University's belief in the importance of the MEP program. M. Sessumes welcomed the Board to Texas and shared some statistics about Texas and the impact of TMAC on the state's approximate 20,000 manufacturers. C. Thomas asked Board members and attendees to introduce themselves and then discussed the MEP National Network™ Strategic Plan.

Presentation: MEP National Network 2017-2022 Strategic Goals
Speaker: Carroll Thomas, Director of MEP

- Empower Manufacturers
  - Objective: to assist U.S. manufacturers in embracing productivity-enhancing innovative manufacturing technologies, navigate advanced technology solutions and recruit and retain a skilled and diverse workforce.
- Champion Manufacturing
  - Objective: to actively promote the importance of a strong manufacturing base as key to a robust U.S. economy and for the protection of national security interests; create awareness of innovations in manufacturing; create workforce development partnerships to build a stronger and diverse workforce pipeline; and maximize market awareness of the MEP National Network.
- Leverage Partnerships
  - Objective: to leverage national, regional, state and local partnerships to gain substantial increase in market penetration; identify mission-complementary advocates to help MEP become a recognized manufacturing resource brand; build an expanded service delivery model to support manufacturing.
- Transform the Network
  - Objective: to maximize National Network knowledge and experience to operate as an integrated National Network; increase efficiency and effectiveness by employing a Learning Organization platform; and create a resilient and adaptive MEP National Network to support resilient and adaptive U.S. manufacturing.

Network Priorities for the Next Eighteen Months
- Create an integrated National Network Service Delivery System
- Update national-level partnerships and performance support services
- Define areas of focus for manufacturing technology advances, including:
  - Cybersecurity
  - Digital manufacturing
  - Automation and robotics
  - Additive manufacturing
  - Internet of Things
  - National and regional service portfolio coordination
  - National Network workforce development plan

- Develop supply chain national services and information and technology access
- Build infrastructure for National Network Learning Organization

Eighteen-Month Measures of Success
- Piloted integrated national networked approach to delivery system engaging 50% of Centers in multi-Center delivery projects
  - FY 2017 Baseline: number of Centers in multi-center delivery projects-17
    - 1st Quarter Progress: number of Centers in multi-center delivery projects-17. The group working on integrated delivery systems is ramping up its efforts and the change to an integrated National Network will require a full eighteen months
- Increased small/rural engagements through third party partnerships by 10% and increased longer-term impactful projects with these smaller firms by 5%
  - FY 2017 Baseline: number of small manufacturers engaged through third party partnerships-507
    - 1st Quarter Progress: number of small manufacturers engaged through third party partnerships-244
  - FY 2017 Baseline: number of rural manufacturers engaged through third party partnerships-341
    - 1st Quarter Progress: number of rural manufacturers engaged through third party partnerships-152
  - FY 2017 Baseline: impacts for transformational projects-1,100 clients, 21,612 jobs, $2.7 billion sales, $484 million cost savings, $762 million new investments
    - 1st Quarter Progress: impacts for transformational projects-580 clients, 13,529 jobs, $1.1 billion sales, $125.6 million cost savings, $290 million in new investments
- Attained Operational Excellence in 25% of Centers' operations and in 50% of NIST MEP administrative support
  - Baseline and progress figures not yet available for Centers engaged/monitored by NIST MEP.
  - For NIST MEP a number of standard operating procedures are in place. Travel and time and attendance policies have improved, resulting in time and cost savings.
- Increased awareness of the MEP National Network brand by 10% over base brand recognition measurement a year after the MEP National Network launches the brand
  - February 2018 Baseline: MEP National Network had 10 instances of branded searches
    - 1st Quarter Progress: MEP National Network had 20 instances of branded searches
  - February 2018 Baseline: MEP National Network webpage received 695 page views
    - 1st Quarter Progress: MEP National Network webpage received 793 page views
  - February 2018 Baseline: MEP National Network webpage had 14 backlinks
    - 1st Quarter Progress: MEP National Network webpage had 24 backlinks

Discussion
- B. Hawes asked if NIST MEP is keeping in mind that some Centers are up for renewal at different time frames than others. C. Thomas said that NIST MEP is tracking this. Most of the Center renewals are now done quarterly. There were seven Centers that were not part of the competition and NIST MEP is working towards moving them into alignment with the other Centers.
- M. Newman said that the Center Boards and staff serve as ambassadors. He highly recommended Board members become active on social media to support Center and NIST MEP messaging online. Board members were encouraged to "like," "comment on," and share social media posts to extend and amplify efforts. This will help to get the word out and

connect manufacturers with Centers. NIST MEP and the MEP Marketing Working Group offer continuous support to the Centers with social media strategies. It was discussed that NIST MEP may offer a webinar for Board members on the basics of social media activities.

- C. Cason asked if any integrated multi-center delivery projects other than cybersecurity have been launched. C. Thomas said NIST MEP had to slow down on some of the competitive awards due to appropriations and funding delays; however, they are moving forward with them now. Some of the embedded projects are multi-center by their nature but more multi-center projects will be awarded from the competitive awards. D. Stieren added that an area ripe for multi-center engagement is food safety, where NIST MEP is developing a national threshold capability pilot.

Presentation: Director's Update
Speaker: Carroll Thomas, Director of MEP

NIST MEP Program Budget Outlook (as of 6/13/18)
- FY 2018 Appropriation Status
  - Budget enacted on 3/23/18 at $140 million, a $10 million increase over previous years
  - Automatic funding level from OMB of $93.6 million through 5/22/18
  - Full access to Appropriation approved 6/1/18

- FY 2019 President's Budget Request
  - Program proposed for elimination with no funds for wind-down
  - House Full Committee mark on 5/17/18 at $140 million
  - Senate Subcommittee mark still to be determined, but they have announced they want to keep the NIST MEP Program at $140 million

C. Lyford said that in a Senate hearing held the previous day, several Senators pointed to the NIST MEP Program's value to the nation's economy.

NIST MEP FY 2018 Current Spend Plan
- Available Funding
  - Full year appropriation: $140 million
  - Carryover from FY 2017: $8.5 million
    - Total available funding: $148.5 million

- Planned Expenditures
  - Center renewals: $110 million
  - Supplemental Funding: $10 million
  - Strategic competitions: $8.1 million
  - Contracts: $5.7 million
  - NIST MEP Labor: $8.3 million
  - NIST MEP Overhead: $6.4 million
    - Total planned expenditures: $148.5 million

Reports to Congress
- Status of re-competition of the MEP Centers
  - Pursuant to House Report 115-231 accompanying the Consolidated Appropriations Act, 2018 (P.L. 115-141), NIST shall provide the Committee on Appropriations with updates on the status of re-competition of the MEP Centers
  - Provided by NIST on 5/23/18 for concurrence and transmittal to the Office of Management and Budget
- Efficiency

- o Enabled given FY2018 Budget apportionment, now in development. Due to the additional $10 million in funding, NIST MEP's efficiency rating will probably be under 11%. Congress has asked that NIST MEP not go over 13%
- Government Accountability Office (GAO) report on NIST MEP
  - o Entrance conference with GAO took place on April 5, 2018
  - o Package of materials provided to GAO in response
  - o Impact Washington and Mass MEP were chosen for visits
  - o Conference call with GAO, focused on data, took place on May 15, 2018

NIST MEP Economic Impact Analysis
- In April 2018, the W.E. Upjohn Institute for Employment Research published a study that found the NIST MEP Program generated a substantial return on investment for the $128 million invested by the federal government in FY2017. Some of the data included the following statistics:
  - o Jobs: 219,148
  - o GDP: $22.01 billion
  - o Return on investment: 14.5:1

State Manufacturing Policy Academy
- The Policy Academy: "Strengthen Your State's Manufacturers" will identify relevant manufacturing-related partnerships and policies to advance the economic development strategies for each participating state.
- The Policy Academy features state-based teams led by state economic development agency leaders and MEP Center Directors that will go through a year-long planning and implementation process.
- NIST MEP will customize this process and deliver expected outcomes through the following focus areas:
  - o Help states build on existing policy efforts and provide ideas about improving performance of existing approaches
  - o Provide access to national subject matter experts
  - o Provide a platform to discuss and refine ideas from other states facing similar challenges or opportunities
- The Policy Academy is organized by State and Science Technology Institute (SSTI) and Center for Regional Economic Competitiveness (CREC) who will partner with International Economic Development Council (IEDC) and others as needed.
- The first Policy Academy will include a cohort of up to four states from among 15 not holding 2018 gubernatorial elections: DE, IN, KY, LA, MS, MO, MT, NJ, NC, ND, PR, UT, VA, WA, WV
- A second cohort will be selected in 2019-2020 from the remaining states

Alaska Competition
- MAKE Partnership host (AK MEP), Southwest Alaska Municipal Conference (SWAMC) has decided to voluntarily end their cooperative agreement in Alaska as of 12/31/18.
- An "Alaska Information Forum" was held on 6/7/18 in Anchorage. The forum provided information detailing hosting an MEP Center.
  - o Targeted forum marketing outreach took place via e-mail
  - o Three groups requested and participated in 20-minute one-on-one sessions
- A "Notice of Funding Opportunity" (NOFO) is being finalized, with publication anticipated soon.
- A new Alaska MEP Center is expected to begin operations on 1/1/19.

Advisory Board and Staffing Updates
- Advisory Board
  - o Current Board count: 14; next membership expires in 2019

- A proposed new member is currently in the DOC's vetting process:
  - Patricia Moulton, President, Vermont Tech (Community College)
- NIST MEP Staff
  - Two new Federal Program Officers:
    - Sekou Johnson - Southwest
    - Julia Shriner - Midwest
  - Several other positions are in process, including the hiring of a new Regional Manager
- Center Directors
  - LA-Willie Smith, Sr. (Acting Director, MEPoL)
  - KS-Tiffany Stovall (Permanent CEO, MAMTC)
  - NE-Matt Allmand (Selected by host as Permanent Director, NE MEP)
  - TX-Mark Sessumes (Selected by host as Permanent Director, TMAC)

Discussion

- G. Spottswood asked how the bulk of the $8.1 million in expenditures for strategic competitions will be applied. C. Thomas said the awards have not been announced yet, therefore she was not able to discuss the specifics, but this money is exclusively for MEP Centers.
- M. Magee asked a question regarding the GAO audit. He commented that, in his experience, audits can be intensive and sometimes antagonistic. C. Thomas said NIST MEP is supporting the GAO report and providing them with all of the information they need, so it has not become antagonistic. GAO staff are trying to create an objective report that is more qualitative than quantitative.
- L. Byars said that the Upjohn report contains a wealth of economic information and she encouraged Board members to review it. The report is available at https://tinyurl.com/MEP-Upjohn-2018.
- G. Thompson, who attended the Alaska Information Forum, said that approximately seven organizations (12 people present, six participating by phone) attended the recent presentation detailing the requirements to become the next Alaska MEP Center. NIST MEP will work to align the new Alaska Center with the January cohort, giving them a six or seven-year window before a re-certification will be necessary.

The Future Is Now (FIN) Update

C. Thomas presented an update on the effort to establish an integrated National Network. Committees have been created under the overarching leadership team for the initiative that has been known heretofore as the FIN but will be known moving forward as the Center Leadership Team (CLT). Champions for each of the committees have been selected to lead the committees and report to the CLT.

The FIN/CLT Committees include the following:
- Knowledge Sharing
- Communications
- Manufacturing & Technology Solutions
- Network Evolution

Thirty-one out of the 51 Centers are represented on the CLT and across the committees. T. Bugnitz, Outreach Liaison, discussed the FIN/CLT meeting in Denver, which nine of the 11 members and several NIST MEP staff attended.

Next Steps
- Priorities
  - Define the vision of the network and develop value propositions and benefits
  - Provide guidance and oversight to Centers and committees
  - Develop outreach and communications to the network
- Actions
  - Foundation for Manufacturing Excellence (FORME) create a sponsorship package
  - Champions to engage potential committee members

- Champions will provide any relevant feedback from member conversations
    - Create boilerplate terms and conditions for multi-state engagements
    - Champions send recommended committee members to the CLT for review

Performance-based Panel Review

- Intent
    - The American Innovation and Competitiveness Act (AICA) requires a performance-based review to satisfy statutory requirement
        - Provide analysis, diagnosis and feedback to Centers regarding their strengths and opportunities for improvement, identifying deficiency areas, if any. Performance is defined as market penetration and economic impact
        - Includes an evaluation of a Center's own Performance & Evaluation Management System effectiveness, use, and self-assessment
        - Promotes the sharing of information across the MEP National Network
        - Identifies common Center performance gaps allowing the Centers to leverage internal and external resources to develop performance improvement practices
- NIST MEP's Data Reporting & Center Performance System
    - Operating plan
        - Annual plan linked to the Center's strategic plan that outlines the anticipated activities and results for the coming year
    - Quarterly data reporting
        - Center reports progress and client project data quarterly, plus staff and financial information and other elements
    - Annual review
        - Each year prior to annual renewal of federal funding, the performance of the Center is reviewed comprehensively by NIST MEP
    - External panel review
        - In the third and eighth year, the Center is reviewed by an external panel that assesses the Center's performance and performance evaluation management system
    - Third party client survey
        - NIST MEP sponsors a national survey conducted quarterly by an independent third party that collects data from Center clients on the business impacts of the services provided by their local MEP Center. NIST MEP uses this performance data as a core component in reviewing Center performance. The results also provide the Centers with a tool to measure their effectiveness, benchmark their performance against other Centers, and communicate their results to stakeholders
- Performance-based Panel Review roles
    - Panel Members – Who Reviews
        - Three Center Directors (MEP Center Leadership)
            - Role: Provide analysis, diagnosis and feedback to Centers regarding their strengths and opportunities for performance improvement, identifying deficiency areas, if any; performance is defined as market penetration and economic impact
        - Panel Chair (NIST MEP Staff)
            - Role: Facilitate process and key discussions; ensuring Panel Members have a complete and clear picture of the Center's overall performance. Develops Panel Summary Report on behalf of Panel
    - Panel Review Resources and Support
        - Regional Team (NIST MEP Regional Manager & Federal Program Officer)
            - Role: Provide clarifying and/or factual background information about the Center to the Panel Members
        - Panel Review Manager (NIST MEP Staff)

- Role: Manages Panel Review process; incorporating lessons learned for continuous improvement. Reviews and analyzes outcome of each Panel Review to identify potential best practices and common challenges across the National Network
- Performance-based Panel Review Inputs and Process
  - Panel Review Inputs
    - Center Performance and Profile Report (CPPR)
    - Center's strategic plan
    - Center's year one and two annual review reports
    - Center's response to pre-panel questions
    - Center's Performance & Evaluation Management System presentation
  - Panel Review Output
    - Panel summary report
      - Panel's feedback on Center strengths and opportunities for performance improvements, including the adequacy of the Center's Performance & Evaluation Management System
  - Process
    - Overall process and key review documentation is automated and streamlined in the Review Module located within NIST MEP's Enterprise Information System (MEIS)
    - The CPPR composed of Center data readily available in MEIS. The Centers are responsible for responding to key performance questions within the seven categories
- Performance-based Peer Panel Review Update
  - Round 1 complete: CO, CT, IN, MI, NC, NH, OK, OR, TN, TX, VA, and FL
  - Round 2 reviews in process May – July 2018: AK, IL, ID, MN, NJ, NY, WA, WI, and WV
  - The seven legacy Centers (RI, AZ, MD, KY, SD, NE and FL) will be the first Centers to undergo the fifth year legislatively required Secretarial evaluation
    - As of 6/13/18, RI and MD have been completed; AZ is almost completed, and KY and SD are underway

NIST MEP Cybersecurity Industry Efforts

- C. Thomas noted that promising efforts are emerging from integrating what the NIST IT and Engineering Laboratories are doing with what NIST MEP is working on. Further discussion was tabled until the Supply Chain Development Working Group's presentation later in the meeting, which will have a large focus on current Cybersecurity efforts.

Knowledge and Learning Management

- Initial Goals/Objectives
  - Create a system to connect those who know with those who want to know (an 'Ask the Expert System')
  - Establish a structure of content collection for the Learning Management System (LMS)
  - Develop a system of rating that builds our abilities to meet today's and tomorrow's National Network and client needs
- Planning and Development
  - Establish a Coordinating Committee (Steering Group)
  - Create a framework that defines and aligns actions, roles, and responsibilities
    - FORME LMS Platform
    - Future is Now/CLT: Knowledge Sharing Committee
    - NIST MEP system learning
  - Establish small teams to implement components of the plan

Workcred Research Project
- Project sponsored by NIST MEP in coordination with NIST Standards Coordination Office (SCO) via Workcred, an affiliate of ANSI
- Primary Objective: to examine the quality, market value, and effectiveness of manufacturing credentials
- The study will be released June 2018. Anticipated findings include the following:
  - Project will contribute to the body of knowledge for manufacturing-related skills credentials
  - Project evaluates the quality of the credentials against national and/or international standards
- Project identified the following:
  - Many choices of credentials
  - Significant lack of independent research on quality, market value, and effectiveness
  - Skill gaps that could be filled by creating new credentials and replacing existing ones that are ineffective
  - Credentials being used by manufacturers that are representative of the industry
  - Need for new credentials
- Project determined the following:
  - Market value of credentials based on data from the credential issuer
  - How the credential is being used
  - How the effectiveness of the credential is being determined in work settings
- Summary recommendations
  - Improve understanding about the content and value of credentials
  - Expand the use of quality standards for credentials
  - Strengthen relationships between manufacturers, education, and training providers, and credentialing organizations
  - Add employability skills components to existing and new credentials
  - Create credentials that focus on performance and address new roles
  - Increase the number of apprenticeships and expand apprenticeships to more occupations

Discussion
- M. Isbister asked how this study compared with other organization's efforts, such as the National Association of Manufacturers' (NAM). C. Thomas replied that much of the information will be new to them. She added that another organization, the American Association of Community Colleges (AACC) has also expressed an interest in the findings. NIST MEP will look to explore opportunities to work with both organizations moving forward.
- M. Magee added manufacturers want credentials that are transferable and there is a lot of room for improvement in the industry.
- K. Rennels recommended the importance of being able to stack credentials so employees are able to build towards advanced degrees and progress within a company. She stated this is a way of creating loyalty with younger employees.

2017 Hurricane Disasters: NIST MEP Assisted Manufacturers
- NIST MEP facilitated five awards to MEP Centers between September 2017 – January 2018: TX, LA, FL, GA, and PR
  - $6.2 million total funding
  - Over 800 planned assessments in PR alone, over 1,000 total planned assessments among the five states/MEP Centers
  - Used NIST Authority, Non-Competitive Award process, no cost share
- Objectives:
  - Identify obstacles keeping affected manufacturers from returning to normal operations
  - Develop plans to support recovery

- Connect small and medium-sized manufacturers (SMMs) to local, state, and federal resources
- Collect information, best practices, etc., and disseminate
- Development of proactive strategies for risk avoidance by U.S. manufacturers
- Recovery planning for manufacturers across the U.S.

NIST MEP Program Turns 30

The NIST MEP Program has marked its 30-year anniversary (1988-2018) and will be holding an informational recognition event in late November. C. Lyford is spearheading the planning for this event and encouraged Board members to send any ideas to him or C. Thomas.

Interactive Working Session: Spreading the Good Word – Best Practices for Powerful Advocacy
Speaker: Lisë Stewart, EisnerAmper LLP

L. Stewart facilitated a conversation with the Board on best practices for powerful advocacy.

Guidelines for Powerful Advocacy
- Keep messages short and concise
- Be passionate, polite, and positive
- Aim for the heart
- Don't bury the lead
- Create curiosity
- Make it relevant
- Make it personal
- Include pictures, numbers, and stories
- Make it viral
- Connect in the moment
- Have a call to action and follow up

Discussion
L. Stewart posed the question, "What does the Board need from NIST MEP to help educate others about the NIST MEP and MEP National Network mission and impacts." The group brainstormed and came up with a list of resources currently available and others that could be developed.
- Success stories, such as those featured on NIST MEP's Manufacturing Innovation Blog and those housed on the Success Story portion of the NIST MEP website
- Access the statistics from both state and national levels available on the NIST MEP website, ready for download in concise, portable formats
- Sharing of best practices on how to convince manufacturers to avail themselves of what is available to them in their local Centers
- Data on the promising future of manufacturing; that manufacturing is not dying, just changing
- Be sure to tailor the message to your audience
  - Know their mission and how it aligns with yours
- Connect with manufacturers that are not a part of the MEP National Network
- Bring solutions to the table and demonstrate a willingness to contribute
- There is some benefit to demonstrating the real-world threats to manufacturers that do not take advantage of the assistance from Centers; however, the stronger story is that NIST MEP is one of the most effective private-public partnerships in the history of the United States.
- The message can be carried beyond educating policy makers to communicating to local organizations as well. Board members could look for opportunities to speak or lead tours.
- Board members can share their own personal stories of the successes of working with MEP Centers

<u>Presentation: Update from the Manufacturing U.S.A. Institutes</u>
Speaker: Frank Gayle, Deputy Director, NIST Office of Advanced Manufacturing (OAM) and the Advanced Manufacturing National Program Office

<u>Manufacturing U.S.A. Background</u>
- Mission: Connecting people, ideas, and technology to solve industry-relevant advanced manufacturing challenges
- Vision: Global leadership in advanced manufacturing
- The U.S. leads the world in innovation and inventions, but the manufacturing capabilities and new products get developed in other countries
  - Part of the problem is in the challenges in scaling up from the lab to manufacturing quantities and quality
- Addressing National Needs:
  - The U.S. trade balance has been trending downward
    - One significant result being lower total employment of the U.S. manufacturing workforce
  - Congress passed the bipartisan Revitalize American Manufacturing and Innovation Act (RAMI) in 2014, authorizing the Advanced Manufacturing National Program Office and what would eventually be the current program: Manufacturing U.S.A.
- $1 billion federal investment matched by over $2 billion non-federal funds
- Manufacturing U.S.A. Technology Projects Bridge Gaps
  - Trying to lure private sector investment into the scale up process, which can be very expensive and high-risk, and bringing people together to solve some of the problems facing manufacturers today
  - While large companies take the lead at the 14 shared-use facilities, SMMs and academia are essential partners. Each facility has an area of focus that is a critical industry need and serve as effective collaboration spaces for pre-competitive applied R&D
  - 65% of members are manufacturers; of those, two-thirds are small manufacturers
  - Education and workforce development has ramped up in the last couple years – from 28,000 students in 2016 to 185,425 students currently in institute projects
  - 273 major collaborative projects underway

<u>NIST Functions in Leading the National Program Office</u>
- Coordination
  - Network meetings (semiannually)
  - Institute Directors (monthly)
  - Interagency meetings (biweekly)
  - Communications Team (biweekly)
  - Education/Workforce Team (biweekly)
- Network Support
  - Online shared services
  - Resource of best practices, reference materials, program calendar
  - 15 secure collaboration sites
- Communications
  - ManufacturingUSA.com
  - Manufacturing.gov
  - Manufacturing U.S.A. Annual Report
  - Triennial Strategic Plan

<u>MEP Center staff embedded at all 14 Manufacturing U.S.A. Institutes</u>
- 14 NIST MEP-funded projects
- About $17 million invested
- Centers have successfully used the projects to learn more about the Institutes' technology areas and position themselves with SMMs nationally

- Institutes benefit from MEP Centers' reach with SMMs
- Some state Centers are too geographically-centered and would benefit from better engagement across state. Raising the profile of the MEP National Network may help foster a more national perspective

Highlighted Projects
- Digitizing Legacy Equipment as part of the Digital Manufacturing and Design Innovation Institute (DMDII)
- Embedding Project between MEP Centers in MI (MMTC) and TN (TN MEP) and two Institutes, the Lightweight Innovations for Tomorrow (LIFT) and Institute for Advanced Composites Manufacturing Innovation (IACMI), to design lightweight car frames

Challenges ahead
- Global competition
  - China and Canada have started up Manufacturing U.S.A.-like Institutes
- After network and institute start-up
  - Post-cooperative agreement institute performance
  - Federal engagement in the long term
  - RAMI changes
  - Measuring technology diffusion and program success
  - MEP Center support of the Institutes
  - New Institutes

Discussion
- C. Cason asked where funding for the Manufacturing U.S.A. projects comes from in the NIST MEP budget. C. Thomas said the $17 million contributed by NIST MEP came through the competitive process. Going forward, there will no longer be embedding awards, because they are meant to be self-sustaining. However, there will still be competitive awards. D. Stieren added that NIST MEP does not know how many of the 14 Institutes will continue to have embedded MEP Center staff. There will continue to be relationships between Centers and the Institutes, but the embedding project was meant to help the MEP National Network learn about the Institutes. C. Thomas said that there were some Centers that wanted to be involved in the embedding project but did not get the opportunity; they will now be able to go after competitive awards proposing new embeds.
- C. Cason further asked how the collaborations currently underway will continue to be supported. C. Thomas said the competitive awards were intended for launch only, but some of the collaborations have spun projects that provide program income.
- B. Hawes asked for more information on the next institute to be launched. F. Gayle said the next one will be a Department of Energy Institute coming the summer of 2018.
- J. Wright asked about how the Institutes get started and how the individual companies initially get involved. F. Gayle said the Institutes usually include a team of over one hundred proposed members in their applications. The most important thing is to increase awareness about the Institute's technology space that is available in the many areas of interest, particularly making the MEP Centers more aware of the technology capacities of the various Institutes.
- C. Cason asked how many of the companies participating on projects at one or more of the Institutes are SMMs. F. Gayle said he didn't have that number, but it seemed like there are a large number engaging in the projects in some capacity. D. Stieren added that the embedding projects were focused on developing persistent business models while also being the means by which MEP Centers could engage SMMs in the technology focus areas and market opportunities associated with the individual Institutes. With the first round of five projects, well over 1,000 SMMs were engaged as a result of the embeds.
- C. Cason asked what the barriers are for SMMs to participate. F. Gayle said membership fees could be a part of it, as well as time commitments. D. Stieren added the geographical dispersion in larger states is a barrier to small companies and NIST MEP has been trying to develop a national capability with regional footprints to access those Institutes that have been embedded or have satellite nodes. M. Hsu said that all of the projects require an SMM to be

involved, but there are far more SMMs than there are projects. SMMs generally do not have the man hours or travel budgets necessary to fully participate. This is an area where the MEP National Network may be able to help; MEP Center staff could go to meetings and share the information with SMMs unable to attend.

- L. Taito asked about who owns the intellectual property developed from each project. F. Gayle said this is a major issue for which each of the Institutes have had to develop their own policies. A guiding principle is that all members can use research for development but not commercialization.

MEP Advisory Board Working Group Updates

Supply Chain Development Working Group
Speakers: Matt Newman, MEP Advisory Board; Dave Stieren, NIST MEP

Working Group Deliverable
- Guidance and perspective on the MEP National Network support and development of manufacturing supply chains with an emphasis on defense suppliers regarding Defense Industrial Base gaps; and expertise on who should be brought into the discussion to provide insight on defense supplier gaps

DoD supply chain is a major area for growth opportunities for the MEP National Network. It encompasses many areas, highlighted by the following:
- Cybersecurity assistance
- Involvement in Defense Industry Adjustment efforts of the DoD Office of Economic Adjustment (OEA)
- Working with the DoD-sponsored Manufacturing U.S.A. Institutes

NIST MEP sought the Advisory Board's perspectives on the strategic importance of this work to the MEP National Network, including focusing of the messaging to MEP Centers, the DoD, and most importantly, small U.S. manufacturers going forward.

NIST MEP Cybersecurity Update
- MEP National Network Cybersecurity Program
  - o >1700 small manufacturers served since 2017
  - o 150 projects completed
  - o 18 MEP Centers currently doing OEA Cyber project work, funded at $4.6 million
  - o 165 awareness/training events

MEP National Network Cybersecurity Progress (as of 6/13/18)
  - o 25% of Defense contractors are currently DFARS/800-171 compliant
  - o 40 MEP Centers are active in the NIST MEP Cybersecurity Work Group
  - o 39 out of 51 MEP Centers have cybersecurity practice. Every Center should be able to provide cybersecurity assistance, whether directly, through a go-to resource in the region, or a third-party service provider

Discussion
- G. Spottswood asked how the Centers receive their cybersecurity training. D. Stieren said that the majority of Centers with cybersecurity practice utilize third party service providers. Some Centers have one or two dedicated cybersecurity staff members. The FIN group is developing a "Cyber in a Box" that will provide Centers with all the resources they need for cyber practice.
- L. Taito said that as a customer she would want some kind of standardized national compliance assessment. D. Stieren said they are currently trying to figure out how to develop a national service capability and a technology area for the MEP National Network. Compliance with DFARs and 800-171 have been the drivers heretofore. NIST MEP will be taking the approach of setting up go-to regional Centers to develop national capability.

- J. Wright asked about the compliance certifications available. M. Newman discussed the differences between compliant, certified, and validated certifications. He went on to mention that it is in a company's best interest to demonstrate some level of cybersecurity certification to its customers, such as microbadges. C. Thomas said NIST MEP has issued a proposal for all of the Centers to be compliant themselves. J. Wright suggested the MEP National Network market itself as a trusted, reputable cyber resource, particularly given the uncertainty about the thousands of cybersecurity service providers and the opportunity for things to turn out very badly.
- D. Stieren said that DMDII recently stood up a DoD cybersecurity for manufacturing hub. This will become an integral part of what DMDII does. As this hub evolves, the MEP National Network will be positioned to be the service provider to the supply chains of the OEMs that are participating in DMDII. These are entirely new supply chains for NIST MEP.
- G. Spottswood asked how NIST MEP is addressing the ongoing issue of keeping up with changes to guidance and requirements for certification. D. Stieren said NIST MEP is strategically positioned to keep up with this information at the national level. A lot of the guidance changes are coming out of work done in the NIST Labs, DHS, and DoD. NIST MEP is working closely with these organizations to stay abreast of changes so they can inform the Centers as they occur. Providing meaningful assistance could be an ongoing opportunity for Centers.
- M. Newman said he was able to get a list of all of the Oklahoma manufacturers in DoD's supply chain. MEP Centers have the ability to get this data for each state. He asked the Board to approve getting each Center Director a DoD supply chain list for their state and share it with their elected officials. C. Thomas said this task can go through the Working Group to address.

The Board asked the two Center Directors observing the meeting to share their perspectives on the Cybersecurity discussion.

- M. Sessumes said the MEP National Network is most effective at providing practical solutions to manufacturers and cybersecurity is no different. TMAC is going to follow a people-based approach, focusing on organizational policy, procedures, training, and audits/follow-up. Data penetration testing requires a level of capability and risk that is beyond most universities. The National Network could make a significant impact by just helping clients get the basics of cybersecurity in place. He also said that Center Directors need to be sensitive to the difficulty in assessing the value of those incidents that don't happen and brought up the challenge of providing reportable impacts for customers implementing cybersecurity projects. D. Stieren responded that when the MEP National Network helps get a DoD contractor compliant, that amounts to retained sales, which are a measurable impact.
- M. Sessumes said that Texas has roughly 80,000 man hours of capacity to generate $500 million of impact. He questioned "Where our time is best spent?" Cybersecurity is important, but most of TMAC's customers are much more interested in assistance with reducing their inventory, because that is measurable. Alignment of the overall metrics measured by NIST MEP to some of these efforts is important.
- T. Bugnitz said part of the job of Center Directors is to get the necessary things done in spite of metrics, budgets, and matching. Cybersecurity falls into this category. NIST MEP needs to emphasize that this is a core function of the National Network, not just another service area. He recommended that Center Directors hire someone to constantly plug cybersecurity for a year, making the state aware that the Center is available as a go-to resource.

Performance/Research Development Working Group
Speakers: Leslie Taito, MEP Advisory Board; Ken Voytek, NIST MEP

Working Group Deliverable
- Input and guidance on the management portfolio and Program performance measurement processes of the MEP National Network. In addition, the working group will provide feedback and suggestions for establishing a research agenda that will support and enrich NIST MEP's performance and evaluation management system through improved Center evaluation processes, the promotion of system learning, and by enhancing the portfolio of network information services for Centers.

The deliverable is still in draft, pending Chair review. The draft consists of four sections: background, observations, continuous improvement, and recommendations (including some research suggestions)
- Overarching themes include the following items:
  - NIST MEP's bottom line focus on metrics distinguishes it from other programs
  - Focus metric on outcomes, not just how many projects
  - Many of the findings have been reviewed by external organizations looking at NIST MEP's performance measurement scheme

Final report will be delivered to the Board by September 2018

Questions to the Board from the Working Group
- What factors are most important in explaining Center performance variation across the MEP National Network?
- How can we improve MEP National Network efficiency and effectiveness with limited resources?
- Would it be worth NIST MEP's investment to engage outside resources to capture lessons learned from Center's new initiative engagements; perhaps developing a manufacturing research agenda?
- How can we accurately capture multi-center delivery of client impacts to ensure proactive collaboration by Centers involved and not be a roadblock to collaboration?

Discussion
- C. Thomas suggested completing the draft and distributing it to the Board for feedback rather than having an open discussion during this meeting.
- J. Wilcox asked if the Board felt the objective function is defined well enough, in terms of what NIST MEP is seeking to improve. C. Thomas said the objective is to ensure that NIST MEP is getting the information needed for continuous improvement.
- K. Voytek said that the main thing NIST MEP has struggled with is that the National Network served about the same number of SMMs for the last ten years.
- K. Voytek said other measures that could get at impact may include survivability. SMMs that have engaged with the National Network have stronger lasting power. Improvements to SMMs' competitiveness and productivity are listed in the legislative objective for NIST MEP's Program. NIST MEP provides Centers with a wealth of information on their states that they should be taking ownership of and making use of in their own ways.
- L. Taito said that the 11 years of data they reviewed showed the MEP National Network has had very healthy performance metrics. The working group is looking for ways Centers can use this information and additional metrics in a more meaningful fashion.
- K. Voytek said the National Network should take advantage of net promoter score surveys.
- B. Hawes suggested looking at different specializations to see what type of metrics can be applied to the MEP National Network. Survivability is clearly a health indicator.
- M. Isbister said her Center Board often asks about repeat engagements as a way to infer customer satisfaction. K. Voytek said NIST MEP has repeat versus new client metrics; the national repeat client rate is around 60-65%.
- M. Isbister said Centers struggle with the disincentive to work with small clients because of the smaller impact compared with large companies. She also said that due to the uncertainty of continued federal funding, there is a move towards looking more like a for-profit business. This creates a tendency to drive Centers towards larger companies that can pay more for services. She asked if there is anything NIST MEP can offer Centers to help them counterbalance this since NIST MEP's mission is to help SMMs. L. Taito said the working group has been having this discussion and considered bifurcating some of the questions asked to better target the very small manufacturers. C. Thomas said there is nothing wrong with Centers seeking additional funding sources, but the variability between locations would not allow for a requirement across the National Network. K. Voytek said that typically Centers that have state funding do much better than those without. Having a diversified portfolio provides a buffer in times of economic uncertainty. Centers are also exploring tiered pricing schemes.
- K. Rennels said that it is critical to start working with high schools and universities to talk to students about what manufacturing is today and where it is going.

- C. Cason said the panel review process presents opportunities for gaining insights on challenges and key factors in performance variation. K. Voytek said that in the new panel review process, Centers are asked to self-identify some of their challenges and there have been some common challenges and factors emerging. He said that one measure most Centers are struggling with is market penetration.
- J. Wilcox asked if there is a sense of how uneven performance is across Centers. L. Taito said they could send out a packet to Board members on Center performance data. K. Voytek said they have seen the distribution shifting in the right direction. It is not difficult to focus on the lowest performing few Centers, the more challenging thing will be getting the majority of mid-performing Centers moving in the right direction. Part of this is rethinking how NIST MEP assesses Centers so that they have a more refined picture.

Executive Committee Working Group
Speaker: Cheryl Gendron, NIST MEP

Working Group Deliverable
- Guidance on future Advisory Board leadership and insights from the Board Assessment; Board membership; Board role in regards to MEP Center boards

C. Gendron discussed the statutory role of the Advisory Board, which is to give advice to the NIST Director.

New Member Support
- Implementing an informal mentoring program
- Job roles and responsibilities document is in development
- Glossary of commonly used NIST MEP and MEP National Network terms is in development
- Onboarding presentations are currently in place
- If Board members have any other ideas for new member support, they should email them to any of the Executive Committee Working Group members

Discussion of Current Bylaws
- Right amount of prescriptive direction
  - Attendance at meetings: expectations clear that Board members are encouraged to not miss more than two meetings in a row
  - Succession plan will be kept as is, with the Vice Chair succeeding the Chair
  - Recommend not adding additional member types to the Bylaws over and above what is already in statute; however, the Executive Committee Working Group will consider internally what skill sets are needed on the Board as positions become available
- Collecting ideas for future changes
  - Communicate any suggested changes to the Executive Committee Working Group
  - Process for change is extensive so all suggestions will be collected, and changes made as a group in the future

Discussion
- M. Newman asked that any of the documents that the Board should have access to be stored on a share drive. C. Gendron will send an email following this meeting outlining what is available on MEP Connect, a shared network available to all Board members.
- C. Cason asked about the opportunity for representation on the Board in the area of food processing. C. Thomas said this is a great idea as this is going to be a significant focus area for NIST MEP and the MEP National Network.

Wrap-Up/Public Comments

Public Comments
There were no public comments.

Concluding Comments
- Board members said that the information they glean from these meetings is extremely valuable to pass along to their own Centers and organizations.
- M. Isbister said that the process used for selecting MEP Advisory Board members is a good one and has resulted in very diverse perspectives that serves the advisory aspect of this role well.
- K. Rennels reiterated her suggestion for engaging young students, getting manufacturing in their minds so they can start working on valuable skills. This is an opportunity that needs to be explored and is probably part of why NIST MEP's numbers are flat.
- M. Newman commented on the progress Center boards have made in revamping their bylaws and making other improvements. It is also satisfying to see the Advisory Board doing what they are asking the Center boards to do.
- B. Hawes said education has been the key to this meeting. She heard many things around the table that can lead NIST MEP to become a better learning organization.
- C. Cason complimented NIST MEP for concepts associated with cross-Center pollination. It is a challenge to figure out how it is going to be done, how it is going to be evaluated, and who will get what credit, but it is a good step forward.
- M. Magee said collaboration is the key to a successful future.

Next Meeting
The next Advisory Board Meeting is set for September 12, 2018, in Kansas City, Missouri. Board members were invited to consider attending the MEP National Network Update meeting on September 11 and FORME's Best Practice Conference on September 12-14 in Kansas City, Missouri

Adjournment
With no further business, J. Wilcox adjourned the meeting at 4:03 p.m.