

Designing for Impact I: Workshop on Building the National Network for Manufacturing Innovation



ADVANCED MANUFACTURING NATIONAL PROGRAM OFFICE

Dialogues

Introduction

The National Network for Manufacturing Innovation (NNMI)

The interagency Advanced Manufacturing National Program Office (AMNPO), hosted by the National Institute of Standards and Technology (NIST), an agency of the U.S. Department of Commerce, invites interested parties to provide input on a new public-private partnership program, the National Network for Manufacturing Innovation (NNMI or Network). Interested parties may provide input by attending any of a series of public workshops and by responding to a Request for Information. The proposed Network will be composed of up to fifteen Institutes for Manufacturing Innovation (IMIs or Institutes) around the country, each serving as a hub of manufacturing excellence that will help to make United States (U.S.) manufacturing facilities and enterprises more competitive and encourage investment in the United States. This program was proposed in the President's fiscal year (FY) 2013 budget.

Many technologies fail to move to commercialization or reach full scale-up in the United States because the domestic private sector, particularly small and medium-sized enterprises (SMEs), find that the risks of such investments are too great for an individual entity to make. The private sector also reports challenges in accessing key skills and technical infrastructure for demonstration and prototyping purposes.

To meet this challenge, the United States must build on its strengths, leverage its unique research, innovation, and workforce capabilities, and create an infrastructure for manufacturing innovation to ensure that the next generation of processes and products not only will be invented in the United States, but scaled up and manufactured in the United States as well.

Institutes for Manufacturing Innovation (IMIs) and Dialogue Goals

IMIs will bring together large companies, SMEs, academia, federal agencies, states, and other organizations to accelerate innovation through co-investment in industrially relevant manufacturing technologies with broad applications. Used in this context, "co-investment" means that non-federal entities will contribute financial and other resources to the Institutes to complement federal investments. The Institutes will take full advantage of existing infrastructure by integrating current capabilities and building new ones where needed to foster innovation that can impact the manufacturing sector on a large scale.

The objectives of the NNMI are to bridge the gap between applied research and product development, provide shared assets to help companies gain access to cutting-edge capabilities and equipment, and create an unparalleled environment to continuously educate and train students and workers in advanced manufacturing skills. Each Institute will become a self-sustaining technical center of excellence, providing and integrating innovation resources that will help to make U.S. manufacturing facilities and enterprises more competitive and encourage investment in the United States.

The objective of the four Dialogues within this *Designing for Impact* workshop is to inform workshop participants about the proposed NNMI and to solicit individual participant insights and ideas. The individual inputs offered by stakeholders will assist the AMNPO in the development of the new program should NNMI be funded in FY 2013.

Dialogue 1: Technologies with Broad Impact

Facilitator: Chris Clark, Energetics

Agency Leads:

Rob Ivester, NIST
John Vickers, NASA

Overview:

For its particular technology focus area, each Institute should be designed to address issues related to the “industrial commons”—the collective R&D, engineering, and manufacturing capabilities that sustain innovation. This includes addressing shared problems throughout the supply and/or value chain and across multiple end-use applications. The stage of the selected technology areas is envisioned to be within Technology Readiness Level (TRL) 4-7, whereby process economics are further clarified and scale-up issues are better defined and quantified. Further, the Institutes should have strategies for transitioning and implementing to larger-scale production beyond Institute operations.

The topics below are intended to assist in the formulation of individual participant input and should not be construed as a limitation on the discussion or as a limitation on the topics participants may wish to address in their written or verbal inputs. Participants are encouraged to identify best practices, and provide recommended strategies and approaches, when appropriate, as a part of their input.

Topics:

- 1. What criteria should be used to select technology focus areas?**
- 2. What technology focus areas that meet these criteria that would you be willing to co-invest in?**
- 3. What measures could demonstrate that Institute technology activities assist U.S. manufacturing?**
- 4. What measures could assess the performance and impact of Institutes?**

Turn to continue

Other Participant Topics and Input

Dialogue 2: Institute Structure and Governance

Facilitator: Joan Pellegrino, Energetics

Agency Lead: John Christensen, DOD

Overview:

Each Institute is envisioned to be a public-private partnership composed of many different types of organizations, each with their own mission, goal, and structure. Consequently, it is important for each Institute to function under a coherent framework with well-managed operating procedures that allow for flexibility. It will be important for the Institutes to demonstrate the capability to manage the complexity and diversity of the participating entities for successful Institute performance.

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Topics:

- 1. What business models would be effective for the Institutes to manage business decisions?**
- 2. What governance models would be effective for the Institutes to manage governance decisions?**
- 3. What membership and participation structure would be effective for the Institutes, such as financial and intellectual property obligations, access and licensing?**
- 4. How should a network of institutes optimally operate?**

Turn to continue

5. What measures could assess effectiveness of Network structure and governance?

Other Participant Topics and Input

Dialogue 3: Strategies for Sustainable Institute Operations

Facilitator: Fred Hansen, Energetics

Agency Lead: Leo Christodoulou, DOE

Overview:

Each Institute will be catalyzed through an initial investment from the Federal Government. Each institute should have a plan and strategy for private sector co-investment, and to maintain robust performance beyond the initial federal investment. Institute members will need to demonstrate the necessary financial and strategic commitment to ensure successful operations.

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Topics:

- 1. How should initial funding co-investments of the Federal Government and others be organized by types and proportions?**
- 2. What arrangements for co-investment proportions and types could help an Institute become self-sustainable?**
- 3. What measures could assess progress of an Institute towards being self-sustainable?**
- 4. What actions or conditions could improve how Institute operations support for domestic manufacturing facilities while maintaining consistency with our international obligations?**

Turn to continue

5. **How should Institutes engage other manufacturing related programs and networks?**

6. **How should Institutes interact with state and local economic development authorities?**

7. **What measures could assess Institute contributions to long term national security and competitiveness?**

Other Participant Topics and Input

Dialogue 4: Education and Workforce Development

Facilitator: Mauricio Justiniano, Energetics

Agency Lead: Russell Barton, NSF

Overview:

The availability of qualified workers is one of the critical bottlenecks preventing scale-up of many advanced manufacturing industries. Manufacturing competitiveness in an era of rapid technological and market change requires workers to have advanced skills and the foundational knowledge to quickly obtain new skills. Developing and enhancing the skill set of current, displaced and new employees will be critical for Institute success.

The topics below are intended to assist in the formulation of individual participant input and should not be construed as a limitation on the discussion or as a limitation on the topics participants may wish to address in their written or verbal inputs. Participants are encouraged to identify best practices, and provide recommended strategies and approaches, when appropriate, as a part of their input.

Topics:

- 1. How could Institutes support advanced manufacturing workforce development at all educational levels?**
- 2. How could Institutes ensure that advanced manufacturing workforce development activities address industry needs?**
- 3. How could Institutes and the NNMI leverage and complement other education and workforce development programs?**
- 4. What measures could assess Institute performance and impact on education and workforce development?**

Turn to continue

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5. How might Institutes integrate research and development activities and education to best prepare the current and future workforce?

Other Participant Topics and Input