NIST MEP Advisory Board

January 2015
## MEP Advisory Board Meeting Agenda
### January 21, 2015

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Description</th>
<th>Presenter/Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:30 am</td>
<td>Meeting Logistics</td>
<td>Kari Reidy, NIST MEP</td>
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<tr>
<td>8:40 am</td>
<td>Welcome Introductions and Opening Remarks</td>
<td>Vickie Wessel, Chair</td>
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<tr>
<td>8:50 am</td>
<td>Audience Introductions</td>
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<tr>
<td>9:00 am</td>
<td>MEP Director Update on Activities</td>
<td>Phil Singerman, Acting Director NIST MEP</td>
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<tr>
<td>9:30 am</td>
<td>Technology Acceleration Committee Update</td>
<td>Jeff Wilcox, Committee Chair</td>
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<tr>
<td>10:30 am</td>
<td>Break</td>
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<tr>
<td>10:45 am</td>
<td>Board Governance Committee Update</td>
<td>Vickie Wessel, Committee Chair</td>
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<tr>
<td>11:45 am</td>
<td>Lunch</td>
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<tr>
<td>1:00 pm</td>
<td>Overview of NIST Labs</td>
<td>Dr. Richard Cavanagh, NIST</td>
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<tr>
<td>1:45 pm</td>
<td>Discussion of NIST Tours</td>
<td>Dave Stieren, NIST MEP</td>
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<tr>
<td>2:00 pm</td>
<td>NIST Tours</td>
<td></td>
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<tr>
<td>4:00 pm</td>
<td>Adjournment</td>
<td></td>
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</tbody>
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You are here

MEP Advisory Board Meeting

Portrait Room

Phones

Cafeteria

Courtyard

January 21, 2015

MEP Advisory Board Meeting
MEP Director’s Update

Dr. Phillip Singerman, NIST MEP
Agenda

• FY2015 Budget
• NIST Support for Centers
• NIST MEP Client Survey Process
• NIST Panel Review Process
• NIST MEP Center Competition
FY2015 Budget
## NIST MEP Appropriations History

<table>
<thead>
<tr>
<th>Fiscal Year (FY)</th>
<th>Appropriation ($ million)</th>
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<tbody>
<tr>
<td>FY 2010</td>
<td>$124.7</td>
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<tr>
<td>FY 2011</td>
<td>$128.4</td>
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<tr>
<td>FY 2012</td>
<td>$128.4</td>
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<tr>
<td>FY 2013</td>
<td>$120.0</td>
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<tr>
<td>FY 2014</td>
<td>$128.0</td>
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<tr>
<td>FY 2015</td>
<td>$130.0</td>
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<tr>
<td>FY 2016 (President’s request)</td>
<td>TBD – Feb 2015</td>
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### NIST MEP FY 2015 Spend Plan

Total Available Funds \(139.0^A\)

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing MEP Center Renewals</td>
<td>92.0^B</td>
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<tr>
<td>MEP Center Competition</td>
<td>14.9</td>
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<tr>
<td>Supplemental Funding to Centers</td>
<td>5.4^C</td>
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<tr>
<td>MEP Center Strategic Competitions</td>
<td>5.1</td>
</tr>
<tr>
<td>- Business to Business (B2B) Network Awards</td>
<td>2.5</td>
</tr>
<tr>
<td>- Support of Strategic Initiatives</td>
<td>2.6</td>
</tr>
<tr>
<td>Centralized MEP System Support</td>
<td>6.0</td>
</tr>
<tr>
<td>(Programmatic and Non-programmatic Contracts/Cooperative Agreements)</td>
<td></td>
</tr>
<tr>
<td>NIST MEP (Staff Labor, Benefits, Supplies, Travel, etc.)</td>
<td>10.4^D</td>
</tr>
<tr>
<td><strong>NIST Overhead</strong></td>
<td><strong>5.2</strong></td>
</tr>
<tr>
<td>Total Planned Expenditures</td>
<td><strong>139.0</strong></td>
</tr>
</tbody>
</table>

A. FY2015 appropriation plus TIP & NIST Engineering Laboratory transfer and FY2014 Carryover
B. 12 months of funding for existing center cooperative agreements
C. Supplemental funding to be distributed over multiple years
D. Assumes full NIST MEP Staffing
January 21, 2015

Manufacturing Extension Partnership

Director
Provides overall leadership and direction.

Deputy Director
Develops partnerships and outreach activities. Directs program analyses and evaluations. Coordinates the formulation of the NIST MEP budget.

Center Operations Office
Oversees the use of federal funds awarded through MEP center cooperative agreements and grants.

System Operations Office
Helps MEP centers identify opportunities for serving manufacturers. Regional managers serve as primary points of contact with MEP centers.

Program Development Office
Identifies new service offerings and tests and develops new tools, services, and processes for implementation by the MEP center system.

Administration and Finance
Develops and maintains information technology tools for NIST and the MEP center system. Manages financial and budgetary processes.

Strategic Partnerships
Works with MEP centers to foster partnerships with federal, state, and local partners.

Communications
Manages public outreach and internal and external communications.

Manufacturing Policy and Research
Conducts performance evaluations for the MEP center system and facilitates reporting of MEP performance data.

Abbreviations:

- MEP: Manufacturing Extension Partnership
- NIST: National Institute of Standards and Technology

Source: GAO analysis of NIST information.
NIST Support for Centers
NIST MEP Support

- ExporTech
- State Relations Support
- Technology Scouting/Technology-Driven Market Intelligence
- Supply Chain Optimization
MEP ExporTech Program
An Export Acceleration System for Achieving Profitable Growth

What: Export strategy and business development process
Why: Intensive program to “jump start” international sales growth
How: Third-party contractor support (Stone & Associates) - $477K (5/1/14 – 4/30/15)

Program highlights
• 110 ExporTech sessions (13 new programs scheduled January - June 2015)
• 29 states have completed an ExporTech program
• 600 clients have completed the program
• Export sales within 6 months of completing program
• Continued program development: go-to market strategy, one-on-one model, follow-up sales

ExporTech average Impacts
• $770,000 average sales increase / retention per company
• $50,000 average cost and investment savings per company
• $400 Million in total program sales (new/retained) to date
• $12,000 average follow-on sales for centers per client
State Relations Support
Positioning Centers to Leverage State Investments.

What: Support to help Centers with State relationships
Why: States are major investors in MEP and provide programmatic support and opportunity
How: Coop agreement (SSTI, Center for Regional Economic Competitiveness, NGA) - $900k - 10/13-09/14

Outreach to state partners
- Policy Advisors Forum bringing together 59 policy advisors and economic development officials from 33 states
- Focus groups and targeted discussions with states attending Policy Advisors Forum

Advising centers and MEP system on state relations
- Visits or phone conversations with partners or potential partners in more than 15 states
- Assisted centers and MEP system on specific issues involving more than 20 state partners

Alerts on budgets and issues impacting MEP centers
- Review all states budgets from introduction to enactment; special alerts sent regarding budget issues impacting centers in 11 states
- More than 220 news briefs prepared annually; monthly reports on economic development and budget news

Reports on best practices and issues impacting centers
- Profiles of state activity and potential partners prepared for 18 states
- Contributed to report on the Advanced Manufacturing Jobs and Innovation Accelerator Challenge awards

Final results from the NGA Policy Academy on "Making Our Future," a top downloaded report on NGA's website
MEP Tech Scouting/TDMI Program
Technology Acceleration Services Centers Provide to Clients

*What:* Find enabling technologies (Tech Scouting)/Find uses/markets for tech assets (TDMI)/Develop technology collaboratives

*Why:* Intensive program to train and mentor Centers to help clients with technology needs

*How:* Third-party contractor support (RTI International) - $563K (9/22/14 – 9/21/15)

Program highlights
- 38 Centers trained (2 new sessions scheduled January – September 2015)
- 422 Center staff have been trained; 590 have been trained and reached
- 21 Centers are actively engaged in selling and executing TS/TDMI projects
- > 100 projects have been completed
- >$1 million in revenues to the Centers
- 3 technology collaboratives have been formed (CA, NV, MA)
- Continued program development: engage remaining Centers to train and mentor

TS/TDMI Average Impact
- $500,000 per company (typically new sales)
MEP Supply Chain Optimization Program

What: An integrated set of supply chain-oriented tools, diagnostics and workshops
Why: Optimized supply chains increase company value by reducing risk, increasing visibility, and enhancing collaboration
How: Center-led / Center-developed (IMEC, CMTC, SCMEP, TMAC and GenEdge)
NIST-funded (2010 - 2014 - $2.3M) (2015 - $650k pending)

Program highlights
• 24 Centers actively engaged with MEP SCO at various stages including 1) Introduction to the program, 2) Training through the ‘show and do’ model or 3) Hosting public or private client events/meetings with deliverables
• 16 Centers have hosted public events. Recent events in IN have resulted in 80 companies being exposed to SCO. SCMEP submitted 18 records / clients to be surveyed re: SCO services received.
• 9 Executive Engagement Strategy Sessions in 2014
• There have been 39 leads from the ‘Connect’, ‘eNews Registration’ or ‘SC Vitality Quiz’ pages on the website. The interest in SCO is widespread, with leads from university contacts to economic development representatives to manufacturers, including Microsoft and Organic Valley
• 3 client success stories written (Volvo Truck North America, Fire Chariot and Bollman Hat)
Client Survey Process
NIST MEP Survey Process, Instrument, & Uses (1)

- **Surveys** are conducted quarterly. Approximately 7,500 to 8,000 surveys done annually. Response rates typically hover around 75-80 percent.
- Clients are surveyed only once a year. A census of all clients with completed projects.
- Survey is client-based rather than project based.
- Client-based survey done since 2000. (@ 104,000 thousand surveys attempted)
- Survey is done using a third party. Fors Marsh conducts the survey. Surveys are done typically on-line.
NIST MEP Survey Process, Instrument, & Uses (2)

- Surveys are done typically six months after the first project is completed and questions are time bound. In some cases, clients can be surveyed over multiple years even if only one project is completed.
- Survey consists of 12 questions focusing on:
  - Bottom-line client outcomes such as sales, capital investment, cost savings, and employment
  - Questions about challenges, reasons for using the MEP, use of other external resources, and customer satisfaction (Net Promoter)
- Survey results used for GPRA, budget and program decisions, and also to develop a series of metrics to determine relative center performance and targets for improvement.
NIST MEP Impacts: FY 2014

30,056 Manufacturers served in FY 2014

- NEW CLIENT INVESTMENTS: $1.1 Billion
- COST SAVINGS: $4.2 Billion
- NEW SALES: $2.5 Billion
- JOBS RETAINED: 46,069
- JOBS CREATED: 17,883
- RETAINED SALES: $2.7 Billion

January 21, 2015
MEP Advisory Board Meeting
The Most Important Challenges Facing MEP Clients over the Next 3 Years: FY 2014 & FY 2009

- Continuous Improvement/Cost Reduction: 69.6% FY 2014, 71.9% FY 2009
- Growth: 59.2% FY 2014, 53.4% FY 2009
- Product Innovation: 47.9% FY 2014, 45.3% FY 2009
- Employee Recruitment/Retention: 40.7% FY 2014, 21.4% FY 2009
- Sustainability: 25.5% FY 2014, 9.1% FY 2009
- Technology Needs: 13.7% FY 2014, 10.4% FY 2009
- Financing: 12.0% FY 2014, 18.0% FY 2009
- Exporting: 7.8% FY 2014, 8.0% FY 2009
Attributes of the Current System

- Mix of performance measurement and evaluation approaches.
- Triangulation of results through different methods and approaches.
- Focus on intermediate outcomes and ultimate program goals.
- Multi-level & Multi-dimensional (firm, center, and system).
- Provides both centers and program managers with information on general directions on performance.
MEP Measurement System is a Competitive Advantage

• **Communicate to federal, state, local stakeholders:**
  – Replicable, believable data
  – Voice of Customer results
  – Measurement process investment better than any economic development program

• **Operational Improvement**
  – Benchmarking against other centers
  – Focus on how measurable impact drives service delivery choices
NIST MEP Measures Success & Performance At Different Levels

- Client Impacts & Performance Improvements
- Center Performance & Impacts
- System Performance & Impacts
Panel Review Process
NIST MEP Panel Review Process

15 U.S. Code § 278k – Regional centers for the transfer of manufacturing technology

- Each Center which receives financial assistance under this section shall be evaluated ... by an evaluation panel appointed by the Secretary.

- Each such evaluation panel shall be composed of private experts, none of whom shall be connected with the involved Center, and [by] Federal officials. An official of the Institute shall chair the panel.

- The Secretary shall not provide funding for ... a Center’s operation unless the evaluation is positive.

- A Center that has not received a positive evaluation by the evaluation panel shall be notified by the panel of the deficiencies in its performance and shall be placed on probation for one year ... If the Center has not addressed the deficiencies identified by the panel, or shown a significant improvement in its performance, the Director shall conduct a new competition to select an operator for the Center or may close the Center.

- Such an independent review shall be required at least every two years after the sixth year of operation. Funding received for a fiscal year under this section ... shall not exceed one third of the capital and annual operating and maintenance costs of the Center under the program.
Panel Reviews are conducted as “Peer Feedback” that focus on the strategic alignment and direction of an MEP Center. Panel Review criteria are:

- Market Understanding
- Business Model
- Partnership Development and Utilization
- Financial Viability
- Performance Metrics

MEP Center’s prepare a Center Progress Report (CPR) to address above criteria as preparation for the discussion with the Panel.

- CPR to be integrated into the Center’s annual Operating Plan to streamline documentation required of the Center by NIST
- Peer Panelists review submitted CPR, coordinate as a panel prior to meeting with the Center, conduct the review itself, caucus separately as a panel and de-brief Center participants on Panel Review observations, recommendations and observed “exemplary” Center practices
NIST MEP Panel Review Process

• In addition to involvement of MEP Center director and key Center staffs, Panel Review participants increasingly include Center Board Chairs, board members and representatives of key Center stakeholders

• “Strategic” Panel Reviews alternate every other year with “Tactical” Annual Reviews
  – Annual Reviews are conducted by NIST MEP Regional Managers for Strategic Transition (RMSTs) and Federal Program Officers (FPOs)
  – Panel Reviews look three to five years into the future…Annual Reviews focus on the one year, near term outlook

• Panel Reviews will be a critical element of the new five year cooperative agreements to be awarded as part of the MEP Center re-competition process
  – Panel Reviews will provide “peer assessment” of an MEP Center’s performance and will weigh heavily on the decision by NIST MEP to either renew or re-compete the cooperative agreement at the end of the initial five year period of performance
2014 NIST MEP Panel Reviews

- There were a total of 27 panels in 2014.
- Over 50% of the panelist participants were Center Directors.
- Nearly 30% of the centers were represented by staff members other than Center Directors.
- Partners and other Stakeholders represented 15% of the panelist participation.
Center Competition
MEP State Competition – Overview/Background

• Background
  • The Administration’s FY2015 Budget
    ➢ Proposed a 10% increase ($13 million) for MEP and noted
    ➢ MEP’s strategic planning process and operational reform agenda; and
    ➢ NIST Management’s direction in FY 2014 to initiate a carefully planned, systematic, multi-year re-competition of the national system of Centers.

  • The Government Accountability Office (GAO) (March 2014) report “MEP: Most Federal Spending Directly Supports Work with Manufacturers, but Distribution Could Be Improved” recommended that “Commerce’s spending on cooperative agreement awards be revised to account for variations across service areas in demand for program services and in MEP centers’ cost of providing services. Commerce agreed with GAO’s recommendation.”

  • H.R. 5035 - NIST Reauthorization Act of 2014 “To reauthorize the National Institute of Standards and Technology, and for other purposes” passed the House on July 22, 2014, which provided that if a recipient has received a Center award for 10 consecutive years, then the Director shall conduct a competition to select a Center operator. Current Centers in good standing are eligible.
MEP State Competition – Overview/Background (2)

- Background (continued)
  - **Primary objective**: Optimize the impact of the Federal investment on U.S. manufacturing and to allocate additional funds to areas with higher concentrations of manufacturers.
  - **Goal**: Complete competition of the entire 50 State (plus Puerto Rico) national network over three years.
  - **Tool**: Demonstration Pilot
# Center Competition

<table>
<thead>
<tr>
<th>MEP Center Location and Assigned Geographical Service Area (by State)</th>
<th>Annual Federal Funding for Each Year of the Award</th>
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<tbody>
<tr>
<td>Colorado</td>
<td>$1,668,359</td>
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<tr>
<td>Connecticut</td>
<td>$1,476,247</td>
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<tr>
<td>Indiana</td>
<td>$2,758,688</td>
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<tr>
<td>Michigan</td>
<td>$4,229,175</td>
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<td>New Hampshire</td>
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<td>North Carolina</td>
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<td>Oregon</td>
<td>$1,792,029</td>
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<td>Tennessee</td>
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<td>Texas</td>
<td>$6,700,881</td>
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<tr>
<td>Virginia</td>
<td>$1,722,571</td>
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Center Competition Timeline

- **August 1** – Federal Funding Opportunity Released
- **October 15** – Proposals Due
- **October 15 – December 15** – Technical Review
- **December 15 – December 31** – Review by Selecting Official
- **January 1 – January 31** – Review by Grants
MEP System Strategic Plan

Manufacturing Extension Partnership (MEP) System Strategic Plan 2014-2017

MISSION
To enhance the productivity and technological performance of U.S. manufacturing.

ROLE
MEP’s state and regional centers facilitate and accelerate the transfer of manufacturing technology in partnership with industry, universities and educational institutions, state governments, and NIST and other federal research laboratories and agencies.

PROGRAMMATIC STRENGTHS
- National Program with at least one center in every state.
- Federally, public-private partnership with local flexibility.
- Cost share policy that matches federal investments with state and private sector investments.
- Market driven program that responds to the needs of private sector manufacturers.
- Leverage partnering expertise as strategic advantage.
- Local knowledge, focus on, and access to manufacturers.

STRATEGIC GOALS

ENHANCE COMPETITIVENESS
Enhance the competitiveness of U.S. manufacturers, with particular focus on small and medium-sized companies.

CHAMPION MANUFACTURING
Serve as a voice and a champion for manufacturers in engaging policy makers, stakeholders, and clients.

SUPPORT PARTNERSHIPS
Support national, state, and regional manufacturing eco-systems and partnerships.

DEVELOP CAPABILITIES
Develop MEP’s capabilities as a learning organization and high performance system.
MEP Strategic Plan Goals

ENHANCE COMPETITIVENESS
Enhance the competitiveness of U.S. manufacturers, with particular focus on small and medium-sized companies.

CHAMPION MANUFACTURING
Serve as a voice to and a voice for manufacturers in engaging policy makers, stakeholders, and clients.

SUPPORT PARTNERSHIPS
Support national, state, and regional manufacturing eco-systems and partnerships.

DEVELOP CAPABILITIES
Develop MEP’s capabilities as a learning organization and high performance system.
Reminder –
Principles of the Strategic Plan

- Goals / Strategic Objectives are organizing themes
- We are not trying to do everything right away
- Not every center has to do everything
- “These are not the ten commandments”
- Some things are new; some are continuing
- Some will be led by NIST; others will need to be led by centers; some are very much co-owned
- Plan should be dynamic and ever-changing
Strategic Plan Refinement: Enhance Competitiveness

- Deliver services that create value for all manufacturers, particularly focusing on small and mid-sized manufacturers (“SMEs”).
- Enable centers to make new manufacturing technology, techniques, and processes usable by U.S. based small and medium-sized companies.
- Develop “Data as a Service” for Competitive Advantage.
Strategic Plan Refinement: Champion Manufacturing

• Champion the importance of SMEs and ensure their inclusion in the economic competitiveness policies and programs of the U.S. government.
• Increase Role of National and Center Boards.
Strategic Plan Refinement: Support Partnerships

- Provide Centers with local flexibility and adaptability to operate based on regional priorities and client needs.
- Support national policy goals.
Strategic Plan Refinement: Develop Capabilities

- Promote system learning.
- Evolve MEP performance system.
- Continue administrative reforms.
Advisory Board Committee on Technology Acceleration (ABCTA)

Jeff Wilcox, Committee Chair
Agenda

1. ABCTA Charter
2. MEP Approach to Technology Acceleration–Connect and Assist
3. Technology Acceleration Work Plan
   - Inputs
   - Evaluation
   - Implementation Plan
   - Timeline
Purpose:
To provide Board guidance to shape MEP’s Technology Acceleration strategy and activities, which contribute to the MEP mission of enhancing the productivity and technological performance of U.S. manufacturing.

Objectives: The Advisory Board Committee on Technology Acceleration (ABCTA) will:

- Represent manufacturers’ — and especially SMMs’ (small- and medium-sized manufacturers’) — viewpoints regarding current MEP services and emerging opportunities.
- Assist with setting priorities among competing demands and focus on highest-impact Technology Acceleration activities.
- Seek alignment between MEP Technology Acceleration activities and existing structures of MEP Centers.

Schedule:
- Launch Committee and schedule meetings (NIST MEP) Nov/Dec 2014
- Collect data on current TA activities (NIST MEP) Nov 2014-March 2015
- Present to Board draft work plan for analysis and research (Committee) Jan 21, 2015
- Inform/validate findings and recommendations with Center leaders (NIST MEP) Nov 2014-May 2015
- Deliver MEP Technology Acceleration Action Plan to Board (Committee) May/June 2015

About Technology Acceleration:
- MEP defines Technology Acceleration as integrating technology into the products, processes, services and business models of manufacturers to solve manufacturing problems or pursue opportunities and facilitate competitiveness and enhance manufacturing growth. Technology Acceleration spans the innovation continuum and can include aspects of technology transfer, technology transition, technology diffusion, technology deployment and manufacturing implementation.

Critical Issues:
- Collect and analyze data from inventory and Nashville System Update Meeting in time to incorporate into draft work plan.
- Respond to stakeholder interest in expanded MEP role with realistic goals.

Contact:
- Mark Troppe NIST MEP
- Ben Vickery NIST MEP
- Clara Asmail NIST MEP

Committee Members:
- Jeff Wilcox, Chair
- Carolyn Cason
- Roy Church
- Bernadine Hawes
- Bill Shorma
- Ed Wolbert

Opportunities for Center Input:
- Inventory of Center Activities Nov-Dec, possibly Jan-Feb 2015.
- Nashville Quarterly Update meeting Nov
- Inform/validate findings and recommendations Jan-May 2015.
- Possibly establish Center work group Jan-March 2015.
- Others?
Technology Acceleration Definition

“...integrating technology into the products, processes, services and business models of manufacturers to solve manufacturing problems or pursue opportunities and facilitate competitiveness and enhance manufacturing growth.

Technology Acceleration spans the innovation continuum and can include aspects of technology transfer, technology transition, technology diffusion, technology deployment and manufacturing implementation.”
Technology Acceleration Ecosystem

Interventions supporting movement of technologies for new products, processes toward market and supply chain needs

- Voice of customer
- Manufacturing processes
- Strategic business decisions
- Access to capital

Commercialization “Black Box” functional interventions needed for manufacturing innovation to overcome barriers:

Federal Labs
Universities
SBIR companies

COTS advanced technologies

Technology Push

Market
Supply Chain

Technology Pull

Econ Dev Orgs
SBDCs

MEP Centers & Partners

NNMI ERCs
I/UCRCs

Accelerators
Incubators
IMCPs
iCorps

M-TACs

Accelerators
Incubators
IMCPs
iCorps
MEP Approach to Technology Acceleration: Connect and Assist

• Accelerate technology development and commercialization by connecting U.S. manufacturers’ capabilities, needs with technology sources

• Enhance business opportunities for U.S. manufacturers by connecting their capabilities and capacities with supply needs of govt. agencies, OEMs

• Provide commercialization assistance to manufacturers: manufacturing strategy, scale-up, product development, IP mgt, financing

• Provide tools, manufacturer assistance mechanisms, opportunities
Technology Acceleration
Work Plan

Responsive to current technologies trends/investments and Administration priorities
Tech Acceleration Work Plan

*Center Engagement is critical*

- Cuts across all components of Work Plan
- Provides a Reality Check
  - Engage Center leaders and outside experts in structured conversations to explore and assess various strategies, services and approaches to inform the Implementation Plan.

- Engagement Approach
  - Group of diverse Center leaders and center experts to advise on entire range of ABCTA needs their experience, interests
Tech Acceleration Work Plan

• Objective – Prepare a recommended plan to guide the development and deployment of technology acceleration services in the MEP system
  – The Implementation Plan will articulate the strategy to guide development and deployment of technology acceleration services in the MEP system.

• Following is the Work Plan
  – provides the road map over the next 4-5 months.

• Tasks
  1. Foundation Building
  2. Data Collection and Analysis
  3. Evaluation of Potential Future Actions/Investments
  4. Develop Implementation Plan
Foundation building

- Confirmation of charter
- Confirmation of TA Definition
- Confirmation of task/activities to complete objective
- Communication portal and plan
- Document barriers to technology adoption and sources of technology
Data Collection

• Develop baseline understanding of current activity level (depth, expertise profile and business models) for TA projects.
• Refine/update barriers to technology acceleration.
• Identify sources of technologies relevant to SMEs and create a taxonomy of technology sources/readiness for project implementation time frames.
Data Collection

- Inventory of current activities
  - Nashville meeting feedback
  - Regional Managers structured center interviews
  - Other sources

- Mine client project data

- Identify and communicate with technology partners and agencies
Analysis

• Organize and analyze data
• Baseline of current state
• Map center competencies, business models and fit with MEP strategic plan
• Map MEP services and capabilities against barriers to TA
• Draft ROI logic
• Identify stakeholder roles
Evaluate Actions/Investments

• Based on knowledge gained from first two tasks, ABCTA and MEP team will develop draft Implementation Plan including recommendations

• Potential structure:
  - Connect
  - Assist
  - System Learning
Develop Implementation Plan

• Based on input and evaluations, construct draft implementation plan.
  – Identify specific activities and services to be developed and deployed and
  – Methods for building center capabilities to sell and deliver.

• Will define priority activities/investments:
  – e.g., Connecting Small Manufacturers to NIST/Federal Labs as technology sources
# Develop Implementation Plan

<table>
<thead>
<tr>
<th>Task and Related Activities</th>
<th>Deliverable</th>
<th>Estimated Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting the Foundation</td>
<td>Draft work plan, ABCTA presentation</td>
<td>January 21, 2015</td>
</tr>
<tr>
<td>Data Collection and Analysis</td>
<td>Data collection summary report, Analysis report, Evaluation report</td>
<td>Early April 2015</td>
</tr>
<tr>
<td>Develop Implementation Plan</td>
<td>Final report to MEP Advisory Board</td>
<td>May/June 2015</td>
</tr>
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MEP Advisory Board: Committee on Board Distinctive Practices and Governance

Vicki Wessel, Committee Chair
Mike Simpson, NIST MEP Committee Lead
The Environment
MEP Strategic Plan:

CHAMPION MANUFACTURING

Serve as a Voice to and a Voice for Manufacturers

STRATEGIC OBJECTIVES:

- Champion the importance of SMEs and ensure their inclusion in the economic competitiveness policies and programs of the U.S. government.
- Increase Role of National and Center Boards.
Section 7. BOARD OF DIRECTORS/TRUSTEES

Each Center shall establish and maintain an oversight board that is broadly representative of local stakeholders with a majority of board members drawn from local small- and medium-sized manufacturing firms.

Board members may not concurrently serve on more than one Center’s oversight board.

If a Center’s oversight board does not meet the requirements of this paragraph at any time during the term of an MEP award, the Center must disclose the deficiencies to the FPO and must submit a detailed plan to the FPO for bringing its oversight board into compliance with this term within 12 months.

Additionally, each Center oversight board shall adopt bylaws governing the operation of the board, including a conflict of interest policy to ensure relevant relationships are disclosed and proper recusal procedures are in place.

Upon request, a Center shall provide the FPO and/or NIST Grants Officer with copies of its organizational documents, including ratified by-laws and conflicts of interest policies.
H.R. 5035 – NIST Reauthorization Act of 2014 “To reauthorize the National Institute of Standards and Technology and for other purposes”

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“(8) ADVISORY BOARDS.—Each Center’s advisory boards shall institute a conflict of interest policy, approved by the Director, that ensures the Board represents local small and medium-sized manufacturers in the Center’s region. Board Members may not serve as a vendor or provide services to the Center, nor may they serve on more than one Center’s oversight board simultaneously.
“(6) CENTER OVERSIGHT BOARDS.—

“(A) IN GENERAL.—Each Center that receives financial assistance under this subsection shall establish an oversight board that is broadly representative of regional stakeholders with a majority of board members drawn from local small- and medium-sized manufacturing companies.

“(C) BYLAWS AND CONFLICT OF INTEREST.—Each oversight board under subparagraph (A) shall adopt and submit to the Director bylaws to govern the operation of the board, including a conflict of interest policy to ensure relevant relationships are disclosed and proper recusal procedures are in place.

“(D) LIMITATIONS.—Board members may not—

“(i) serve as a vendor or provide services to the Center; or

“(ii) serve on more than 1 Center’s oversight board simultaneously.
System Demographics
MEP Centers Organizational Structure

33 501 C(3)
- California (2)
- Colorado
- Connecticut
- Connecticut
- Illinois
- Kansas
- Massachusetts
- Maryland
- Maine
- Michigan
- Minnesota
- Missouri
- Mississippi
- North Dakota
- New Hampshire
- New Jersey
- New Mexico
- Oklahoma
- Oregon
- Pennsylvania (7)
- Puerto Rico
- Rhode Island
- South Carolina
- Utah
- Washington
- Wisconsin

17 University
- Delaware MEP
- Georgia
- Iowa
- Idaho
- Kentucky
- Louisiana
- Montana
- North Carolina
- Nebraska
- Nevada
- South Dakota
- Tennessee
- Texas
- Vermont
- Northwest Wisconsin
- West Virginia
- Wyoming

8 State Entity
- Alabama
- Arkansas
- Arizona
- Hawaii
- Indiana
- New York
- Ohio MEP
- Virginia
Fiduciary versus Advisory

Fiduciary:
- Alaska
- Arkansas
- California - CMTC
- Colorado
- Connecticut
- Delaware
- Hawaii
- Illinois
- Kansas
- Massachusetts
- Maryland
- Maine
- Michigan
- Minnesota
- Missouri
- Montana
- North Dakota
- New Hampshire
- New Jersey
- New Mexico
- Oklahoma
- Oregon
- Pennsylvania - IMRC, MANTEC, MRC, DWRIC
- Puerto Rico
- South Carolina
- Louisiana
- Washington
- Wisconsin

Advisory:
- Alabama
- Arkansas
- Arizona
- California - MANEX
- Connecticut
- Delaware
- Georgia
- Iowa
- Idaho
- Indiana
- Kentucky
- Louisiana
- Mississippi
- Montana
- North Carolina
- Nebraska
- Nevada
- New York
- Ohio
- Pennsylvania - IMRC, MANTEC, MRC, DWRIC
- Rhode Island
- South Dakota
- Tennessee
- Texas
- Vermont
- Northwest Wisconsin
- West Virginia
- Wyoming

January 21, 2015
MEP Advisory Board Meeting
Fiduciary versus Advisory

Fiduciary
- 501c3s
- Cooperative Agreement holder has programmatic responsibilities over program

Advisory
- State/University based
- Host organizations create advisory councils to advise and broaden expertise available to the Board
MEP Advisory Board Charter and Framework
MEP Advisory Board Committee on Board Practices and Governance - Charter

**Purpose:**
The purpose is to implement the strategic objective - Increasing Roles of the National and Center Boards including:
- Increase connectivity between national/center Boards
- Ensure Board members serve as manufacturing advocates
- Strengthen Board governance and accountability

**Benefit:** By the sharing of distinctive practices we improve the performance of the boards in the governance/oversight of the MEP Center

**Objectives:** The MEP Advisory Board Committee will:
- Inventory distinctive practices across Center Boards in Leadership, Advocacy, Fiscal Management and Strategic Development and Implementation.
- Develop and Evaluate Performance Systems for Advisory and Fiduciary Boards.
- Evaluate mechanisms and facilitate to increase communication between the MEP Advisory Board & Center Boards.

**Schedule:**
- Forming subcommittee and establish prioritization of key objectives and tasks Nov 2014
- Collecting data/profile of current MEP Center Boards Nov - Dec 2014
- Completing tasks 3-6 months Jan - June 2015

**Initial Issues:**
- Recruit Local MEP Center Board members to the Board Committee and schedule hold meetings
- Define the project plan, including deliverables
- Collect Information to Inform the Performance Measurement and distinctive practices Tasks

**Leadership**
- Key Staff Hiring
- Succession Planning
- Board Evaluation, Recruitment, Orientation

**Advocacy**
- With State in support of Manufacturing
- Voice for Manufacturing
- Effective Local visits to Manufacturing Clients

**Fiscal Management and Legal Implications**
- 5 Year Budgeting for MEP Cooperative Agreements
- Center Cost Share Management
- Fiscal Goal setting within a MEP Center

**Strategic Development and Implementation**
- Strategic Planning Cycle
- Integration of New MEP System Strategy

**Interfaces:**
- Mike Simpson NIST MEP
- Gary Thompson NIST MEP
- Phillip Wadsworth NIST MEP

**MEP Advisory Board Committee Members:**
- Vicki Wessel Chair AZ-RevAZ
- Denny Dotson Ent MN
- Eileen Guarino NY MEP
- Tommy Lee ATN

**Center Board Members:**
(Note these Members are non-Voting)
- Ray Yeager Catalyst Connection 501c3
- Carl Spang Maine MEP 501c3
- Mark Tyler* UW-Stout University
- Tom Fallo* CMTC 501c3
- Loren Lyon Impact Washington 501c3
- Felipe Hernandez Primex 501c3
- Robert Sproles AMS State
- Alan Edington TN MEP University
- Grant Goodwin NC MEP University
- Eric Stebbins New Mexico MEP 501c3

*Confirmed

**Center Director Members**
1. Bonnie del Conte ConnStep 501c3
2. Bill Donohue GenEdge State
3. Paddy Fleming Montana University
4. Mike Coast Michigan 501c3
Purpose of the Committee on Board Distinctive Practices and Governance

To implement the strategic objective of increasing roles of the national and center boards including:

• Increase connectivity between national and Center Boards
• Ensure Board members serves as manufacturing advocates
• Strengthen Board governance and accountability
Objectives

1. Inventory distinctive practices across Center Boards in Leadership, Advocacy, Fiscal Management, Strategic Development and Implementation

2. Develop and evaluate performance systems for Fiduciary and Advisory Boards

3. Evaluate mechanisms and facilitate linkages to increase communication between the MEP Advisory Board and MEP Center Boards
Objective 1: Identification of possible distinctive practices important to Center Boards in four key areas:

**Leadership**
- Key Staff Hiring
- Succession Planning
- Board Evaluation, Recruitment, Orientation

**Advocacy**
- With State in support of Manufacturing
- Voice for/of Manufacturing
- Effective Local visits to Manufacturing Clients

**Fiscal Management and Legal Implications**
- 5 Year Budgeting for MEP Cooperative Agreements
- Center Cost Share Management
- Fiscal Goal setting within a MEP Center

**Strategic Development and Implementation**
- Strategic Planning Cycle
- Integration of New MEP System Strategy
- Communication Methods for Effective Board meetings

**Next Steps:**
1. Gather Center Documentation – In Progress
2. Conduct a Working Session with Center Directors and Analyze – In Progress
3. Conduct Regional Calls with Center Board Chairs – Planning
4. Document Distinctive Practices – TBD (Need to determine how best to disseminate)
Objective 2: Develop and Evaluate Performance Systems for Advisory and Fiduciary Boards

- Research other system of Board Monitoring
- Discussion of attributes of a successful Board
- Research other measures for effective Boards
- Determine a monitoring approach

Next Steps:
1. Gather Center Documentation – In Progress
2. Conduct a Working Session with Center Directors and Analyze – In Progress
3. Conduct Regional Calls with Center Board Chairs – Planning
4. Contact other Organizations to determine if they have a Performance System.
5. Document Distinctive Practices – TBD (Need to determine how best to disseminate)
Objective 3: Evaluate mechanisms and facilitate linkages to increase communication between the MEP Advisory Board and MEP Center Boards

• Discuss all potential mechanisms for Board to Board connections
  • Written, Web Based
  • Board Orientations
  • Visits
• Select appropriate activity to increase Board to Board connections
• Determine appropriate timeframe for evaluation of communication tools

Next Steps:
1. Gather Center Documentation – In Progress
2. Conduct a Working Session with Center Directors and Analyze – In Progress
3. Conduct Regional Calls with Center Board Chairs – Planning
4. Develop Communication Plan

January 21, 2015
MEP Advisory Board Meeting
# The Team and Advisors

## MAB Committee Members

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vickie Wessel</td>
<td>RevAZ</td>
<td></td>
</tr>
<tr>
<td>Denny Dotson</td>
<td>Enterprise MN</td>
<td></td>
</tr>
<tr>
<td>Eileen Guarino</td>
<td>NY MEP</td>
<td></td>
</tr>
<tr>
<td>Tommy Lee</td>
<td>ATN</td>
<td></td>
</tr>
</tbody>
</table>

## MEP Center Boards

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ray Yeager</td>
<td>Catalyst</td>
<td>Fiduciary</td>
</tr>
<tr>
<td>Carl Spang</td>
<td>Maine MEP</td>
<td>Fiduciary</td>
</tr>
<tr>
<td>Mark Tyler</td>
<td>NW-Stout</td>
<td>Advisory</td>
</tr>
<tr>
<td>Tom Fallo</td>
<td>CMTC</td>
<td>Fiduciary</td>
</tr>
<tr>
<td>Loren Lyon</td>
<td>Impact WA</td>
<td>Fiduciary</td>
</tr>
</tbody>
</table>

## MEP Center Directors

1. Bonnie Del Conte - ConnStep, 501c3, Fiduciary/Advisory Boards
2. Paddy Fleming - Montana MEP, University based, Advisory Board
3. Bill Donohue - GenEdge, VA, State Entity, Advisory Board
4. Mike O’Donnell - CIRAS, University, Advisory Board
5. Mike Coast - Michigan MEP, 501c3, Fiduciary Board

---

**January 21, 2015**

**MEP Advisory Board Meeting**
# TIMELINE for Framework Development:

<table>
<thead>
<tr>
<th>Task</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recruit and finalize Center Board and Director Guest Committee members</td>
<td>Jan 2015</td>
</tr>
<tr>
<td>2. Brief the MEP Advisory Board on Committee Plan for Jan – June 2015</td>
<td></td>
</tr>
<tr>
<td>3. Conduct Briefing for Ctr Board Members and Ctr Directors related to Charter</td>
<td></td>
</tr>
<tr>
<td>4. Schedule Monthly Updates for Committee Members</td>
<td></td>
</tr>
<tr>
<td>1. Complete Analysis of Center Director Board Session at Update Meeting</td>
<td>Jan/Feb 2015</td>
</tr>
<tr>
<td>2. Complete Analysis of Center Board Documentation</td>
<td></td>
</tr>
<tr>
<td>3. Inventory Non-MEP Board Resources (Board Source, Ctr for Not-for-Profits, etc…)</td>
<td></td>
</tr>
<tr>
<td>4. Develop Preliminary Set of Distinctive Practices</td>
<td></td>
</tr>
<tr>
<td>1. Develop a Communication Plan</td>
<td>Mar/May 2015</td>
</tr>
<tr>
<td>2. Define a Board Resource Library for Centers</td>
<td></td>
</tr>
<tr>
<td>3. Framework for creating a Learning Organizations around Boards</td>
<td></td>
</tr>
</tbody>
</table>
QUESTIONS?
Overview of NIST Laboratories

Dr. Richard Cavanagh
Acting Associate Director for Laboratory Programs
National Institute of Standards and Technology
Department of Commerce
National Institute of Standards and Technology (NIST)

- Non-regulatory agency within U.S. Department of Commerce
- Founded in 1901 as National Bureau of Standards

Unique Mission within the Federal Government...

to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life

Article I, Section 8: The Congress shall have the power to ...

...coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures
Since our inception, in addition to maintaining the more traditional National physical standards, we have also focused a significant portion of our research and measurement services activities on addressing contemporary societal needs.

**NIST Strategic Investment Priorities**
- Advanced Manufacturing
- Advanced Materials
- the Environment and Consumer Safety
- Energy
- Bioscience and Health
- Information Technology & Cybersecurity
- Physical Infrastructure
- Forensics & Homeland Security
NIST-at-a-Glance

Major Assets

• ~3,000 Employees;
  1800 Scientists and Engineers

• ~3,500 Associates

• ~400 NIST Staff on ~1,000 national and international standards committees

NIST has two main campuses

Gaithersburg, MD
62 buildings; 578 acres

Boulder, CO
26 buildings; 208 acres

Two sites housing NIST radio stations:

• Ft. Collins; 390 acres
• Kauai; US Navy 30 acre site

and six joint institutes

• JILA – amo physics
• JQI – quantum science
• IBBR – adv. therapeutics
• HML – marine bioscience
• NCCoE – cybersecurity
• CHiMaD – “materials by design”

NIST FY 2015 Congressional Appropriations
$864 M

Scientific and Technical Research Services
Industrial Technology Services
Construction of Research Facilities

Plus
~ $100 M from other Government Agencies
~ $50 M for other reimbursable services
Willie May (Acting)
Under Secretary of Commerce for Standards and Technology
NIST Director

Richard Cavanagh (Acting)
Phillip Singerman
Mary Saunders
NIST Laboratory Programs

providing measurement solutions for industry and the nation

Materials Measurement Laboratory

Physical Measurement Laboratory

Engineering Laboratory

Information Technology Laboratory

Communication Technology Laboratory

Center for Nanoscale Science and Technology

NIST Center for Neutron Research

NIST Lab Resources for FY15

• ~ $676 million from Direct Appropriations
• ~ $120 million from Other Federal and State Agencies
• ~ $50 million for other reimbursable services
NIST Products and Services

Measurement research
- ~ 2,200 publications per year

Standard Reference Data
- ~ 100 different types
- ~ 6,000 units sold per year
- ~ 226 million data downloads per year

Standard Reference Materials
- ~ 1,300 products available
- ~ 30,000 units sold per year

Calibration tests
- ~ 18,000 tests per year

Laboratory accreditation
- ~ 800 accreditations of testing and calibrations laboratories per year
**Documentary Standards**

Standards solutions for national priorities

- Smart Grid, electronic health records, cloud computing, etc.

Improving U.S. government engagement in standards

- Federal interagency coordination

Conformity assessment

- 800 + laboratories accredited by NVLAP

Technical underpinnings

- NIST researchers lend their expertise to 1,000 + standards-related activities
- 100 + technical committees
- Approx. 400 staff
- Leadership in ASTM Intl., IEEE, ISO, IEC, etc.
## Engagement Opportunities with MEP

<table>
<thead>
<tr>
<th>Facilities</th>
<th>Partnerships</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Programs</td>
<td>On Going Activities</td>
</tr>
</tbody>
</table>
On Going Efforts

Energy
- Fuel Cell & Battery (NCNR, PML, MML, CNST)
- Solar (CSNT, MML, PML, EL)

Pharmaceutical Development
- MML, CNST

Environment
- Air (SPO, PML, EL, MML, CNST)
- Water (MML)

Materials Performance
- MML, PML, CNST, EL, ITL, NCNR

Electronics
- PML, CTL, MML

Medical Imaging
- PML, MML

Dimensional Metrology
- PML

Fluid Dynamics
- PML

Public Health and Safety
- SPO, MML, PML

Calibrations
- PML

Reference Materials
- MML

Reference Data
- MML

Advanced Networking
- ITL
<table>
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</tr>
</thead>
<tbody>
<tr>
<td>New Programs</td>
<td>On Going Activities</td>
</tr>
</tbody>
</table>
National User Facilities

The NIST Center for Neutron Research (NCNR) is a national resource for researchers from industry, university and other government agencies.

http://www.nist.gov/ncnr/index.cfm

NIST NanoFab is a shared NIST resource which provides industry, academia, and other government agencies access to world-class nanoscale measurement and fabrication methods and technology on a fee-based, shared-use basis.

http://www.nist.gov/cnst/nanofab/quickstart.cfm

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Facilities

NCNR
CNST - NanoFab
Automotive light-weighting
Robotics Test Facility
Combustion Facility
Sorbents Test Facility

.....
U.S. Innovation Agenda – NIST has an increasing role

**Advanced Manufacturing**
- Precision Measurements
- Bio and Nanomanufacturing
- Smart Manufacturing
- Advanced Materials

**Cybersecurity and Advanced Communications**
- Executive Order – Framework for Critical Infrastructure
- National Cybersecurity Center of Excellence
- Establishing new Center for Advanced Communications with NTIA

**Health Care and Bioscience**
- Measurement tools that will support multiplex analysis of proteins, genetic material, and metabolites.

**Forensic Science**
- Partnering with Department of Justice to enable greater transparency and rigor in forensic evidence use

**Climate Change and Clean Energy**
- Measurement science for buildings
Measurements, Standards, and Data for:

- Biomanufacturing
- Nanomanufacturing
- Sustainable Manufacturing
- Smart Manufacturing
- Robotics
Facilities

Partnerships

New Programs

On Going Activities
Center of Excellence on Advanced Materials

- Center for Hierarchical Materials Design (CHiMaD) Consortium lead by Northwestern
  - University of Chicago
  - Northwestern-Argonne Institute of Science and Engineering (partnership between Northwestern and DoE’s Argonne National Lab)
  - The Computation Institute (partnership between University of Chicago and Argonne National Lab)
- $5 million NIST award with $4.65 million consortium contribution
- CHiMaD will focus on the discovery of novel hierarchical materials. Hierarchical materials exploit distinct structural details at various scales from the atomic on up to achieve special, enhanced properties.
NIST Centers of Excellence

NIST FY2014 appropriations included $8M to expand the Centers of Excellence program. We will establish new COEs in:

• **Disaster Resilience**
  o Develop integrated, systems-based computational models to assess community infrastructure resilience and guide community-level resilience investment decisions
  o Received strong response (closed Sept. 12, 2014)
  o Expect to make award in early 2015

• **Forensic Science**
  o Develop probabilistic methods to support the forensic science disciplines, focusing Pattern Evidence and Digital Evidence
  o Closed December 11, 2014
  o Expect to make award in Spring 2015
On Sept 23rd, NIST awarded FFRDC contract to MITRE, a not-for-profit company that operates multiple FFRDCs for DOD and FAA.

MITRE has existing expertise in cybersecurity, as well as systems engineering and advanced technologies

First task orders include:

- Use Case Development and Implementation ($6M over 2 years)
- Building Block Development and Demonstration ($5.5M over 2 years)
- Operations Management and Facilities Planning Support ($17.6M over 5 years)
NIST-at-a-Glance

Major Assets

- ~3,000 Employees;
  - 1800 Scientists and Engineers
- ~3,500 Associates
- ~400 NIST Staff on ~1,000 national and international standards committees

### NIST FY 2015 Congressional Appropriations

$864 M

- Scientific and Technical Research Services
- Industrial Technology Services
- Construction of Research Facilities

### Number of FY 14 NIST Associates in technical/scientific categories:

<table>
<thead>
<tr>
<th>Category</th>
<th>Associates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DOMESTIC</strong></td>
<td>2300</td>
</tr>
<tr>
<td>Academia Total</td>
<td>1649</td>
</tr>
<tr>
<td>HBCUs</td>
<td>27</td>
</tr>
<tr>
<td>Other MSIs</td>
<td>425</td>
</tr>
<tr>
<td>Other (non-HBCU/MSIs)</td>
<td>1197</td>
</tr>
<tr>
<td><strong>Industry Total</strong></td>
<td>712</td>
</tr>
<tr>
<td>Small Businesses</td>
<td>558</td>
</tr>
<tr>
<td>Large Businesses</td>
<td>154</td>
</tr>
<tr>
<td><strong>Government Total</strong></td>
<td>367</td>
</tr>
</tbody>
</table>

### FOREIGN

- Academia                               | 364        |
- Industry                               | 17         |
- Government (including NMIs)            | 80         |

**Total for FY2014**

| Total                                  | 3506       |

Plus

- ~$100 M from other Government Agencies
- ~$50 M for other reimbursable services
NIST Science & Technology Entrepreneurship Program

This new program will accelerate the development and commercialization of new technologies and grow new business opportunities around the NIST campuses.

As highly trained scientists and engineers, NIST postdoctoral researchers are an underutilized resource for spin-offs and development of new products.

- **Research & Development Awards**
  - Competitive program for NIST post-docs completing their research program
  - Focus on directed R&D to ready a technology for commercial application

- **Entrepreneurial Training**
  - Program participants will take advantage of approved entrepreneurship training activities
  - Entrepreneurs-in-Residence will serve as valuable consultants
Thanks for Your Attention

Questions and Comments?

Gaithersburg, MD
62 buildings; 578 acres

Boulder, CO
26 buildings; 208 acres
NIST TOURS

David Stieren, NIST MEP
NIST Tours
A Glimpse of NIST Resources Accessible to Small Manufacturers

2:10 NIST Manufacturing Robotics Testbed
Engineering Mechanics Bldg 202
• Elena Messina and Jeremy Marvel
  NIST Engineering Laboratory

2:50 NIST Center for Automotive Lightweighting
Industrial Bldg 231
• Tim Foecke
  NIST Material Measurement Laboratory

3:25 NIST Additive Manufacturing
Shops Bldg 304
• Kevin Jurrens
  NIST Engineering Laboratory
Manufacturing Robotics Testbed

Research Focus

• Helping to facilitate implementation of robotics for diverse array of manufacturing applications, including advanced mfg and material handling

• Research focus on human-robot collaboration, rapid re-tasking of robot systems, improvements to robot safety standards, performance evaluation of robots, industrial vehicle systems, sensor systems, dexterous manipulation for industrial applications, and validating simulation systems

Why Should You Be Interested?

• MEP and NIST EL collaborating on a Workshop in MD in Spring 2015
  • incorporate small manufacturer perspectives into NIST research program
  • make small manufacturers aware of opportunities

• Collaborative Robotics and Flexible Automation represent opportunities for significant process improvement for many manufacturing applications, and there have been significant advancements that improve prospects for implementation by small manufacturers
Center for Automotive Lightweighting

Research Focus

- Understanding manufacturability of new materials that are being used to lighten the weight of automobiles.
- Includes understanding how materials are strained in response to stresses of forming operations that produce hoods, fenders, door panels, floor pans, other parts.
- Also understanding how new materials will hold up in collisions, which is strongly influenced by material type and part shape.

Why Should You Be Interested?

- Center is a resource for small manufacturers in conjunction with supply to auto sector.
- Auto industry lacks data, material models needed to reliably manufacture vehicle components from lightweight metals, including aluminum alloys and high-strength steels.
- NIST playing key role in addressing this problem by developing new mechanical testing methods and metrology.
- Technical relevance to NNMI Lightweight and Modern Metals Manufacturing Innovation Institute.
Additive Manufacturing

Research Focus

• Development of measurements and standards to help enable widespread and appropriate implementation of additive manufacturing processes.

• Includes efforts that will enable: rapid characterization of materials used in additive manufacturing processes; in-process sensing, monitoring, and model-based control of additive manufacturing processes; and performance qualification of additive manufacturing materials, processes and parts

Why Should You Be Interested?

• Fundamental issues being addressed in NIST research programs are critical to appropriate, cost-effective implementation of additive manufacturing – from product design, to process planning, to product and process validation
  – All critical for small manufacturers especially

• Technical relevance to NNMI America Makes National Additive Manufacturing Innovation Institute