National Institute of Standards and Technology
Manufacturing Extension Partnership
Advisory Board
Minutes of the June 27, 2024 Meeting

Background

The Department of Commerce (DOC) National Institute of Standards and Technology (NIST) Manufacturing Extension Partnership (MEP) Advisory Board (Board) met in an open session from 12:30 p.m. to 5:06 p.m. on June 27, 2024, via videoconference. The meeting had 32 attendees, including Board members, NIST and NIST MEP staff, participants from MEP Centers, guest speakers and observers. Jennifer Rosa is the Designated Federal Officer for the MEP Advisory Board.

Attendees

Board Members
Donald Bockoven, CEO, Fiber Industries LLC
Dr. Jermaine Ford, President, Florence-Darlington Technical College
Louis Foreman, CEO, Enventys Partners
Michael Garvey, President and CEO, M-7 Technologies
Bernadine Hawes, Chair, MEP Advisory Board and Senior Advisor, Econsult Solutions, Inc.
Miriam Kmetzo, Executive Vice President, Welding Technology Corp.
Chris Mathews, National Custom Hollow Metal Doors and Frames & Maple Leaf Awning & Canvas
Pat Moulton, Central Vermont Recovery Officer
Dr. Annette Parker, President, South Central College
Candice Smith, Director of Enterprise Engineering, The Boeing Company
Tyrome Smith, Director of Partnerships, The Common Mission Project
David Vasko, Industry Consultant, NIST

NIST MEP Participants
Scott Dockum, Network Agreements Division
Nathan Ginty, Chief, National Platforms Division
Aaron Levy, Chief, Outreach and External Affairs Division
G. Nagesh Rao, Acting Director
Jennifer Rosa, FACA Officer; Outreach & External Affairs Division
Michael Taylor, National Programs Division
Ben Vickery, National Platforms Division
Marlon Walker, National Programs Division

Guest Speakers
Mojdeh Bahar, Associate Director for Innovation and Industry Services, NIST
Robert Fangmeyer, Director, Baldrige Performance Excellence Program, NIST
Laurie Locascio, Under Secretary of Commerce for Standards and Technology and NIST Director
Bethany Loftin, Director, Technology Partnerships Office, NIST
Staci Miller, Director, West Virginia Manufacturing Extension Partnership (WV MEP)
Phil Mintz, Director, North Carolina Manufacturing Extension Partnership (NC MEP)
Michael Molnar, Director, Office of Advanced Manufacturing, NIST

Mike O'Donnell, Director, Center for Industrial Research and Service (IA MEP)
Danica Rome, Vice President, Kansas Manufacturing Solutions (KMS, Kansas MEP)
Ranae Stewart, Senior Executive Director, Purdue MEP (Indiana MEP)
Tiffany Stovall, CEO, Kansas Manufacturing Solutions (KMS, Kansas MEP)
Ingrid Tighe, President, Michigan Manufacturing Technology Center (MMTC, Michigan MEP)

Observers

Alyssa Rodrigues, Alaska MEP
Carrie Hines, Foundation for Manufacturing Excellence
Dave Garafano, Arizona MEP
Ryan Winstead, Battra, LLC.
Art Fisher, BBGH
Rebecca Singer, CIFT
Rustyn Stoops, Delaware MEP
Todd Weinstein, ESG OWL
Kylie Milliken, Fahe
Bill Donohue, GENEDGE
Joi Neal, NIST MEP
David Boulay, IMEC
Kelley Sowards, Impact Washington
George Chao, Manex
Jennifer Hagan-Dier, Manufacturer's Edge
Jeff Spain, MEP at Columbus State
Rocky Case, Manufacturing Works
Sevan Simonian, NIST MEP
Patricia Moulton, MEP Advisory Board (former)
Douglas Devereaux, NIST MEP
Gerson Santos-Leon, NIST MEP
Maria Bancroft, Missouri Enterprise
Dusty Cruise, Missouri Enterprise
Sandy Crist, MMA-MEP
KeAnne Hoeg, NC MEP
Allegra Chilstrom, Neal R Gross
JenniferSinsabaugh, New Mexico MEP
Peter Hogya, NextCorps
Kathleen Martin, NextCorps
Chris Musumeci, NH MEP
Mark Bardini, NIST MEP
Jason Boehm, NIST
Deborah Ahn, NIST MEP
Nicole Ausherman, NIST MEP
Mellissa Ayala, NIST MEP
Robert Barnes, NIST MEP
Megean Blum, NIST MEP
Stephen Campbell, NIST MEP
Nadine DeJesus, NIST MEP
Bryana Head, NIST MEP
Diane Henderson, NIST MEP
Mary Kombolias, NIST MEP
Brian Lagas, NIST MEP

Wiza Lequin, NIST MEP
Jyoti Malhotra, NIST MEP
Heather Mayton, NIST MEP
Thomas Nalepa, NIST MEP
Katie Rapp, NIST MEP
Saul Rojas, NIST MEP
Mark Schmit, NIST MEP
Carol Shibley, NIST MEP
Julia Shriner, NIST MEP
Megan Spangler, NIST MEP
Nico Thomas, NIST MEP
Savann Thorn, NIST MEP
Ben Vickery, NIST MEP
Marlon Walker, NIST MEP
Samm Webb, NIST MEP
Thomas Williams, NIST MEP
Timothy Flynn, NIST MEP
Matthew Fieldman, NIST MEP
Peter Connolly, NJMEP
Aaron Patrick, Ohio MEP
Dave Rowland, Oklahoma Manufacturing Alliance
Mike Vanier, OMEP
Rikki Riegner, PA MEP
Matt Watson, Polaris MEP
Michelle Kakacek, SD Manufacturing & Technology Solutions
Jeffrey Blander, U.S. Department of State

Welcome and Introductions

Speakers:

Jennifer Rosa, FACA Officer
Laurie Locascio, NIST Director
Bernadine Hawes, Chair, MEP Advisory Board
Don Bockoven, Vice Chair, MEP Advisory Board
Mojdeh Bahar, Associate Director, Innovation and Industry Services (IIS), NIST
G. Nagesh Rao, MEP Acting Director

J. Rosa called the meeting to order and briefed the Board on the guidelines for the meeting, as set forth in the Federal Advisory Committee Act (FACA). She led a roll call introduction of Board members and acknowledged the Board members who were unable to attend: Beth Bafford, Winston Chang, and Sean Ketter. J. Rosa outlined the agenda for the meeting and turned the meeting over to B. Hawes to introduce Under Secretary of Commerce for Standards and Technology and NIST Director Laurie Locascio. Dr. Locascio thanked the Board for inviting her to join the meeting on behalf of herself and Secretary of Commerce Gina Raimondo. She summarized a recent visit to Albuquerque where she met with Theta Plate Incorporated, a third generation family-owned business that has been able to expand its service offerings while maintaining high levels of quality thanks to the work of the New Mexico MEP and the MEP National Network (MEPNN). She noted that she received numerous questions about MEP during her recent testimony in front of the House Committee on Science, Space, and Technology, which led her to feel optimistic that Congress will continue its bipartisan support of the MEP program. She thanked the Board members for their service and urged them to be candid with their feedback during the meeting to assist staff in successfully implementing the MEP National Network 2023-2027 Strategic Plan.

B. Hawes thanked the Board members for their engagement during the past year and encouraged them to continue those efforts in their local communities. D. Bockoven spoke about the focus and clarity that the strategic plan has brought to its three pillars and the importance of leveraging NIST's manufacturing ecosystem through the MEPNN. N. Rao thanked the Chair and Vice Chair for their leadership and thanked Pat Moulton for her service, as she is stepping down from the Board. He thanked his colleagues in Innovation and Industry Services, NIST staff, and the MEP Center Directors for their support and guidance as he has taken on the role of MEP Acting Director.

Brief Update on MEP Operations

Speakers:

G. Nagesh Rao, MEP Acting Director

Budget Update

- The FY 2024 appropriation was $175 million for MEP.
- The House and the Senate are still deliberating FY 2025 spending levels for the Department of Commerce.
    - The House markup bill indicates $175 million for MEP.

Notice of Funding Opportunities (NOFOs)

- The Florida NOFO is open until July 1, 2024.

Updated General Terms and Conditions

- The updated general terms and conditions will be included in Center awards.
- The NIST MEP staff are working to help guide MEP Centers through a constant and agile improvement process.

New Hires and Personnel Changes, March 2024-Present

- Nearly at 95% occupancy for all critical full-time equivalents (FTEs)
- Network Agreements Management (481)
    - Scott Dockum, Group Manager
    - Deborah Ahn, Federal Program Manager
    - Mark Bardini, Federal Program Manager
    - Timothy Flynn, Federal Program Manager

    - Thomas Nalepa, Federal Program Manager
- National Platforms (484)
    - Saul Rojas Muniz, IT Program Manager
- National Programs (483)
    - Mary Kombolias, Management and Program Analyst
    - Stella Vewessee, Industrial Specialist
- Outreach and External Affairs (485)
    - Aaron Levy, Division Chief
    - Jennifer Rosa, Senior Communications Specialist (Transfer)
    - Nicole Ausherman, Senior Communications Specialist (Promotion)

Supply Chain Optimization and Intelligence Network (SCOIN) Anniversary

- MEP celebrated the one-year anniversary of SCOIN in Greenville, South Carolina, at an event organized by Andrew Carr, South Carolina MEP Center Director, in partnership with Carrie Hines and Kelly Buchanan from the Foundation for Manufacturing Excellence.
    - Attended by supply chain experts from MEP Centers across the country
    - Included visits to GE Vernova and BMW

Federal Laboratory Consortium for Technology Transfer (FLC)

- N. Rao attended the FLC meeting in Dallas, Texas along with M. Bahar, B. Loftin, and J. DiVietro.
- NIST has built inroads with FLC to push forward on MATTR and MATTR+ endeavors, using MEP Centers as a conduit of engagement.

Manufacturing USA

- MEP continues to collaborate with Manufacturing USA institutes, including through memorandums of understanding (MOUs).
- MEP entered into an MOU with MxD focused on digital manufacturing.
    - Collaborative efforts under this MOU include:
        - Cybersecurity adoption
        - Advanced manufacturing services
        - Manufacturing workforce development
        - Utilization of the organization's resources
- CESMII, the smart manufacturing institute, has agreed to waive membership fees for all 51 MEP Centers.
    - MEP is working on an MOU focusing on smart manufacturing for energy and adjacent sectors.
- MEP continues to explore the intersections of cybersecurity in manufacturing with CYMANII, the cybersecurity institute, and they are developing a new MOU.

Additional Partnerships

- MEP is continuing to focus on building and strengthening relationships outside of NIST with federal agencies that have aligned missions, including:
    - Department of Energy
    - United States Patent and Trademark Office
    - National Science Foundation
    - Economic Development Administration
    - Association of Procurement Technical Assistance Centers
    - Minority serving institutions
    - National laboratories

- MEP recently finalized an MOU with the Department of Transportation.

Light Interactions and Scorecard Metrics

- In April 2024 NIST MEP began collecting light interactions from MEP Centers.
    - This reporting capability allows Centers to submit interactions with clients that may not be suitable for NIST MEP's client impact survey, as long as there is a transfer of value included in the interaction.
        - These interactions will not prompt a survey but will still be counted towards clients served.
        - Examples of light interactions include webinars, events, and workshops.
    - This shift is a direct response to feedback received from the Centers about challenges and limitations posed by the survey structure, and it ties into the strategic plan goal to increase market penetration.
    - Since April 2024 there have been over 2,000 light interactions reported.

Listening Tour

- Since assuming the role of MEP Acting Director, N. Gao has travelled to various MEP Centers in an effort to hear from Center Directors and staff directly about their successes, challenges, and pain points.
    - After the FLC meeting in Dallas, he visited the Texas Manufacturing Assistance Center (TMAC).
    - On a visit to the New York MEP he was able to see the Center's work with CESMII at Rensselaer Polytechnic Institute (RPI).

IIS Program Update

Briefing from Associate Director of Innovation and Industry Services

Speaker:

Mojdeh Bahar, Associate Director, Innovation and Industry Services, NIST

MEP Leadership

- G. Nagesh Rao has been serving as the MEP Acting Director, maintaining continuity and momentum in implementing the strategic plan as the MEP program undertakes a diligent search for a new Director.

Strategic Plan Implementation

- MEP is working with Battra and Deloitte to implement the strategic plan.
- Battra is assisting NIST MEP and the MEP Center leadership team on a change management and strategic communications plan.
    - Battra will synthesize key findings about NIST MEP, feature actionable recommendations, identify tactical steps, and provide communications recommendations.
        - Battra has identified interrelated themes that fall under three general categories:
            - Strategic direction
            - Communication
            - Staff and skills

    - Proactively executing this strategy will lead to effective implementation and measurement of the strategic plan and improve communication and collaboration between NIST MEP, the Network, and relevant stakeholders.
        - Identifying clear owners and expectations for outcomes will increase accountability, boost employment productivity satisfaction, and improve morale.
    - This is an interactive, ongoing process which began in the fall of 2023 and will continue throughout 2024.
    - Battra is also providing quarterly leadership training and executive coaching to ensure that MEP leadership is aligned and enabled to successfully operationalize the strategic plan.
    - Battra is providing guidance on the makeup and governance of the strategic implementation working groups for each pillar of the strategic plan and creating a roadmap to align the working groups.

Metrics

- Metrics must be carefully designed to accurately capture the impact of MEP's efforts and progress towards meeting goals in order to demonstrate effective execution of the strategic plan.
- While metrics are vital, they must be complemented by real world examples and stories.
- The strategic plan has several objectives supporting the three pillars, including:
    - Increasing market penetration
    - Increasing impact generation
    - Effectively communicating MEP's success stories
- To achieve these goals, the MEPNN must continue to adapt and evolve.
- In September 2022, NIST MEP's Performance Evaluation and Economic Impacts Division initiated the Performance and Evaluation Working Group.
    - The working group explores the areas of reporting, survey, and metrics in coordination with the release of the strategic plan.
    - Over 30 MEP Centers of varying types, sizes, and regions participated in the working group meetings.
- Additional input was gathered through NIST MEP research and a metrics review conducted by the Center for Regional Economic Competitiveness (CREC) and the State Science & Technology Institute (SSTI).
    - Changes resulting from this work include the successful introduction of light interaction reporting.
- Opportunities exist to better align metrics with the MEP program's direction and focus, particularly in the areas of workforce and ecosystem engagement.
- Changes to impact metrics are also examined based on NIST MEP review and feedback from the National Network.
- NIST MEP is committed to maintaining an ongoing dialogue and continually improving their approaches.

SCOIN

- With the first anniversary of SCOIN, MEP's work continues to strengthen supply chains.
- 100% of MEP Centers now have a full-time employee dedicated to working on SCOIN activities.
- Supplier scouting activities have increased each month, and will reach record levels this year.
- To date, there have been 144 different SCOIN projects with 128 clients.
- There have been 263 supplier scouting opportunities (SSOs) in the first year of SCOIN.
    - 106 of these are from federal agencies.

Strategic Partnerships

- Strategic partnerships must be mutually beneficial and centered on addressing key challenges within the manufacturing industry.
    - The "why" questions must be answered: why is this partnership strategic, and why is this strategic partnership important?
- NIST MEP's strategy focuses on developing and strengthening collaborative relationships and partnerships between NIST MEP and stakeholders.
    - These partnerships are built on shared interests and voluntary commitment to collaboratively devise solutions, pursue common objectives, and tackle specific tasks.
        - They involve mutually agreed upon sharing of responsibilities and benefits.
- In 2019, NIST MEP signed an MOU with the FDA
    - Food manufacturing requires adherence to food safety regulations, quality standards, and consumer preferences.
    - Assisting food manufacturers accounts for approximately 12% of all MEP projects and includes almost every service that MEP Centers offer.
    - The purpose of the MOU with FDA was to support food manufacturers in adopting safe manufacturing practices to improve food safety in the U.S.
    - This partnership has proven very successful, and NIST MEP is currently working on a new MOU with the FDA.
- NIST MEP and Manufacturing USA are working to strengthen their relationship and identify new opportunities for collaboration.
    - With both programs having a national presence, MEP Centers and Manufacturing USA institutes can establish regional ecosystems that connect manufacturers, technology providers, educational institutions, and other stakeholders.
    - Collaborations can foster knowledge sharing, innovation, and supply chain integration at a regional level.
    - MEP Centers can facilitate access to Manufacturing USA institutes' state-of-the-art facilities and specialized equipment to conduct experiments, prototype products, and test new technologies.
        - Some examples include CESMII, CYMANII, and MxD.
- Collaboration across programs is also important.
    - All four components of IIS are in the business of building ecosystems and are interconnected with each other, NIST laboratories, and external stakeholders.
    - Staff from these units meet quarterly for IIS community days.
        - This enables networking and the generation of ideas for increased collaboration.

Office of Advanced Manufacturing

Speaker:

Mike Molnar, Director, Office of Advanced Manufacturing (OAM), NIST

10 Years of Manufacturing USA

- Manufacturing USA was established under the Revitalize American Manufacturing and Innovation Act (RAMI).
- A growing network of 17 industry-led innovation institutes.
- Network of public-private partnerships that convene industry, academia, and other stakeholders to collaborate on applied research projects.
    - Electronics:
        - AIM Photonics (integrated photonics – Albany, NY, and Rochester, NY)

        - NextFlex (flexible hybrid electronics – San Jose, CA)
        - PowerAmerica (wide-bandgap semiconductors – Raleigh, NC)
    - Materials:
        - AFFOA (advanced fibers and textiles – Cambridge, MA)
        - IACMI (advanced composites – Knoxville, TN)
        - LIFT (advanced materials – Detroit, MI)
    - Energy/environment:
        - RAPID (modular chemical process intensification – New York, NY)
        - REMADE Institute (sustainable manufacturing – Rochester, NY)
        - CESMII (smart manufacturing – Los Angeles, CA)
        - EPIXC (industrial process decarbonization – Tempe, AZ)
    - Digital/automation:
        - America Makes (additive manufacturing – Youngstown, OH)
        - ARM Institute (advanced robotics & AI – Pittsburgh, PA)
        - MxD, The Digital Manufacturing & Cybersecurity Institute (digital manufacturing & cybersecurity – Chicago, IL)
        - CYMANII (cybersecurity in manufacturing – San Antonio, TX)
    - Bio-manufacturing:
        - BioFabUSA (regenerative manufacturing – Manchester, NH)
        - NIIMBL (biopharmaceutical manufacturing – Newark, DE)
        - BioMADE (bioindustrial manufacturing – St. Paul, MN)
- New NIST institutes:
    - Digital Twin for Semiconductor Manufacturing
        - Part of CHIPS for America
    - Artificial Intelligence for Resilient Manufacturing

Manufacturing USA Network Annual Impact

- Work with 2,500+ member organizations.
- Collaborate on 670+ major applied research and development projects.
- Engage 106,000+ people with workforce knowledge and skills in advanced manufacturing.
- Invest $416M in these activities from state, industry, and federal funds.
- These efforts help ensure what's invented here is made here by a skilled American workforce.

Manufacturing USA Leaders Council

- Established in 2023.
- Many similarities to the MEP Advisory Board.
- Composed of the leaders from all 17 institutes, who come together to brainstorm and prioritize the most important areas to establish initiatives.
    - Improving coordination with MEP Centers.
        - Task team formed to foster stronger relationships among institutes and the MEPNN.
            - Creating guides for identifying alignment of technology focus areas and best practices for relationship-building and cohosted events.

Discussion

- B. Hawes asked about the barriers to fully integrating small and medium-sized manufacturers (SMMs) into the appropriate USA Manufacturing institutes. M. Molnar said that while two-thirds of their industry members are SMMs, most SMMs are not aware of the opportunities afforded by Manufacturing USA, and OAM has launched a national awareness campaign to highlight the value proposition of the model.

- M. Garvey asked if they have thought about working with the Baldrige Performance Excellence Program and R. Fangmeyer to foster collaboration between the institutes and MEP participants. M. Molnar said that he himself was currently being trained in Baldrige and that they were connecting R. Fangmeyer with the Manufacturing USA team. He added that M. Bahar has been very supportive of efforts to find natural connection points within IIS.
- D. Vasko suggested making it standard practice to waive membership fees for MEP Centers throughout Manufacturing USA institutes, expanding on what CESMII has done. M. Molnar referenced the task team that is looking at enhancing collaborations and agreed that from their perspective, MEP Centers should be treated differently than other associations or not-for-profits looking to join Manufacturing USA.
- A. Parker said that her institution was a member of BioMADE, which has reduced its membership costs in order to reach community colleges. She asked what percentage of industry financial support comes from SMMs. M. Molnar said that while they do not necessarily want to make membership free, institutes want to set the tier level very low for community colleges and SMMs. He noted that educational institutions involved in Manufacturing USA receive more funding for projects than they pay in membership dues.
- B. Hawes recalled when a few MEP Centers were embedded into the existing Manufacturing USA institutes and suggested that it might be time to revisit that type of initiative in order to eliminate silos within NIST MEP. D. Bockoven said that this seemed like a natural ecosystem component to build into the strategic pillar around leveraging technology.

Baldrige Performance Excellence Program

Speaker:

Robert Fangmeyer, Director, Baldrige Performance Excellence Program, NIST

Baldrige Performance Excellence Program

- Enhancing the quality of life in the U.S. by recognizing, sharing, and promoting superior leadership, management, and operational practices in business, health care, education, nonprofit, and government.
- Recognizes national role models.
    - Presidential Award.
    - Industry-led evaluation and judging.
    - Seven award categories.
    - Recipients widely share best practices.
- Provides educational and improvement offerings.
    - Baldrige Excellence Framework.
    - Quest for Excellence conference.
    - Leadership development.
    - Organizational assessment tools.
- Fosters nationwide ecosystem
    - 30 state/regional programs.
    - Communities of excellence.
    - Regional conferences.
    - Baldrige consultants.
- $820:$1 economic benefit to cost ratio.
- Approximately 1,500 organizations assessed annually.
- Approximately 2,000 volunteer examiners each year.

- Approximately 80% median revenue growth.
- Approximately 56% median job growth.

How Can Baldrige Benefit MEP?

- Improvement Tools:
    - Help SMMs improve quality, performance, and resilience.
        - Foundations for a Successful Business
        - Easy Insight
        - Are We Making Progress survey set
        - Job Quality Toolkit and self-assessment
        - Baldrige Excellence Builder
        - Baldrige Excellence Framework
- Educational Offerings:
    - Enhance knowledge and skill.
        - Quest for Excellence conference
        - Baldrige Executive Fellows Program
        - Baldrige Fall Conference
        - Baldrige Examiner Training
- Assessment and Recognition:
    - Available at the national, regional, state, and community levels.
        - Baldrige Award
        - Alliance for Performance Excellence programs
        - Communities of Excellence 2026
        - Variety of self-assessments
- Future Opportunities:
    - Strategic partnership to systematically provide Baldrige-based offerings through MEPNN, further enhancing the performance and long-term success of SMMs in the U.S.

Discussion

- S. Miller, West Virginia MEP Center Director, asked how many of the organizations that are active with Baldrige have fewer than 25 employees. R. Fangmeyer said that it was difficult to tell; small manufacturers did participate in their award process, though the number of participants in general has decreased over time. He noted that Baldrige has proven to have tremendous impact on SMMs, and they have had award recipients whose employees numbered in the twenties.
- M. Bahar asked R. Fangmeyer to summarize the new streamlined version of the Baldrige Award and comment on the concept of resilience. R. Fangmeyer confirmed that they have streamlined the award process in order to make it simpler, easier, and less time-consuming for organizations and to provide greater value by enhancing the opportunities for recognition. He added that it was easier for smaller organizations to deploy Baldrige than larger and more complex groups, and that their new focus on resilience and long-term success will benefit SMMs who do not have extra resources or bandwidth.

Technology Partnership Office

Speaker:

Bethany Loftin, Director, Technology Partnerships Office (TPO), NIST

Agreements

- TPO negotiates and executes agreements to foster collaborations with NIST and disseminate NIST research and research outputs, including:
    - Material Transfer Agreements (MTA)
    - Data Transfer Agreements (DTA)
    - Non-Disclosure Agreements (NDA)
    - Research Collaboration Agreements (RCA)
    - CRADAs
    - Consortia agreements

Patenting & Licensing

- TPO manages the technology transfer process for inventions made by NIST researches. This includes:
    - Disclosure intake
    - Invention Review & Commercial Analysis
    - Patenting
    - Technology
    - Marketing
    - Licensing
    - License Auditing

SBIR

- TPO manages NIST's Small Business Innovation Research (SBIR) program, where NIST provides funding in the form of grants for innovative ideas or technologies from qualified small businesses that can help solve problems or enhance technologies in any of NIST's research areas.
    - Topic areas:
        - Advanced communications, networks, and scientific data systems
        - Advanced manufacturing and material measurements
        - Cybersecurity and privacy
        - Fundamental measurement, quantum science, and measurement dissemination
        - Health and biological systems measurement
        - Physical infrastructure and resilience
        - Exploratory measurement science

Interagency Activities

- TPO carries out many of NIST's responsibilities related to tech transfer that reach all areas of the federal government and beyond, including:
    - Host agency for the FLC
    - Co-chairs Lab-to-Market (L2M) subcommittee of the National Science and Technology Council (NSTC)
    - Convenes Interagency Working Group for Bayh-Dole (IAWGBD) & Interagency Working Group on Technology Transfer (IAWGTT)
    - Manages iEdison
    - Collects and submits annual technology transfer (T2) reports to Congress
    - Economic impact studies

Discussion

- T. Smith asked about SBIR's engagement with minority-serving institutions and ways to access NIST technology transfer. B. Loftin said that they listed NIST technologies and patents available for licensing on the TPO website, and that they participated in SBIR road shows to try to spread the word about their programs. She invited Board members to contact her with information about

additional programs that SBIR could participate in to increase their visibility to underserved communities.

Special Programming: Update on MEP's 2023-2027 Strategic Pillars

Supply Chain Pillar

Speakers:

Nathan Ginty, NIST MEP
Staci Miller, West Virginia Manufacturing Extension Partnership (WV MEP)
Phil Mintz, North Carolina Manufacturing Extension Partnership (NC MEP)
Mike O'Donnell, Center for Industrial Research and Service (IA MEP)

Assessing the Effectiveness of SCOIN

- Overview:
  - Two-year pilot program investing in the National Network to study manufacturing ecosystems and identify gaps in an effort to build more resilient, sustainable supply chains through MEP assistance.
- Objectives and goals:
  - Map the capabilities and interconnections within manufacturing supply chains.
  - Scale up and enhance the impact of supplier scouting services to source domestic products and continue expansion of capabilities.
- Progress:
  - 144 different SCOIN projects with 128 different clients (continuous touchpoints with Centers). As of 2024 Q1, 35 projects have been surveyed with the following impacts reported by clients on the MEP Client Survey
    - Total sales (new and retained): $4.5M
    - Total jobs (created and retained): 150
    - Total investment (products & processes, plant & equipment, information technology, workforce, other): $3M
    - Total cost savings (save and avoid investment): $700K
  - 263 opportunities in first year of SCOIN (includes opportunities already open)
  - 86 from government agencies (federal and state) (monthly webinars and training engagements)
  - 148 SSOs from Centers to the Network (coordinated events to develop the Network and share best practices)
  - 29 SSOs from private entities
  - 100% FTEs working in Centers
  - Increasing supplier scouting activity month after month (94%-100% response rate)

MEPNN SCOIN Teams

- SCOIN Leadership Team
  - Nathan Ginty, NIST MEP
  - Staci Miller, West Virginia Manufacturing Extension Partnership (WV MEP)
  - Phil Mintz, North Carolina Manufacturing Extension Partnership (NC MEP)
  - Mike O'Donnell, Center for Industrial Research and Service (IA MEP)
- MEP Center Action Team
  - Mike Aller, FloridaMakes

    - Olivia Antonelli, MassMEP
    - Mike Boyte, TMAC (TX MEP)
    - Jim Harrison, AZ MEP
    - Mary Ingman, Impact Dakota (ND MEP)
    - Rebekah McCarter, MMTC (MI MEP)
    - Chris Scafario, DVIRC (PA MEP)
    - Ella Snelson, Enterprise Missouri
    - Shane Steinke, OMEP (OR MEP)
    - Eric Taylor, NCMEP
    - Kayla Viveiros, Polaris (RI MEP)
- NIST MEP Action Team
    - Robert Barnes, National Platforms Division
    - Kim Coffman, Performance and Evaluation Division
    - Scott Dockum, Network Agreements Division
    - Doug Deveraux, National Programs Division
    - Autumn Hernandez, Internal Operations Division
    - Katie Rapp, Outreach and External Affairs Division
    - Angelina Rivera, National Platforms Division
    - Jennifer Rosa, Outreach and External Affairs Division
    - Samm Webb, National Platforms Division
    - Tom Williams, Network Agreements Division

Assessment Methodology and Results

- Beginning to one-year: West Virginia
    - Modifications to system, hiring FTE, assessing the environment, developed new services
- Key findings: North Carolina
    - Industry engagements
- Next steps: Iowa
    - Successes and wins:
        - Client engagement: bringing real opportunities to clients
        - Provided scope to drive projects forward from a state perspective
        - Broader network of SCOIN work to tap into

Discussion

- M. Kmetzo asked about lessons learned from the first year of SCOIN. S. Miller said that for her Center, one of the benefits was allowing them to do research, ask questions, and talk to customers without worrying about selling services. M. O'Donnell said that it was helpful to have a clear mission and expected outcomes with flexibility around the implementation, as every state has a slightly different approach. P. Mintz said that the messaging and the framework around the pillars are important, especially around technology, which was still a fearful area for some smaller manufacturers.
- D. Bockoven asked the participants to share some of the issues and solutions that were raised during the SCOIN event in Greenville, South Carolina. He also asked about overcoming companies' reluctance to share their data. N. Ginty said that there was synergy around most topics raised at the event, with the exception of databases, which were controversial. Their next statement of work will include building an interface into the MEP Enterprise Information Systems (MEIS) to allow the systems to connect to an API. S. Miller said that reluctance to share information would always be a problem, especially as many organizations do not trust government entities, and they need to see the benefit of contributing their information.

- N. Rao asked the Center Directors and N. Ginty what NIST headquarters could do to better support and enhance SCOIN. N. Ginty said that there was a sense of uncertainty about the future of the program and the more intelligence they gathered, the more strategically they could make decisions. M. O'Donnell said that NIST had found the right balance between asking Centers to look for impact without applying it to their impact metrics, and this allowed them to ramp up rather than panicking and making short-term decisions. He added that while the concept of the one SCOIN FTE was strong, the contracting requirements were challenging for Centers and they could use more flexibility.

Technology and Innovation Pillar

Speakers:

Scott Dockum, NIST MEP
Ingrid Tighe, Michigan Manufacturing Technology Center (MMTC, Michigan MEP)
Marlon Walker, NIST MEP
Michael Taylor, NIST MEP

Leverage Technology Working Group

- Focus the working group on the following key areas from the current MEP strategic plan.
    - Increase technology adoption.
    - Ensure holistic, comprehensive application and use of technology (not just in production but in business operations, etc.).
    - Strengthen cybersecurity capabilities.
    - Partner with federal labs to accelerate the use of new technologies.
    - Increase technology adoption across served customers (intersections across strategic goals).
- Utilize the expertise of the selected Centers to understand the larger ecosystems that play a role in innovation technology adoption for SMMs.
    - Determine how these ecosystems contribute to meeting the goals and vision of the current MEP strategic plan.
    - Examine any other areas that were not considered or known at the time the MEP strategic plan was published.
    - Develop an action plan to meet the goals of bringing innovation and new technologies to SMMs.
- Team was put into place on June 6, 2024.
- Working group kickoff meeting scheduled for the week of June 24 and will meet on a regular cadence thereafter.
- Request for Board feedback includes areas that they see as needing attention based on their understanding of innovative technology issues with SMMs in the ecosystems that they work in.

MEPNN Technology Executive Team

- MEP Center Team
    - David Boulay, Illinois Manufacturing Excellence Center (IMEC, Illinois MEP)
    - Kathie Mahoney, Massachusetts Manufacturing Extension Partnership (MassMEP)
    - Rodney Reddic, Texas Manufacturing Assistance Center (TMAC, Texas MEP)
    - Ingrid Tighe, Michigan Manufacturing Technology Center (MMTC, Michigan MEP)
- NIST MEP Team
    - Scott Dockum, Network Agreements Division

- Michael Taylor, National Programs Division
- Marlon Walker, National Programs Division

AI Innovations in Manufacturing (Michigan Manufacturing Technology Center)

- Manufacturing tech stack:
  - Level 1: physical/process
    - Lean
    - Six Sigma
    - Quality
    - Leadership
    - Supply chain
    - Growth services
    - Food processing
    - Environmental
  - Level 2: Industry 4.0 (I4.0) automation/digitization
    - Advanced manufacturing technologies
    - Emerging Leaders in Manufacturing Certification
    - Enhanced operations management
    - Human machine interaction & digital process control
    - Introduction to additive manufacturing
    - Introduction to collaborative robotics
    - Improving information security through risk management
  - Level 3: AI
    - Areas for AI adoption:
      - Administrative applications
        - Enhance email communication
        - Email management
        - Virtual assistants
        - Content generation
        - Meeting scheduling
        - HR & recruitment
        - Workflow automation
        - Meeting notes
        - Data analysis & reporting
      - Design
        - Co-pilot software
        - Prompt engineering
      - Operations
        - Condition-based maintenance
        - Quality control
        - Supply chain optimization
        - Process automation
        - Energy management
- Leveling Up With Industry 4.0
  - I4.0 operations management system
  - Objective: real-time financial performance
    - How? By digitizing workflows end-to-end
- Manufacturing Outlook
  - Industry 5.0: the AI revolution
  - Objective: prepare Michigan manufacturers for the adoption of AI systems.

    - Historical data from digital workflows will enable training of machine learning algorithms that will self-optimize manufacturing operations in all aspects.
    - Productivity and efficiency gains will be unmatched.
    - Manufacturers who are first to implement this technology will be world-leading.
    - If we can get Michigan manufacturers ready for the AI revolution, we will be the world leader in manufacturing (again).

Discussion

- M. Garvey asked if the Michigan MEP Center is looking at AI as applied to distributed manufacturing, and I. Tighe said that they were. M. Garvey asked whether they had thought of hooking up precision manufacturing in a distributed manner, using AI and the digital thread to communicate with machining centers that are spread out geographically. I. Tighe said that while they were having high level conversations on this topic, they have not yet moved towards implementation.
- D. Vasko asked whether the Center helps clients identify where to apply technologies. I. Tighe said that they do conduct a technology assessment identifying strengths, weaknesses, assets and gaps, then create a model to figure out what kind of technology and system makes sense for that company.
- M. Kmetzo asked how the Center embeds the issue of digital attacks when planning their AI and Industry 4.0 initiatives. I. Tighe said that that was part of their education and advice to clients, ensuring that the companies have proper protection in place and are not putting proprietary information on open source networks. M. Taylor added that they had combined the I4.0 and cybersecurity working groups because of the overlap between the two subjects.
- T. Smith said that the Center's inverted triangle tech stack model could be a model for underserved populations and asked how the Center saw this as a model for training. I. Tighe said she imagined there will be many different levels of certifications and degrees in this area, with cyber and AI as layers on top of pieces of curriculum.
- D. Bockoven said that he thought about the two Fs of fear and funding as barriers when it comes to reaching SMMs. I. Tighe agreed and said that many SMMs probably fear AI at the moment, and the MEP Centers are good at creating road maps for clients and walking them through these concepts.
- A. Parker asked how the Center was thinking about SMMs that cannot afford state-of-the-art software but need to understand how to be efficient in their processes. She also asked how the Centers thought about aligning with the new AI-focused Manufacturing USA institute to bring in the future workforce through community colleges and help SMMs see the possibilities. I. Tighe noted that while the working group was just getting started, these questions will be part of their conversations going forward, including identifying the appropriate roles for Centers and community colleges.
- J. Ford suggested adding the Internet of Things (IoT), mobile devices, and cloud computing to the discussion about AI. B. Hawes noted that this pillar is not just about AI, and their task is to look at AI in the context of the bigger picture of advanced manufacturing technologies and innovation.
- C. Smith said that while AI is seemingly very accessible, AI is often hard for SMMs to fully understand it in an integrated way. Adopting technology starts with a big picture view of how they fit into the ecosystem.
- D. Bockoven noted that it was important to keep the focus on value creation, rather than simply pursuing technology for technology's sake.
- N. Rao said that going forward, he and his team were seeking Board members' guidance on implementable and executable product deliverables for this working group.

Workforce Pillar

Speakers:

Ben Vickery, NIST MEP
Ranae Stewart, Purdue MEP (Indiana MEP)
Danica Rome, Kansas Manufacturing Solutions (KMS, Kansas MEP)

Forming an MEPNN Workforce Strategic Working Group

- Purpose:
    - Leverage resources across the MEP National Network to improve the efficiency and effectiveness of workforce and organizational development-related activities.
    - Create and facilitate opportunities for learning and building Network relationships, including guiding the work of the workforce operational group (Workforce Community of Practitioners).
    - Inform NIST MEP on activities, strategies, and investments needed for workforce and organizational development practice expansion.

MEPNN Workforce Executive Team

- MEP Center Team
    - Steve Black, University of Utah MEP (UUMEP)
    - Ranae Stewart, Purdue MEP (Indiana MEP)
    - Tiffany Stovall, Kansas Manufacturing Solutions (KMS, Kansas MEP)
- NIST MEP Team
    - Megean Blum, Performance & Evaluation Division
    - Nadine DeJesus, Network Agreements Division
    - Matt Fieldman, National Platforms Division
    - Jennifer Rosa, Outreach and External Affairs Division
    - Ben Vickery, National Platforms Division

MEPNN Workforce Strategy Working Group

- Goals:
    - Analyze and strengthen workforce-related strategic Center partnerships at all levels.
    - Share best practices, identify opportunities for improvement, and collaborate on potential solutions for MEP Centers.
    - Guide the MEP Workforce Committee (10 to 15-member "Action Team") on plan implementation.
- Objectives:
    - Ensure NIST MEP's workforce activities are engaging a large swath of workforce practitioners.
    - Consistently publicize and assist Centers in finding workforce funding opportunities.
    - Help Centers promote their workforce-related metrics and successes.
    - Continuous improvement through training and professional development, with a focus on an annual MEP National Network workforce-focused event (such as the FireWorks Conference).

Discussion

- R. Stewart shared Purdue MEP's experience with workforce initiatives, including the creation of a 10-day boot camp that is written at an eighth grade level to encompass as much of the state's working population as possible. Since the program launched in 2018 they have trained nearly

2,000 individuals in 150 different cohorts and have worked with rehab facilities, state and correctional facilities, and traditional and charter high school students. They have also provided their curriculum to MEP Centers in other states.

- D. Rome spoke about the workforce landscape in Kansas and solutions that the Kansas MEP Center has implemented. The Center collected data from Kansas manufacturers using the NIST MEP survey as well as an annual industry questionnaire, both of which identified recruitment and retention as major issues. The Center focused on barriers to employment, specifically adverse childhood events (ACEs) and their correlation with stress response and poor work performance, and they developed an innovative program to help manufacturers incorporate a trauma-informed approach into their organizations.
- B. Vickery noted that employee recruitment was consistently ranked in the top three challenges that companies identified in the MEPNN annual survey. He shared two possible outputs from this working group, both of which are in the nascent stages: an MEP workforce corps, with a rotational group of workforce-focused fellows within the Network; and the establishment of a manufacturing fellowship program focused on historically black colleges and universities (HBCU) graduates.
- T. Smith volunteered his assistance in connecting with HBCUs and targeting students for advanced manufacturing.
- A. Parker said that as a college president she saw employers fighting to recruit her students as they are facing workforce challenges in every sector of the economy. She asked how they were dealing with students and the future workforce and their perception of manufacturing. B. Vickery said that changing the perception of manufacturing jobs as dirty, dangerous and undesirable remains a key focus of NIST MEP and the Network. R. Stewart shared that the Indiana MEP Center has formed partnerships across the state with organizations like Goodwill Industries, Job Corps, and parole districts that help the Center to vet potential participants and educate them about manufacturing.
- D. Bockoven suggested that county and state economic development agencies would be good partners in this area and said that they needed to get rid of the myth that a four-year degree is necessary to get high-paying jobs.
- B. Hawes said that as the manufacturing sector continues to transfer knowledge from other sectors, especially in the area of trauma-informed initiatives, they will be able to understand more about what's going on in the entire ecosystem. She suggested that, since this is a layered and nuanced conversation, it may be worth creating a sub-working group within workforce development. M. Kmetzo agreed and said that there could be an intersection between workforce and the technology and innovation team.
- T. Stovall said that rather than duplicating the work that other agencies were doing, they were trying to find MEPNN's unique space around workforce to add value to what is already happening.

Public Comments

Speaker:

Jennifer Rosa, FACA Officer

- J. Rosa shared two questions from K. Milliken: (1) How is MEP preparing for the likely increase in the volume of requests for Build America Buy America Act (BABA) purposes? (2) Is MEP planning to work with home improvement retailers to make information about existing BABA-compliant manufactured products more readily available? If not, does MEP have a list of

domestic manufacturers of items that are needed to build residences that affordable housing developers could access, or will MEP develop a list?

- J. Rosa shared a comment from J. Malhotra, who suggested that MEP could leverage the NIST AI Safety Institute and the AI-Focused Manufacturing USA institute as resources.
- J. Rosa shared a comment from C. Hines expressing the National Network's disappointment that additional funding resources were not provided to extend SCOIN awards for a third year and instead offered to Centers in the form of Competitive Awards Program awards.

Around the Table

Speakers:

MEP Advisory Board Members

- J. Ford said he was a firm believer that by supporting our manufacturing businesses, we can rebuild America with a boosting economy. He looked forward to finding practical applications for the great information shared during the meeting.
- M. Garvey said that it was a great meeting and he was encouraged by the collaboration between all three programs in NIST IIS.
- M. Kmetzo highlighted three things she heard during the meeting that reinforce continuous improvement: listening, collaborating, and sharing lessons learned and success stories.
- C. Mathews said that hearing from Center Directors was very informative and helpful to understand how much work needs to be done and how impactful MEP can be.
- A. Parker highlighted the importance of strategic partnerships that are mutually beneficial and collaborative relationships between NIST MEP and other stakeholders, particularly Manufacturing USA. SCOIN has promise, and as Centers work with employers to build trust in the database, they need more information about next steps and planning for the program.
- C. Smith said that she appreciated the common thread of collaboration as they think about how to integrate technologies and best practices across the Network. She looked forward to learning more about what the working groups need from the Board to develop a big picture strategy and empower the Centers to be nationally aligned.
- T. Smith said his takeaway from the meeting was the importance of understanding and embracing the three pillars as part of an ecosystem of activity.
- D. Vasko said that he appreciated the fact that each presentation addressed workforce gaps, supply chain vulnerabilities, and leveraging technology. He praised the collaboration between NIST MEP and Manufacturing USA and urged them to pursue further opportunities.
- D. Bockoven summarized several themes of the meeting: focus, listening, change, collaboration, coordination, and communication.

Closing Remarks

Speakers:

G. Nagesh Rao, MEP Acting Director
Mojdeh Bahar, Associate Director for Innovation and Industry Services, NIST
Bernadine Hawes, Chair, MEP Advisory Board

N. Rao thanked participants for their robust and dynamic conversations and their contributions to the work of MEP. He noted that they were moving forward in a new direction with FACA meetings, and he was committed to making sure that Center Directors had more face time with the Board members. M. Bahar said that it was an honor to learn from the collective experiences of the Board members and their engagement and dedication. Her phrase for the meeting was "strategic connections and impactful collaborations," which encompasses most of the topics and discussion of the day. B. Hawes said her word for the meeting was "construct." The National Network began as a construct and became a reality with three interconnected pillars, and the challenge now is to make sure that this reality is sustainable.

Next MEP Advisory Board Meeting

The next MEP Advisory Board meeting will take place in conjunction with the FireWorks Conference from September 16-18, 2024 in Cleveland, Ohio.

Adjournment

With no further business, B. Hawes adjourned the meeting at 5:06 p.m.