Update on NIST Extramural Programs in Advanced Manufacturing

Visiting Committee on Advanced Technology
June 11-12, 2013

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NIST Extramural Programs in Advanced Manufacturing

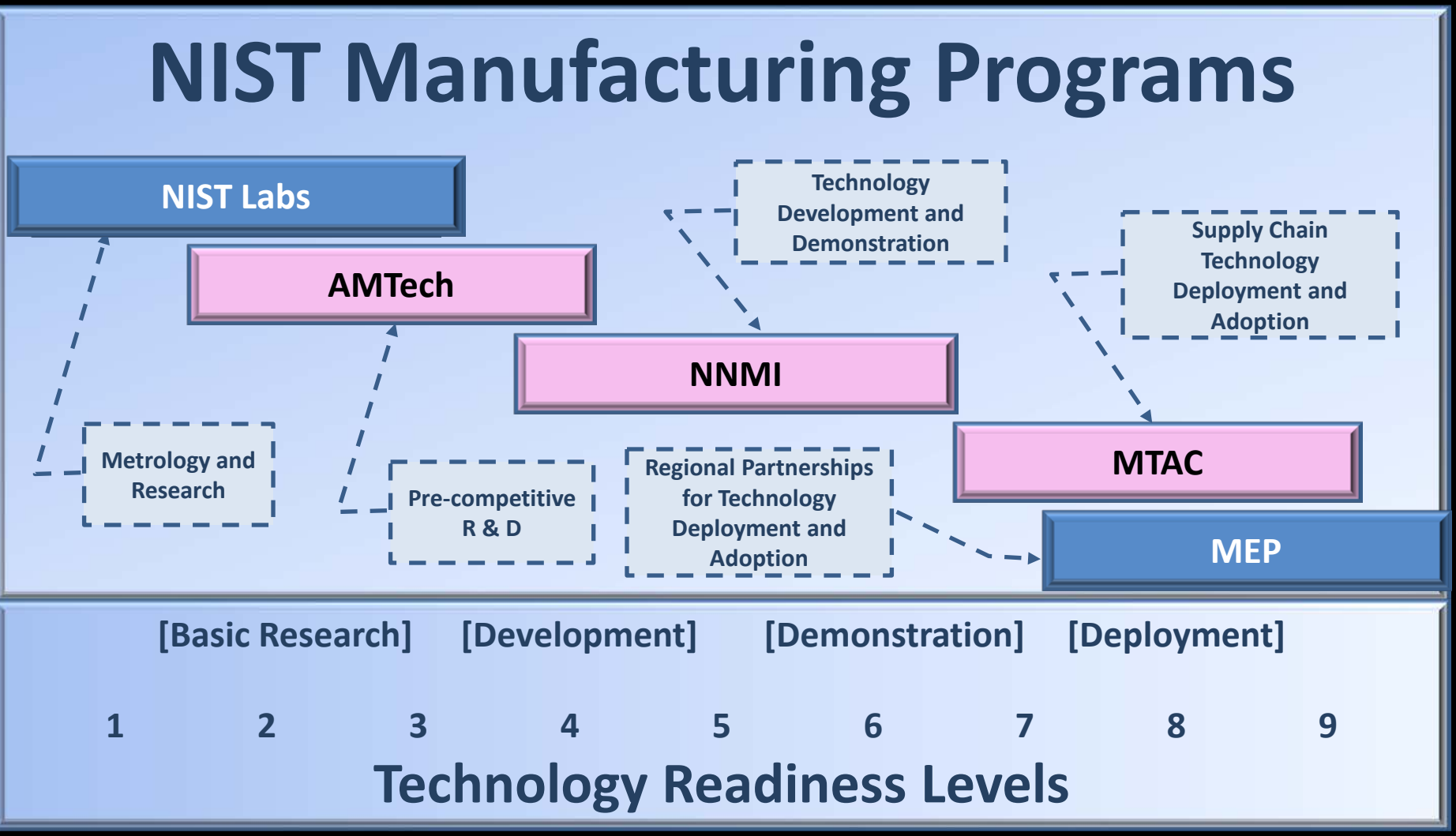
New Extramural programs designed to:

- support US manufacturing competitiveness by strengthening the innovation ecosystem and addressing market failures in technology scale-up
- serve in the precompetitive space and act in a neutral convening and gap-filling role in the manufacturing innovation process.

This set of complementary programs comprise:

1. **AMTech** works at the very earliest stages of manufacturing product and process development by supporting the planning and formation of industry-led consortia.
2. **NNMI** bridges the gap – the "missing middle" – between basic research performed by federal laboratories/academic institutions and applied research performed by private industry; and by addressing skills and workforce development in a "teaching factory" environment
3. **M-TAC** accelerates the commercial adoption of both emerging and existing technology through supply chains specific to the needs of small and mid-sized manufacturing firms

NIST Manufacturing Programs



AMTech

Advanced Manufacturing Technology Consortia

Advanced Manufacturing Technology Consortia (AMTech)

Supports R&D in advanced manufacturing and strengthens long-term U.S. leadership in critical technologies leading to sustainable economic growth and job creation.

AMTech originally proposed in FY 12, funded in FY 13

AMTech program includes :

1. **Planning awards:** consortia to develop a shared vision of industry's research needs
2. **Implementation awards:** larger awards to consortia to facilitate the realization of clearly stated long-term industry research needs

Deliverables and outputs:

- **Consortia** that reflect the needs of consortia members representing industry, small business, and other stakeholder groups
- **R&D outputs** as measured by metrics such as direct funding of research activities, generation of new knowledge, attraction of industry and state funding, and creation of new companies and jobs

VCAT input on AMTech Program design

June 7, 2011

- Meeting of the VCAT Subcommittee on Manufacturing, Chaired by Alan Taub
- Other VCAT Subcommittee members: Sujeet Chand, Uma Chowdhry, Tony Haymet, Karen Kerr, and Al Romig
- Guest experts from Council on Competitiveness, General Motors, ITIF, Maritime Applied Physics Corp., National Economic Council, Texas Instruments, & USCAR

October 18, 2011

- Alan Taub presents Subcommittee recommendations to the full VCAT

February 7, 2012

- Report approved by VCAT: *Recommendations on Design Principles for AMTech*
- VCAT recommendations incorporated in current design/FY2013 FFO

"The VCAT strongly endorses the AMTech program as a model public-private partnership program for supporting technological innovation and facilitating its deployment to support advanced manufacturing" **(2011 VCAT Annual Report)**

Advanced Manufacturing Technology Consortia (AMTech)

Current Status

FY 13 funded at $7.5M

- $3M used to support DOD Institutes for Manufacturing Innovation
  - discussed later under AMNPO/National Network of Manufacturing Innovation

- NIST AMTech grants for consortia planning at ~$4.5 M
  - FFO mid July 2013
  - "Industry Day" by early August
  - Awards expected January 2014

NNMI

National Network for Manufacturing Innovation

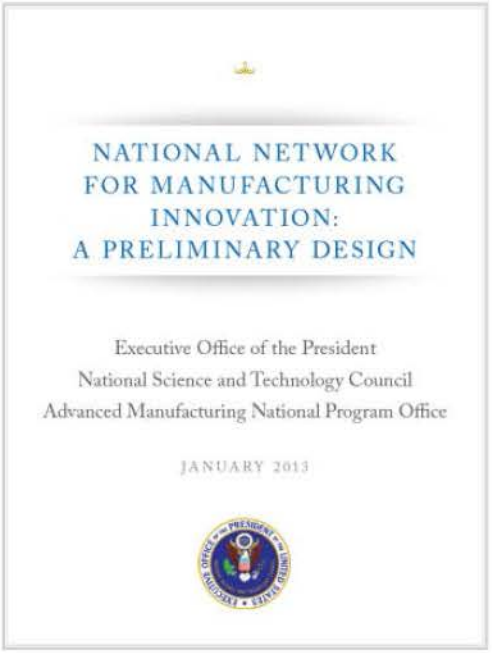
PVCAT February 2013

Program Update: The National Network for Manufacturing Innovation

January 16, 2013 **Blueprint for Action: Workshop on the Design of the National Network for Manufacturing Innovation** in Huntsville, AL

- NASA and DOD sponsored event
- Over 350 participants, majority were industry leaders
- Public release of NSTC Report *National Network for Manufacturing Innovation: A Preliminary Design*
  - Presents an overview of the program, drafted by interagency team led by the AMNPO
  - Based on input from 4 workshops and Request for Information – nearly 900 stakeholders in total

Planned: Washington DC Blueprint for Action workshop, hosted at the National Academy of Sciences



Summary Update:
The National Network for Manufacturing Innovation

February 12, 2013 SOU "… **and I ask this Congress to help create a network of fifteen of these hubs and guarantee that the next revolution in manufacturing is made in America"**

- Proposed <u>new</u> program
  - $1B in one-time funding;
  - Based at NIST
  - Includes interagency participation
- DOD led "pilot" last year: National Additive Manufacturing Innovation Institute
  - $5M FY13 NIST Measurement Science for Advanced Manufacturing grant to support US AM efforts
- DOD and DOE will be launching 3 institutes as part of the NNMI network
  - Lightweight and Modern Metals
  - Digital Manufacturing and Design
  - Wide Bandgap Semiconductors for Power Applications
- Details at www.manufacturing.gov

Summary Update: The NIST Advanced Manufacturing Office and The Advanced Manufacturing National Program Office

New developments

- Advanced Manufacturing Subcommittee under NSTC (CoT) established on December 12, 2012
- Executive Order pending
- Recruiting new Fellows

Gloria Wiens
University of Florida

Brian Paul
Oregon State University

CHARTER
of the
ADVANCED MANUFACTURING SUBCOMMITTEE
COMMITTEE ON TECHNOLOGY
NATIONAL SCIENCE AND TECHNOLOGY COUNCIL

A. Official Designation

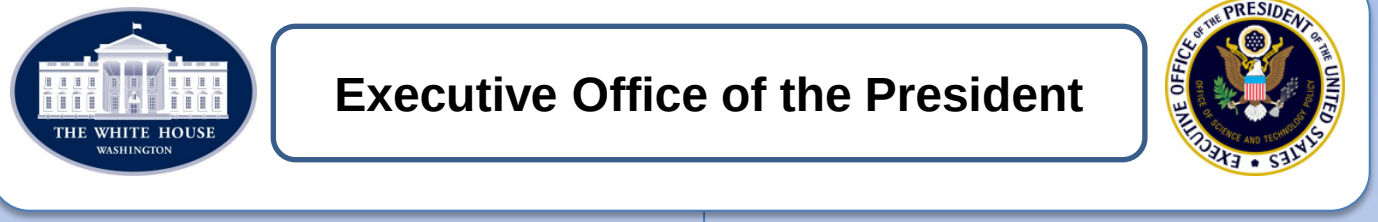
Consistent with the requirements of Sec. 102 of the America COMPETES Reauthorization Act of 2010 (Act) [i], the Advanced Manufacturing Subcommittee (AMS) is hereby established by action of the National Science and Technology Council (NSTC) Committee on Technology (CoT). The AMS replaces the NSTC/CoT Interagency Working Group on Advanced Manufacturing (IAM) which was originally chartered on March 30, 2011 and is hereby dissolved.

B. Purpose and Scope

The AMS serves as a forum within the NSTC for developing consensus and resolving issues associated with Federal advanced manufacturing[1] policy and programs. The AMS will:

1. Support implementation of the industry-led Advanced Manufacturing Partnership (AMP) as announced by the President on June 24, 2011[2] and recommended by the President's Council of Advisors on Science and Technology (PCAST).[3]
2. Support implementation of the National Strategic Plan for Advanced Manufacturing the NSTC provided to Congress.[4]

Interagency Advanced Manufacturing National Program Office (AMNPO)



Advanced Manufacturing Partnership (AMP/PCAST)

Advanced Manufacturing National Program Office (housed at DOC - NIST)

New

NSTC - Advanced Manufacturing Subcommittee

HMEP

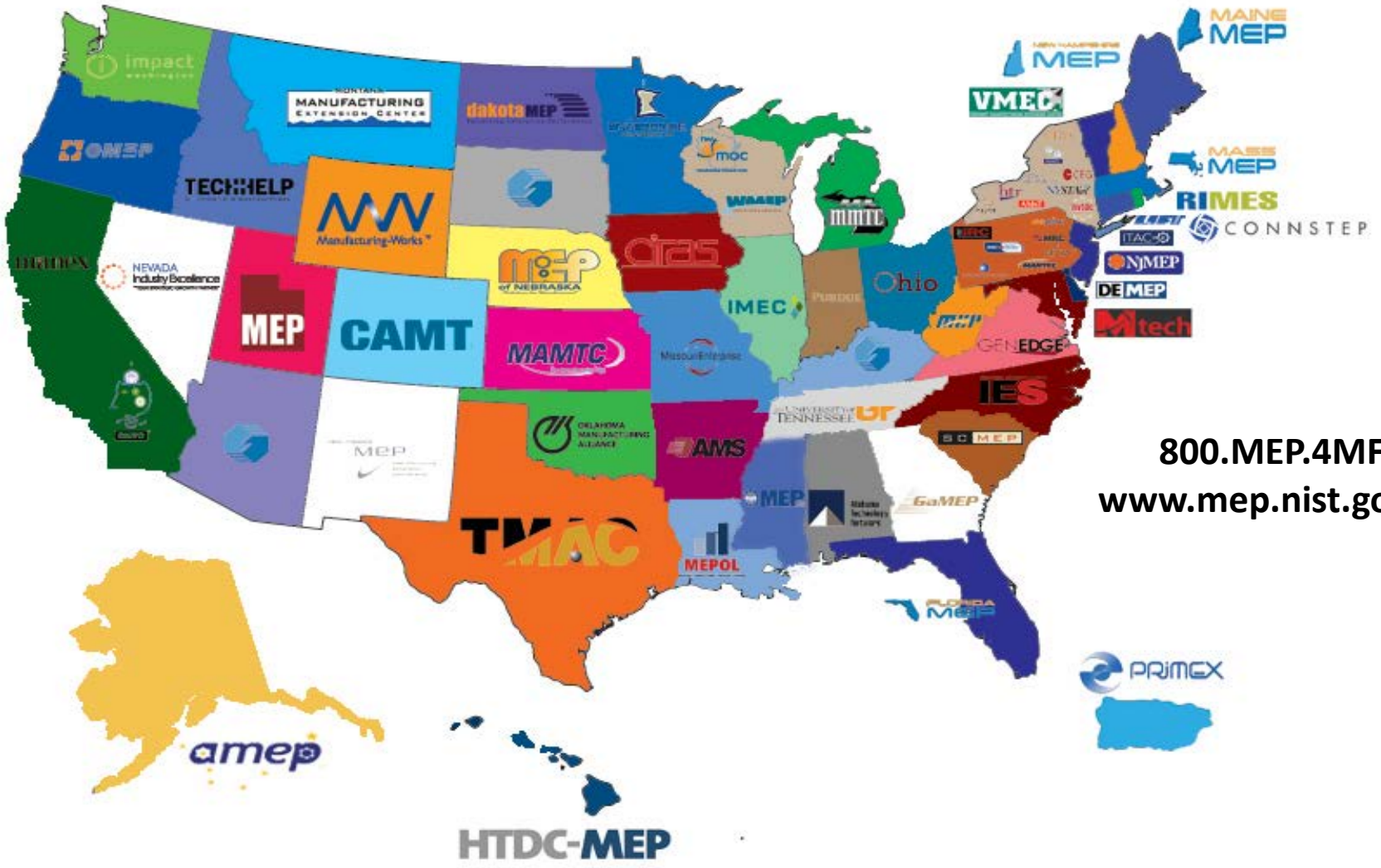
Hollings Manufacturing Extension Partnership

and

M-TAC

Manufacturing Technology Acceleration Centers

HMEP Centers Across the U.S.



800.MEP.4MFG
www.mep.nist.gov

What HMEP Does

Focus on meeting manufacturer's short term needs in context of overall company strategy

HMEP Center areas of common strength

- ✓ Engineering Services for products and processes
- ✓ Growth Services – new or expanded market opportunities
- ✓ Lean Manufacturing
- ✓ Quality Systems
- ✓ Sustainability
- ✓ Workforce Development

Reach over 31,000 manufacturing firms and complete over 7,600 projects per year*

*Based on FY2011 and 2012 MEP Center reported performance data.

M-TAC Background and Focus

Background:

- ✓ M-TACs are a new initiative included in President Obama's 2014 Federal Budget
- ✓ Includes $25 M to deploy M-TACs in FY-2014 Budget Request

Focus:

- ✓ Provide technology acceleration support to small & mid-sized U.S. manufacturers through program that is nationally connected and locally deployed.
- ✓ Deliver technology transition and commercialization services for small & mid-sized U.S. manufacturers on a nationwide-scale
- ✓ Serve as industry-specific coordination points for key supply chains

M-TAC Approach

Approach:

- ✓ Collaborate and partner with local, regional and national resources to fill gaps not being addressed by other national efforts
- ✓ Foster connections between the existing HMEP System and its network of Centers to amplify nationwide HMEP technology acceleration assistance

Emphasis:

- ✓ Supply Chain Development and Optimization through technology adoption
- ✓ Existing & Emerging Technologies; Product & Process Technologies
- ✓ Collaborate with and fill gaps not being addressed by other national efforts
- ✓ Services relating to
  - technology and process integration; engineering; manufacturing scale up
  - new product development; product and process innovation
  - financing; legal (IP and regulatory); marketing, market analysis

Schedule – FY-2013 and FY-2014

2013 Request for Information (RFI) to inform 2014 M-TAC Investments – Post July 2013

- Financially sustainable business & cost share models,
- Technology transition & commercialization tools/services,
- M-TAC role with respect to Supply Chains,
- M-TAC performance evaluation

2013 Federal Funding Opportunity (FFO) for Initiation Pilot Projects – Post July 2013 and Target Award September 2013

- $1M total available
- Focus - Inform 2014 M-TAC investments:
  - ✓ *Test/demo business models for nationwide, scalable service*
  - ✓ *Provide technology transition, commercialization tools & services to small manufacturers*
  - ✓ *Define M-TAC role relating to Supply Chain needs and participation of OEMs*
  - ✓ *Metrics of Success*

FFO for M-TAC Deployment – Target Early 2014 – Pending Funding - $25M

- Establish nationally focused M-TAC's that leverage and amplify network of HMEP Centers

Questions?