NNMI, PCAST and AMP
What these Acronyms Mean for the Future of U.S. Manufacturing

AMP 2.0 Regional Meeting
hosted by Rensselaer Polytechnic Institute and GlobalFoundries
April 24, 2014

Mike Molnar
Advanced Manufacturing National Program Office
www.manufacturing.gov
Interagency Advanced Manufacturing National Program Office (AMNPO)

Executive Office of the President

[Images of various government agencies]
Challenge: US losing leadership in Advanced Products

U.S. Trade Balance for Advanced Technology Products

US Trade Balance
Advanced Technology Products ($ Billion)

Source: Census Bureau
Products invented here, now made elsewhere

*not driven by labor cost*
Advanced Manufacturing Partnership

AMP Co-chairs
Andrew Liveris  
CEO, Dow Chemical
Susan Hockfield  
President, MIT

PCAST / AMP report released July 17, 2012 on whitehouse.gov
• 16 Recommendations in three areas: innovation, talent, and policy

Two of these recommendations:
1) Coordinated “whole of government” effort via Advanced Manufacturing National Program Office
2) Pursue the “missing middle” via manufacturing innovation hubs
AMP: The Scale-up Gap or Missing Middle

Common terms
valley of death, missing Bell Labs, industrial commons
NNMI

National Network for Manufacturing Innovation
Public Engagement on Design
Workshops & Request for Information

Broad & Diverse Stakeholder Input
1,200 voices on the NNMI Design!

Industry 31%
Academia 31%
All Other 10%
Economic Development 6%
Research & non-profits 8%
Federal State & Local Gov’t 14%

University of Colorado
Boulder, Colorado

Cuyahoga Community College
Cleveland Ohio

Rensselaer Polytechnic Institute
Troy New York

National Academies Beckman Center
Irvine California

U.S. Space and Rocket Center
Huntsville, Alabama
Institute Design

Academia
- Universities
- Community Colleges

Industry
- Large Manufacturing Companies
- Small & Medium Enterprise (SMEs)
- Start-ups

Government
- Federal Government
- State/Local Government
- Economic Development Organization

National Network of Institutes

Institute For Manufacturing Innovation
- Prototype lab/shops
- Research facility
- Computer lab

Shared Use Facility
- Mfg. Demonstrations
- Workforce Development
Institute Activities
Not just Applied R&D – solutions, access & workforce

Applied Research & Demo projects for
- reducing cost/risk on commercializing new tech.
- Solving pre-competitive industrial problems

Tech Integration - Development of innovative methodologies and practices for supply chain integration

Small/Medium Enterprises
- Engagement with small and medium-sized manufacturing enterprises (SMEs).

Education, Skills & Workforce development
Education and training at all levels for workforce development
“In my State of the Union Address, I also asked Congress to build on a successful pilot program and create 15 manufacturing innovation institutes that connect businesses, universities, and federal agencies to turn communities left behind by global competition into global centers of high-tech jobs.

“Today, I’m asking Congress to build on the bipartisan support for this idea and triple that number to 45 – creating a network of these hubs and guaranteeing that the next revolution in manufacturing is Made in America.”

July 30, 2013

**NNMI Vision – 45 institutes**

**With Congressional Legislation**
- Open competition on ANY topic proposed by Industry and Academia
- Selection by merit, evaluation by external industry/academic panels
Revitalize American Manufacturing & Innovation Act of 2014

Status

Senate (S. 1468)
- Passed Sen. Commerce Committee (4/9)
  - 15 cosponsors (7R/7D/1Ind.)

House (H.R. 2996)
- Referred to Science Comm.
  - 67 cosponsors (33R/34D)

Joint press release: “Their landmark bill would establish a Network for Manufacturing Innovation to position the United States, once again, as the global leader in advanced manufacturing and ensure that the U.S. can out-innovate the rest of the world while creating thousands of high-paying, high-tech manufacturing jobs.”
We also have the chance, right now, to beat other countries in the race for the next wave of high-tech manufacturing jobs. My administration has launched two hubs for high-tech manufacturing in Raleigh and Youngstown, where we’ve connected businesses to research universities that can help America lead the world in advanced technologies.

Tonight, I’m announcing we’ll launch six more this year. Bipartisan bills in both houses could double the number of these hubs and the jobs they create. So get those bills to my desk and put more Americans back to work.

President Barack Obama
January 28, 2014
NNMI Institute Status – the start of a network

The federal government is launching a National Network for Manufacturing Innovation. The full network, which requires legislation from Congress, would be developed over a decade and consist of up to 45 regional hubs.
AMP 2.0
Advanced Manufacturing Partnership
President’s Council of Advisors on Science and Technology
Advanced Manufacturing Partnership 2.0

Mission: Encourage approaches that sustain/grow U.S. leadership in Advanced Mfg.

AMP 1.0 – 16 Recommendations

Pillar I: Enabling Innovation
Pillar II: Securing the Talent Pipeline
• Pillar III: Improving Business Climate

AMP 2.0 focused on Implementation
kickoff Sept 30, 2013
– Regional engagement and outreach
– Implementation on national initiatives
– Five active Working Teams to issue “letter-reports”

AMP 2.0 Working Teams
1. Transformative manufacturing technologies
2. Demand-driven workforce solutions
3. Supporting implementation of NNMI
4. Technology scale-up policy
5. Improving the Manufacturing image
AMP 2.0 Implementation

- **AMP 2.0 Steering Committee**
  - White House meetings December 3, April 28 and July

- **AMP 2.0 Outreach and Engagement**
  - Roundtables (focus groups)
    - Manufacturing Imaging
    - Capital Access – 3 video conferencing nodes: east-to-west
    - Financing Scale Up for Established SMEs
  - External Subject Matter Experts (Industry – Academia – Government)
  - State and National Government – Governors & Congress

- **AMP 2.0 Regional Meetings [Hosts]**
  - Atlanta, GA – February 3, 2014 [Georgia Institute of Technology]
  - Akron, OH – April 2, 2014 [University of Akron / United Steelworkers]
  - **Troy, NY – April 24, 2014 [Rensselaer Polytechnic Institute / Global Foundries]**
  - Cambridge, MA – May 16, 2014 [Massachusetts Institute of Technology]
  - Detroit, MI – June 9, 2014 [University of Michigan / Northrop Grumman Corporation]
Team 1: Transformative Manufacturing Technologies

Led by Alcoa, Dow, Honeywell and MIT

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<tr>
<th>GOALS</th>
<th>▪ Plan public-private initiatives to advance transformative manufacturing technologies for two-four critical technologies in AMP report. Will assess actions and develop technology strategies for sustained U.S. leadership.</th>
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| SCOPE OF WORK | ▪ Articulate criteria to identify high-priority mfg. technology areas (MTAs)  
 ▪ For selected MTAs, organize events with experts along manufacturing supply chain to develop Manufacturing Technology Strategies/Roadmaps  
 ▪ Deliver Technology Program Strategies / Recommendations |

REPORT OF PROGRESS

▪ Team has developed **prioritization criteria** by which technologies were evaluated: industry pull, national security / economic interest, cross-industry impact and ability to build on current US competitive advantages.

▪ The prioritization process has identified the following as **first technology priorities**
  • Advanced Sensing, Measurement & Process Control  
  • Visualization, Info & Digital Manufacturing  
  • Advanced Materials Design, Synthesis & Processing
## Team 2: Demand-Driven Workforce Development

Led by Siemens and South Central College

### GOALS
- Scaling best-in-class demand-driven workforce solutions to develop technical skills.

### SCOPE OF WORK
- Increase *career pathways and “dual credit” opportunities* across education (K-12 schools, community colleges, and Universities) in advanced manufacturing.
- Increase *nationally portable, stackable credentialing systems* through certifications and work-based learning elements.
- Establish *internship/apprenticeship models* with industry, trade unions, government and high schools or community colleges – regionally across the US.
- Develop practical competency based *“bridging modules” for transitioning veterans* focused on private sector manufacturing skills certifications and apprenticeships with DOL/GI Bill funding and support.

### REPORT OF PROGRESS
- Divided into four subteams, one focused on each of the four priorities identified in the SOW.
- Important elements of the models include concepts such as: multiple entry and exit points along career pathways, modularized training programs, “regionality” of the effort and importance of partnerships between industry and academia with local “intermediaries”.


# Team 3: NNMI

**Led by Georgia Tech, Global Foundries and Overland Storage, Inc.**

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<th>GOALS</th>
<th>• Support implementation of NNMI, ensure institutes and network are appropriately geared towards industry needs, and address core implementation issues.</th>
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<tr>
<td>SCOPE OF WORK</td>
<td>• Provide directional input on the implementation of the NNMI’s to ensure that the institutes and the network are appropriately geared towards industry needs and that core implementation issues are addressed.</td>
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**Work in support of:**
- Pilot Institute established, three more awarded, four upcoming solicitations
- Guidance on stakeholder value, IP, governance, sustainability

**REPORT OF PROGRESS**
- Working Team has divided its activities into two subgroups:
  - **Communication and outreach** – developing a narrative to communicate the value proposition of all stakeholders.
  - **Operations and metrics** – provide input on issues associated with the solicitation process, IP practices, performance metrics, the operational model, network governance, etc.
## Team 4: Scale-Up Policy

**Led by MacArthur Corporation and The University of Akron**

### GOALS
- Solutions to key barriers to accelerate and amplify the value of technology commercialization in the U.S. manufacturing sector – special focus on SMEs, including start-ups & mature enterprises.

### SCOPE OF WORK
- Identify barriers, challenges and solutions to adopting, scaling and rapidly deploy new technologies and processes across the U.S. supply chain.
- Develop clear solutions for core manufacturing policy issues.

### REPORT OF PROGRESS
- The team has decided upon two primary areas of focus for policy analysis and recommendations:
  - **Technology diffusion – supply chain development**: Finding, developing and managing relationships between supply chain partners, identifying mechanisms to accelerate market demand and reduce investment risk for supply chain players. Improving processes for identification and sourcing of advanced manufacturing-related technologies and to more efficiently integrate such technologies into U.S. manufacturing.
  - **Capital sources and access**: Increasing accessibility of financing options for manufacturing scale-up to address the higher risk technology driven manufacturing scale-up phase which is vulnerable to insufficient private and public investment.
Team 5: The Image of Manufacturing

Led by Northrop-Grumman and The University of Michigan

GOALS
- Implement the recommendations included in the “Report of the Advanced Manufacturing Partnership Steering Committee Annex 5: Outreach

SCOPE OF WORK
- Workstream”
  - Develop a new image for advanced manufacturing
  - Develop an outreach program for supporting the manufacturing image campaign
  - Leverage regional and national meetings

REPORT OF PROGRESS
- Target Groups have been identified and prioritized
  - K-12 communities: parents, teachers and students
  - Technical communities: universities and community colleges
  - Local, State & Federal Policymakers: engaging the manufacturing community to help carry the campaign forward
- Work has begun to define and focus messages and outline the associated delivery tactics
  - Messages include: “manufacturing is a career, not just a job” and is rewarding, exciting, creative and innovative, and new adjectives replacing “The Four D’s”
  - Media, social media, video, AD council, regional and national meetings etc.
  - Working with other stake-holders on manufacturing image
- Building links to the action plans that are being developed in the Workforce group
“... AMP’s Dow, Alcoa and Siemens are going to announce two new apprenticeship programs: One that’s in northern California for welders, and one that’s in southern Texas for maintenance technicians.”

“... AMP’s South Central College in Minneapolis is going to work with the 24 colleges that exist in Minnesota to develop apprenticeships in mechatronics.”

Harper College, in suburban Chicago, is establishing an apprenticeship program linked to college credit for veterans in advanced manufacturing, including logistics and supply chain management.

“... AMP leadership is also going to create a how-to manual as to how to then replicate these types of programs.”

Emphasizing skills training as key to a growing middle class, President Barack Obama announced $600 million in competitive grants to spur creation of targeted training and apprenticeship programs to help people land good-paying jobs.
Thank you

For questions or comments, please also contact the Advanced Manufacturing National Program Office

amnpo@nist.gov

www.manufacturing.gov

301-975-2830

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