NIST NNMI Competition

The Power to Transform U.S. Manufacturing

NIST
National Institute of
Standards and Technology
U.S. Department of Commerce
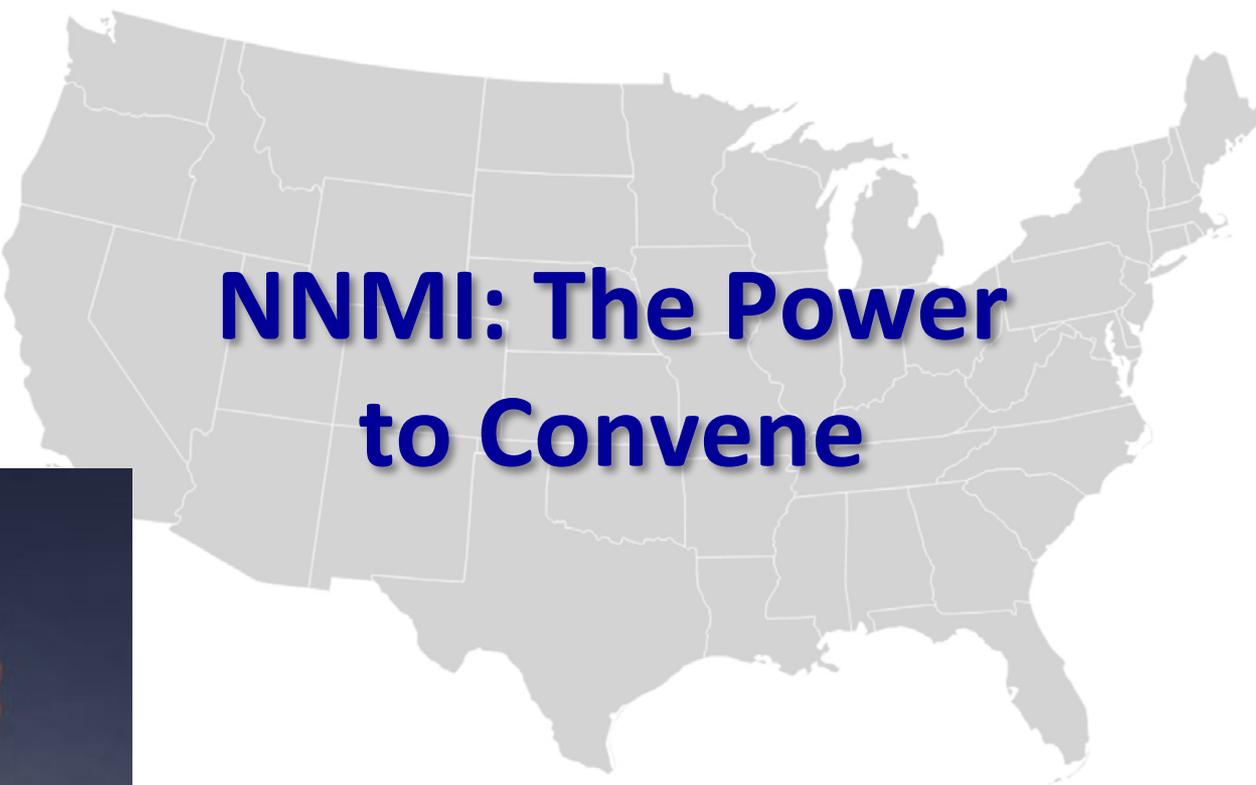
Call to Order

NNMI: The Power to Convene

Call to Order

Dr. Phillip Singerman
Associate Director for Innovation and Industry Services, NIST

2

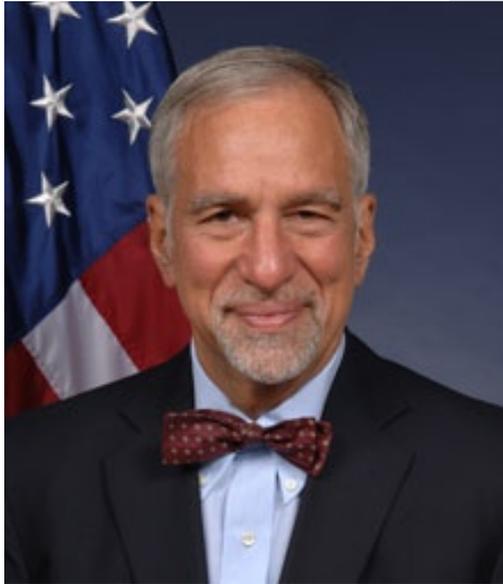# 2016 NIST NNMI Institute Competition

Proposers' Day, March 8, 2016

- **Website and Resources**
  - Visit www.nist.gov/amo/nnmi/2016competition.cfm
  - Resources to assist Applicants, include:
    - Documents, FAQs, Suggested Templates and Guidance, and How-To's
    - Cooperative Agreements & Award Requirements, and Publications
  - Send questions to NIST hotline at nnmifund@nist.gov or (301) 975-0404

- **Competition Timeline**

February 19, 2016	Announced on Grants.gov *(2016-NIST-NNMI-01)*
April 20, 2016, 11:59 p.m. ET	Pre-Applications due through Grants.gov
May 23, 2016 (on or about)	Pre-Application review and selection notification
July 22, 2016, 11:59 p.m. ET (on or about)	Full Applications due through Grants.gov
Q1, CY 2017	Anticipated start date for awards

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U.S. Department of Commerce

Welcome

NNMI: The Power to Innovate

Welcome

Dr. Willie E. May
Under Secretary of Commerce for Standards and Technology
& NIST Director

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U.S. Department of Commerce

NIST is part of the Department of Commerce

Penny Pritzker
Secretary of Commerce

Under Secretary and Administrator
National Oceanic and Atmospheric Administration

Under Secretary for International Trade
Deputy Under Secretary for International Trade Administration

Under Secretary for Industry and Security
Bureau of Industry and Security

Under Secretary for Economic Affairs
Economic and Statistics Administration

Under Secretary for Standards and Technology
National Institute of Standards and Technology

Under Secretary for Intellectual Property and Director
United States Patent and Trademark Office

NIST's Mission is 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.

NIST At-a-Glance

Major Assets, Partnerships, People, Budget

2 Large Research Campuses

Gaithersburg, MD– **62** bldgs., **578** acres
Boulder, CO—**26** bldgs., **208** acres

FY 2016 Appropriations. $964 Million

NIST labs, $**690 M**
Industrial Technology Services, $**155 M**
Construction of Research Facilities, **$119 M**

Additional Resources
~ $120 M from other government agencies
~ $50 M from reimbursable services

Partnerships In Every State

60 Manufacturing Extension Centers
10 joint institutes/Centers of Excellence
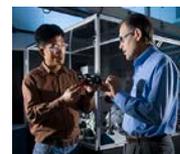
People: Employees & Associates

~**3,400** Federal Employees
~**3,700** Guest Researchers & other NIST Associates
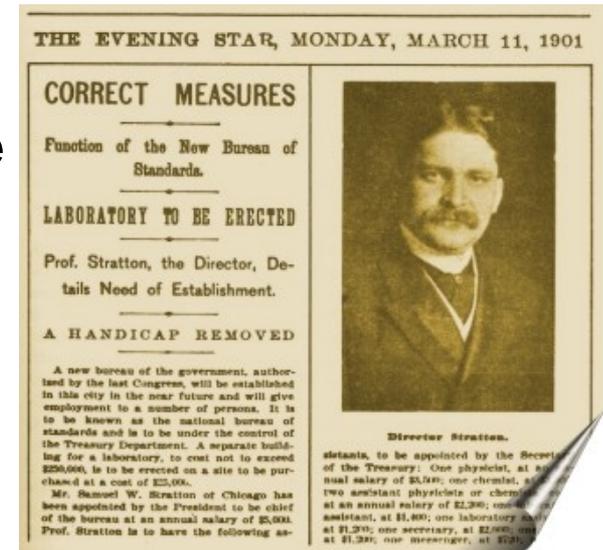~**400** NIST Staff on ~ **1,000** standards committees

NIST (NBS) established in 1901

"It is therefore the unanimous opinion of your committee that no more essential aid could be given to
- **manufacturing**
- commerce
- the makers of scientific apparatus
- the scientific work of Government
- schools, colleges, and universities

than by the establishment of the institution proposed in this bill."

THE EVENING STAR, MONDAY, MARCH 11, 1901

CORRECT MEASURES

Function of the New Bureau of Standards.

LABORATORY TO BE ERECTED

Prof. Stratton, the Director, Details Need of Establishment.

A HANDICAP REMOVED

House Committee on Coinage, Weights and Measures … on the establishment of the National Bureau of Standards (now NIST)   May 3, 1900

NIST – Who We Are and What We Do in 2016

NIST is a world-class scientific and technical agency uniquely focused on driving innovation and economic competitiveness through:

- **a world-leading scientific research program –** measurement, technology, and standards solutions to our stakeholders

- **a Manufacturing Extension Partnership –** focused on strengthening our nation's small and medium manufacturers

- **an Advanced Manufacturing National Program Office –** facilitating expansion of a nationwide network of Institutes for innovation in Manufacturing

- **a Baldrige Performance Excellence Program –** used to assess the nation's companies and organizations which is recognized, utilized, and emulated around the world
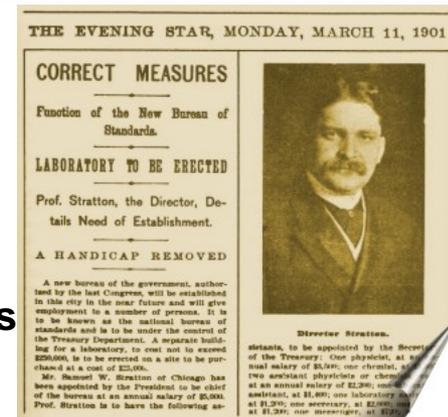
We have a great and unique Mission and are:
- a key player on the Administration's Innovation Team
- the nation's go-to agency for measurements, standards, and technology
- receiving bipartisan and bicameral support

8

NIST (NBS) established in 1901
Organic Act of 1901; Updated in 2008

Functions and activities of the Institute include:

- **custody and dissemination of national standards**
  - **comparison of U.S. national standards with those of other nations**
- **determination of physical constants** and the properties of materials,
- solutions to measurement and standards problems of other government agencies
- providing "Innovation" assistance to industry

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NMI's Around the World *are Working together*

to link our global measurement system to the fundamental constants of nature

Unit		Reference value used to define the unit		
		in current SI	in the new SI	
second,	s	$\Delta\nu(^{133}Cs)_{hfs}$	$\Delta\nu(^{133}Cs)_{hfs}$	Cs hyperfine splitting
metre, m	c	c		speed of light in vacuum
kilogram,	kg	$m(\mathcal{K})$	h	Planck constant
ampere,	A	μ_0	e	elementary charge
kelvin,	K	T_{TPW}	k	Boltzmann constant
mole,	mol	$M(^{12}C)$	N_A	Avogadro constant
candela,	cd	K_{cd}	K_{cd}	luminous efficacy of a 540 THz source

Rigorous realization of these units has provided undeniable impact on trade, commerce, and quality of life

Leading the world in defining the International System of Units

Record-setting Atomic Clock
NIST/JILA's strontium lattice atomic clock, accurate to:
1 second in 15 billion years

Why this level of Precision Matters:

Electric power grid requires:
synchronization to about 1 millionth of a second per day

Modern telecommunications and computer network systems require:
synchronization to about 1 millionth of a second per day

GPS system requires:
synchronization to about 1 billionth of a second per day.

NIST official time is used to time-stamp hundreds of billions of dollars in U.S. financial transactions each working day.
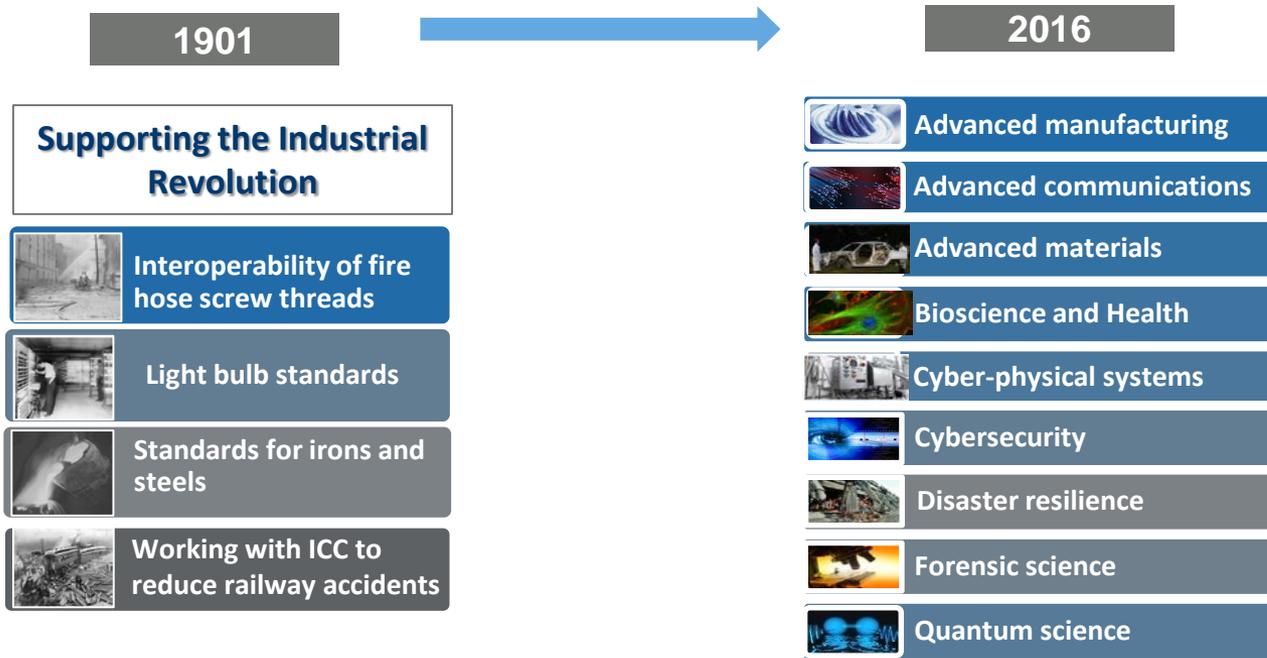
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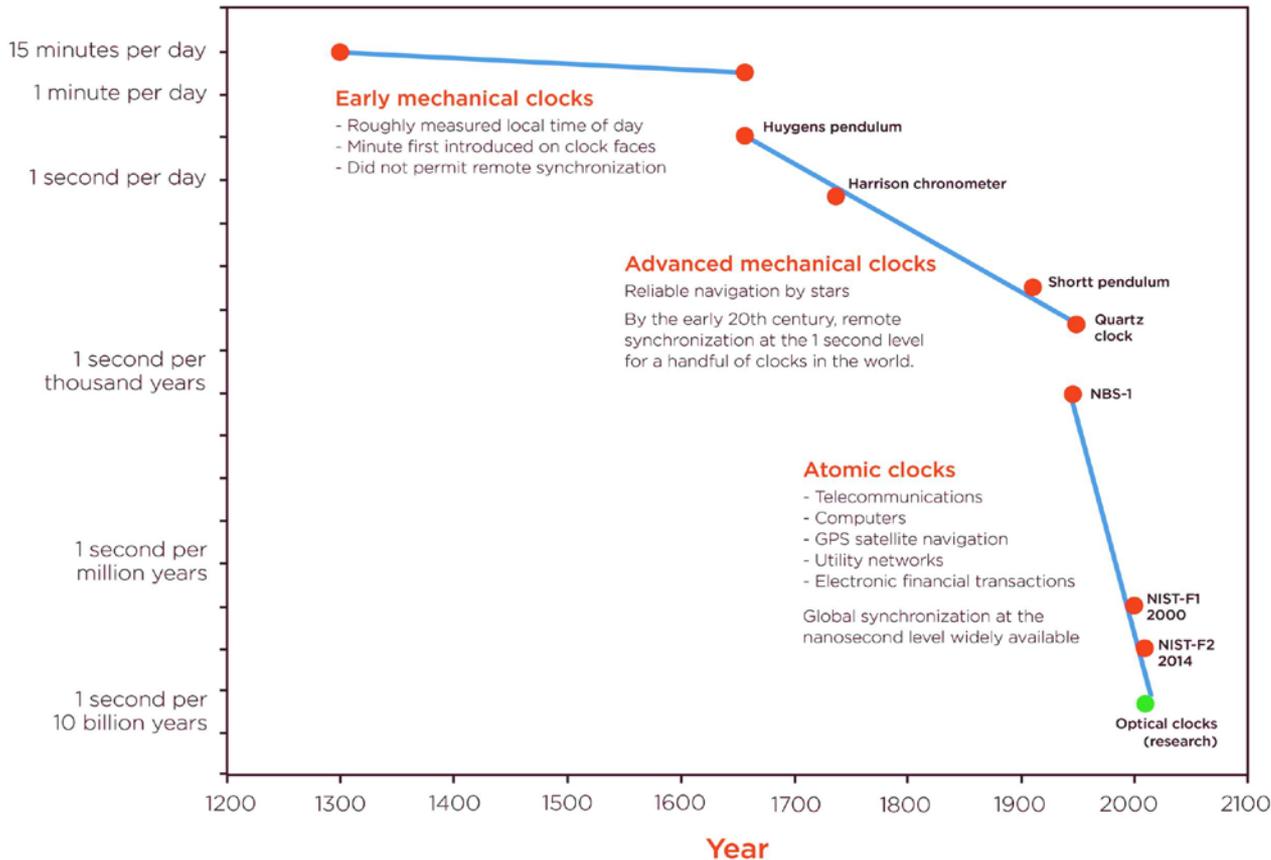
But since our inception as the **National Bureau of Standards in 1901**, in addition to maintaining the more traditional National Physical Measurement Standards, **we have also focused a significant portion of our research and measurement services activities on addressing contemporary societal needs**

NIST has become:

- a key player on the Administration's Innovation Team
- the nation's go-to agency for measurements, standards, and technology

1901 → **2016**

Supporting the Industrial Revolution

- Interoperability of fire hose screw threads
- Light bulb standards
- Standards for irons and steels
- Working with ICC to reduce railway accidents

- Advanced manufacturing
- Advanced communications
- Advanced materials
- Bioscience and Health
- Cyber-physical systems
- Cybersecurity
- Disaster resilience
- Forensic science
- Quantum science

Advanced Manufacturing
Building a National Network for Manufacturing Innovation

Current Institutes
(Sponsored by DoD and DoE)

- **America Makes** (additive manufacturing) Youngstown, OH
- **Digital Manufacturing and Design Innovation Institute**, Chicago, IL
- **Lightweight Innovations for Tomorrow**, Detroit, MI
- **Power America** (Wide Band Gap Semiconductors) Raleigh, N.C.
- **Institute for Advanced Composites Mfg. Innovation**, Knoxville, TN
- **Integrated Photonics**, New York
- **Flexible Hybrid Electronics Manufacturing Innovation Institute**, San Jose, CA

Coming this year!
DoC – 1-2, open topic
DoD – 2, topics TBD
DoE – 2, topics TBD

Today, I'm asking Congress to build on the bipartisan support for this idea . . . creating a network of these hubs and guaranteeing that the next revolution in manufacturing is "Made in America."   -- July 30, 2013

NIST Role in NNMI

- **Hosts the Advanced Manufacturing National Program Office to:**
  - Convene network for collaboration and support among Institutes
  - Provide annual reporting to Congress
  - Share best practices among Institutes
- **Providing support to current institutes** for measurement science research
- **NIST MEP Network linked to NNMI Network** via MOUs, to ensure institute work with small and medium entities
- **NIST lab experts are heavily involved in advisory roles and collaborations with Institute researchers**
- **And now, establish open-topic DoC-led Institute(s)**

Again, Welcome to NIST!

We hope your time here is informative and productive.

2016 NIST NNMI Institute Competition Proposers' Day

Session I: The 2016 NIST Funding Opportunity
- NNMI and NIST Competition Overview
- The Elements of a Complete and Competitive Application
- How Applications Will Be Evaluated

Session II: MEP and Administrative Requirements
- Leveraging the Network of NIST MEP Centers
- Administrative and Award Requirements

Session II: Participant Questions and Next Steps
- Questions and Answers
- Wrap-Up and Next Steps

NNMI & NIST Competition

NNMI: The Power To Advance U.S. Manufacturing

NNMI Overview

Mike Molnar
Director, NIST Advanced Manufacturing Office

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U.S. Department of Commerce

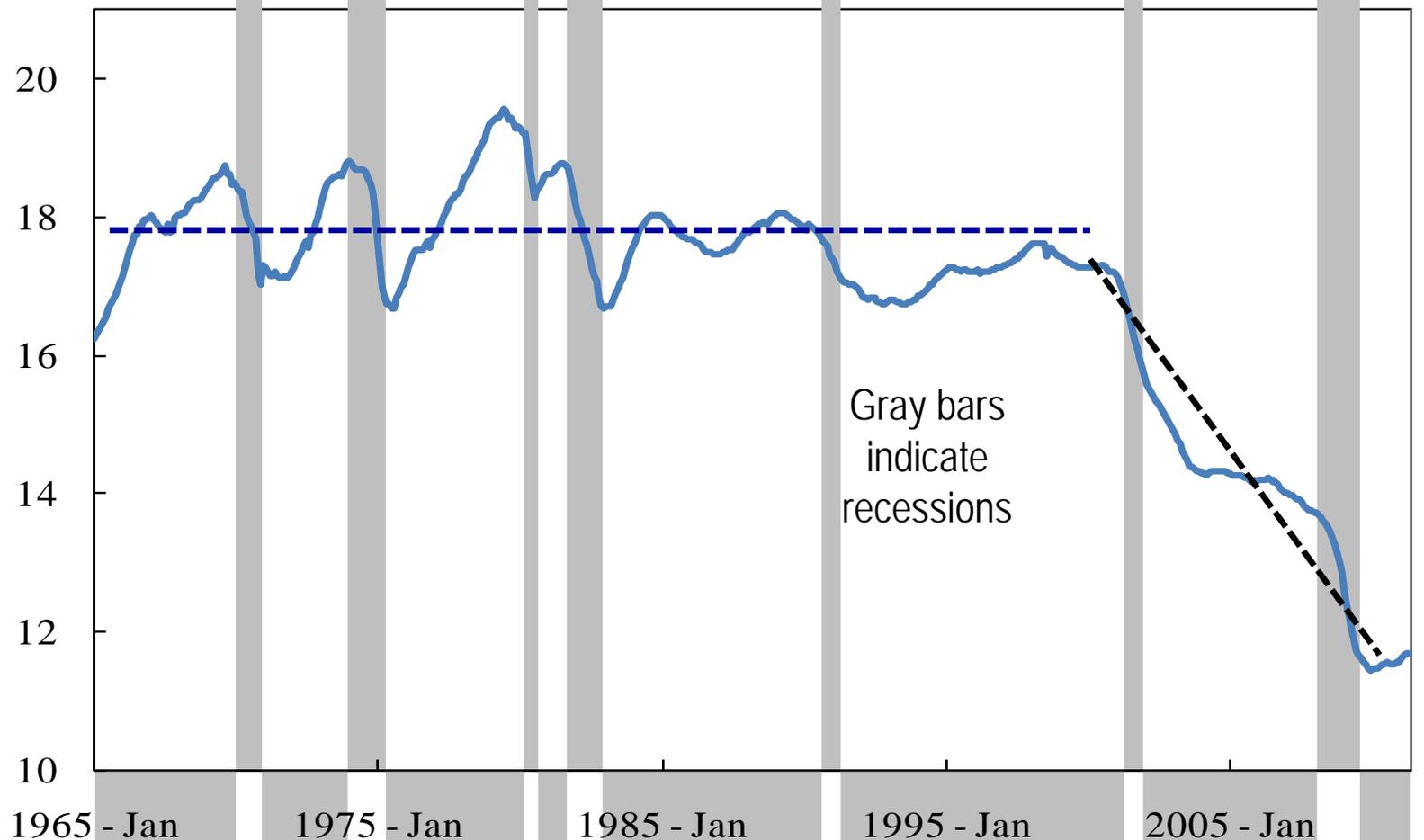Proposers' Day, March 8, 2016

NNMI & NIST Competition

The National Need

A sea change in U.S. Manufacturing Employment

Rising Productivity does **not** create employment losses

1965 – 2000 : US Mfg output rises **6x**, stable employment

Gray bars indicate recessions

Millions

1965 - Jan   1975 - Jan   1985 - Jan   1995 - Jan   2005 - Jan

Beyond Commodity Manufacturing – U.S. losing leadership in Advanced Products

U.S. Trade Balance for Advanced Technology Products

The National Need

US Trade Balance
Advanced Technology Products
($ Billion)

Source: Census Bureau

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Products invented <u>here</u>, now entirely made elsewhere

Not driven by labor cost

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Competitiveness depends on **Productivity**, **Technology Leadership**, and **Innovation**

One comparison

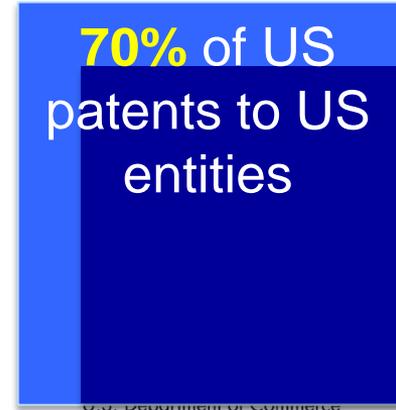|	United States	Germany
Total Population	314 million	80 million
Hourly Manufacturing compensation costs (USD)	$36	$46
Mfg. Value Add as % GDP	**12%**	**23%**

Map of Germany with States - Single Color by FreeVectorMaps.com
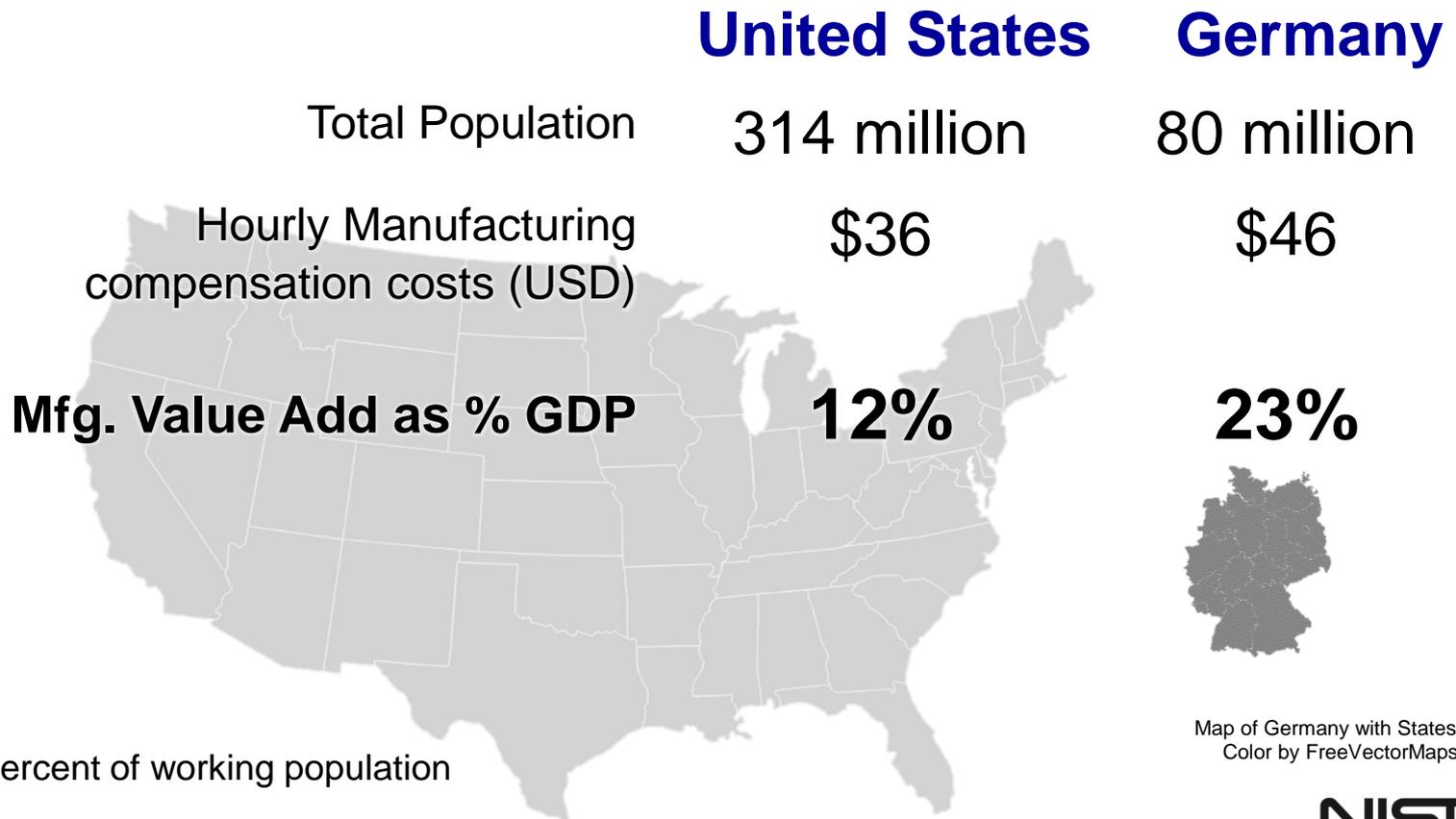
* Percent of working population

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Advanced Manufacturing plays a special role in U.S. Innovation Ecosystem

The National Need

Where you make it… matters!

Manufacturing "punches above its weight" for

1. Economic Impact
2. High paying Jobs Impact
3. Innovation Ecosystem Impact

47% of exports

64% of scientists & engineers

66% of private R&D spend

70% of US patents to US entities

U.S. Department of Commerce
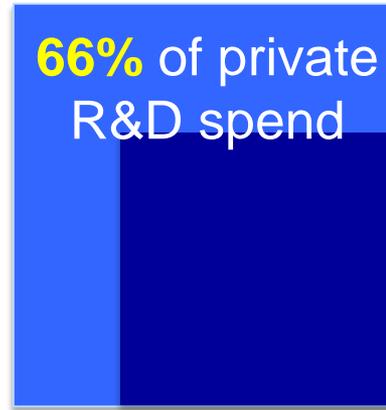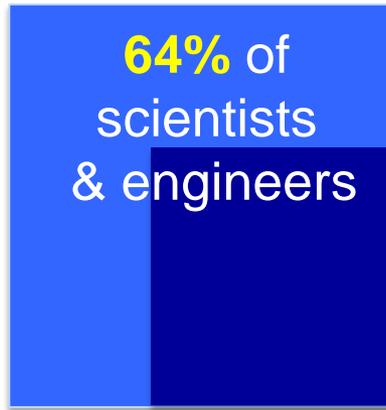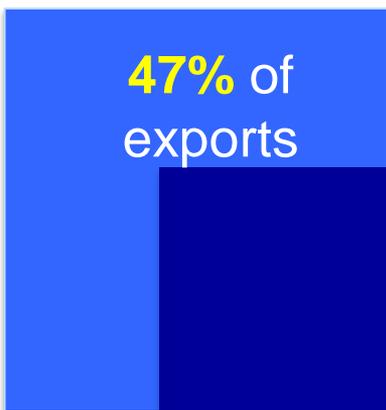
PCAST: The Independent Basis of NNMI
President's Council of Advisors on Science and Technology

The National Need

REPORT TO THE PRESIDENT ON
ENSURING AMERICAN
LEADERSHIP IN ADVANCED
MANUFACTURING

Executive Office of the President

President's Council of Advisors
on Science and Technology

JUNE 2011

PCAST 2011
Recommends Advanced Manufacturing Initiative as national innovation policy

REPORT TO THE PRESIDENT ON
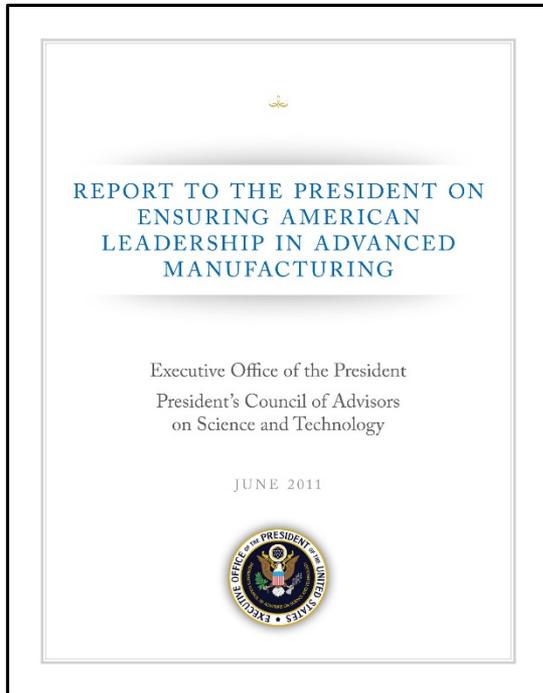CAPTURING DOMESTIC
COMPETITIVE ADVANTAGE IN
ADVANCED MANUFACTURING

Executive Office of the President

President's Council of Advisors on
Science and Technology

JULY 2012
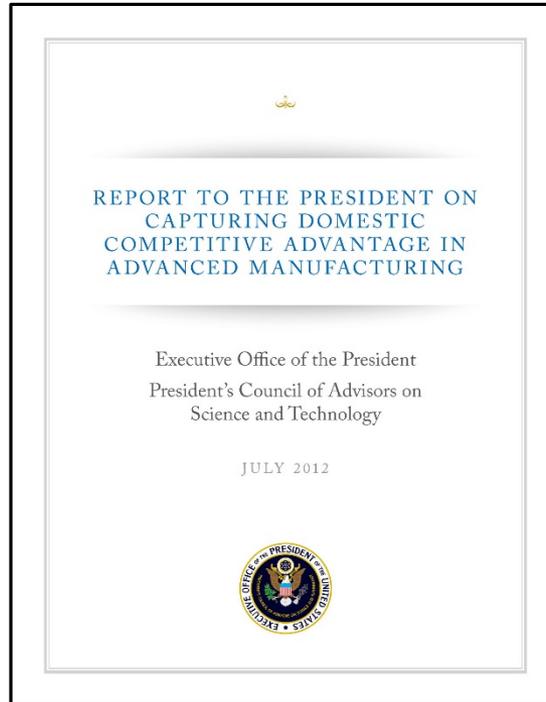
PCAST 2012
Recommends Manufacturing Innovation Institutes to address key market failure

REPORT TO THE PRESIDENT
ACCELERATING U.S. ADVANCED
MANUFACTURING

Executive Office of the President

President's Council of Advisors on
Science and Technology

October 2014
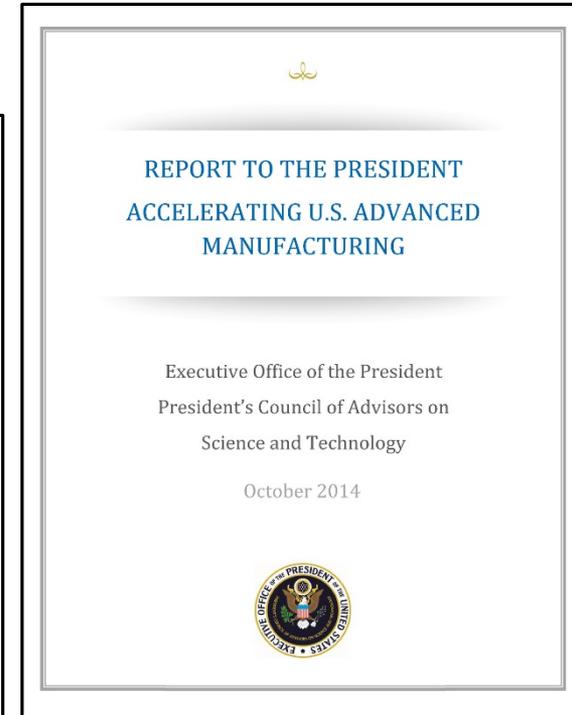
PCAST 2014
Recommends strong, collaborative network of Manufacturing Innovation Institutes

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Common message on HOW

The National Need

Partnership

Industry – Academia – Government

Working better, together to create transformational technologies and build new products and industries

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The NNMI Design

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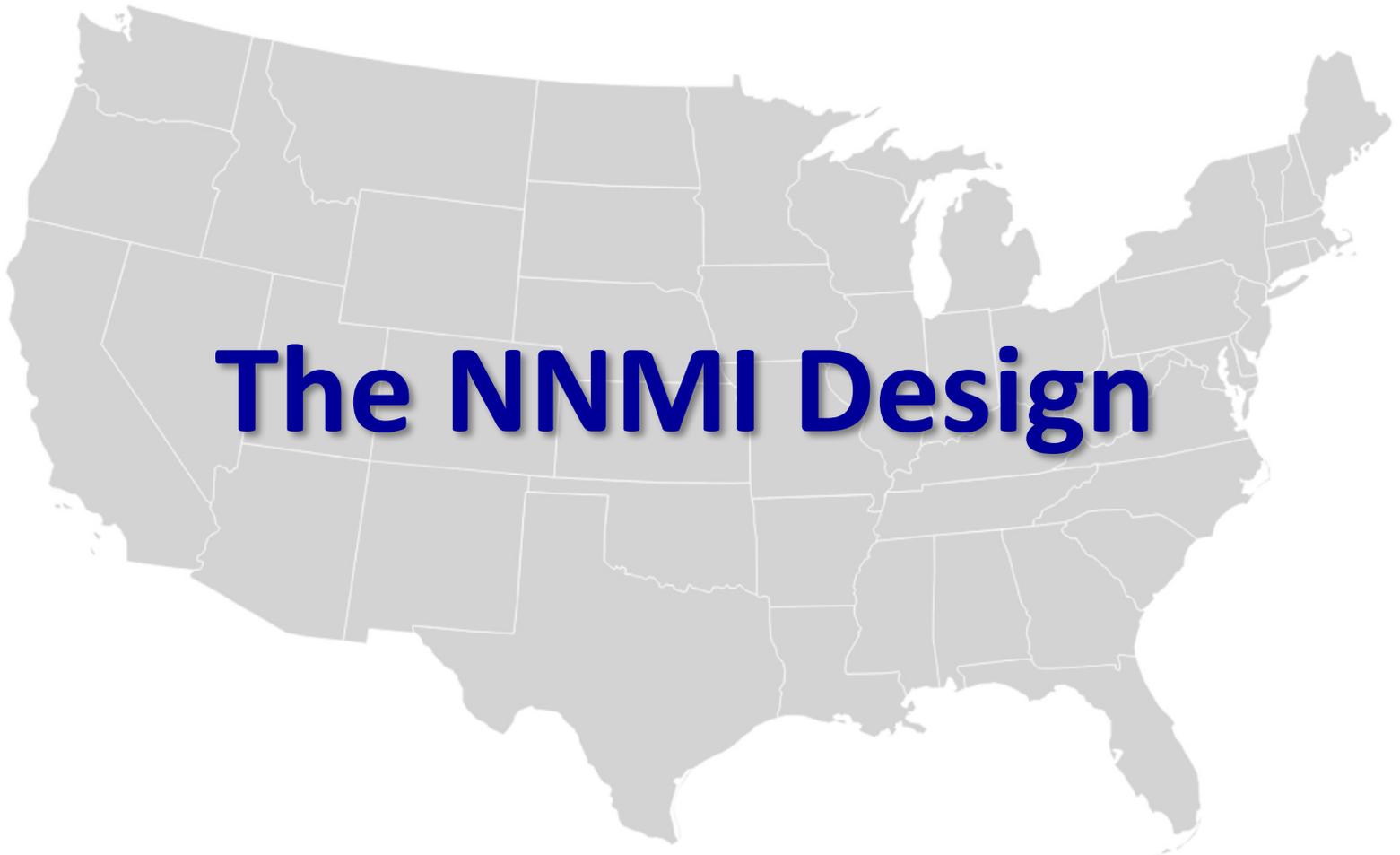
NNMI Focus – Addressing the "Scale-up" Gap

*Focus is to address market failure of insufficient industry R&D in the "missing middle" to **de-risk/speed-up promising new technologies***

*AND address the **education and workforce gaps** on these technologies*

NMMI Design

NNMI is a "Private-Public" Partnership

NMMI Design

White House Report
NNMI Framework Design
January 2013

NATIONAL NETWORK
FOR MANUFACTURING
INNOVATION:
A PRELIMINARY DESIGN

Executive Office of the President
National Science and Technology Council
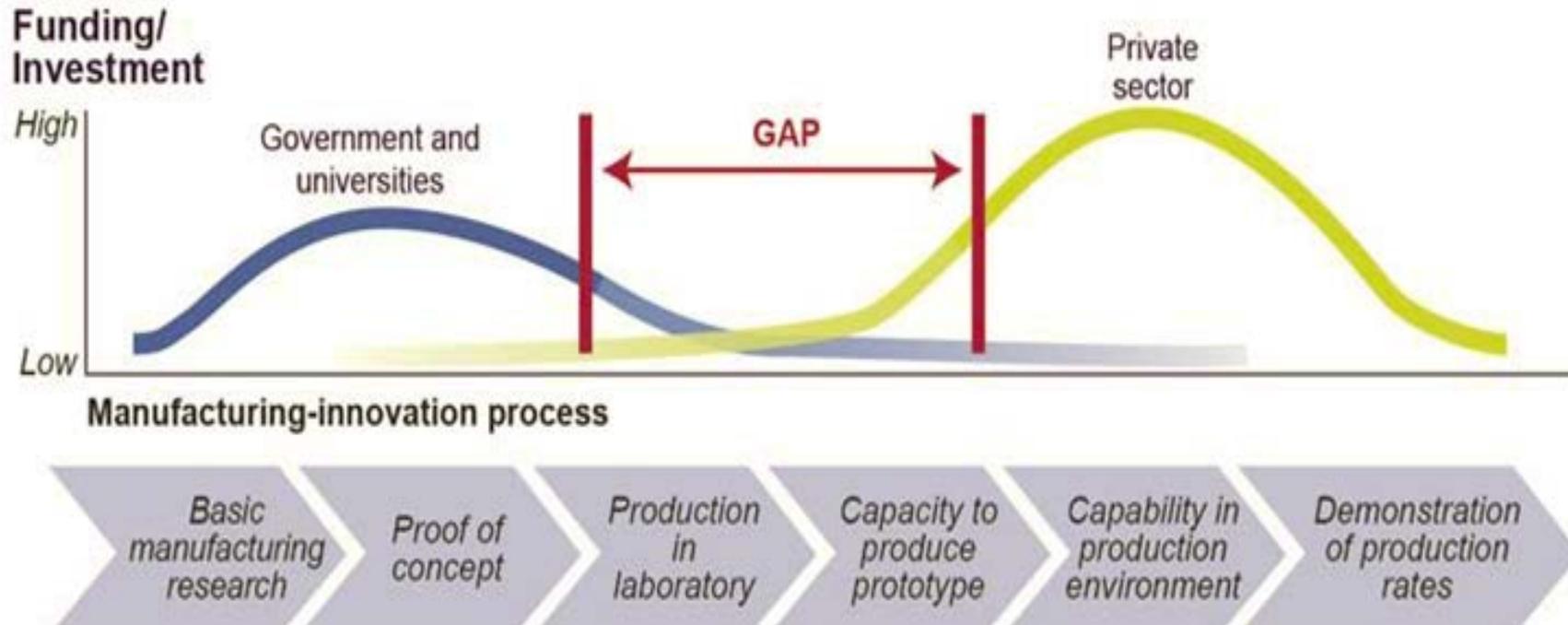Advanced Manufacturing National Program Office

JANUARY 2013

National Network of Institutes

Academia

Universities & National Labs

Community Colleges

Institute For Manufacturing Innovation

Prototype lab/shops
Research facility
Computer lab

Shared Use Facility

Industry

Large Manufacturing Companies

Small & Medium Enterprise

Start-ups

Government

Federal | State & Local | Economic Dev. Org.

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NNMI "elevator speech" – the twin mission

Applied Research + Education/Workforce Skills = Development of Future "Manufacturing Hubs"

The Federal investment in the National Network for Manufacturing Innovation (NNMI) serves to create an effective manufacturing research infrastructure for U.S. industry and academia to solve industry-relevant problems. The NNMI will consist of linked Institutes for Manufacturing Innovation (IMIs) with common goals, but unique concentrations. In an IMI, industry, academia, and government partners leverage existing resources, collaborate, and co-invest to nurture manufacturing innovation and accelerate commercialization.

As sustainable manufacturing innovation hubs, IMIs will create, showcase, and deploy new capabilities, new products, and new processes that can impact commercial production. They will build workforce skills at all levels and enhance manufacturing capabilities in companies large and small. Institutes will draw together the best talents and capabilities from all the partners to build the proving grounds where innovations flourish and to help advance American domestic manufacturing.

Federal startup investment: $70M - $120M/institute over 5-7 years
Institute Consortium owners must have minimum 1:1 co-investment

NMMI Design

NNMI Institute Major Activities

NMMI Design

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

Institute

Education, technical skills and Workforce development

Education and training at all levels for workforce development

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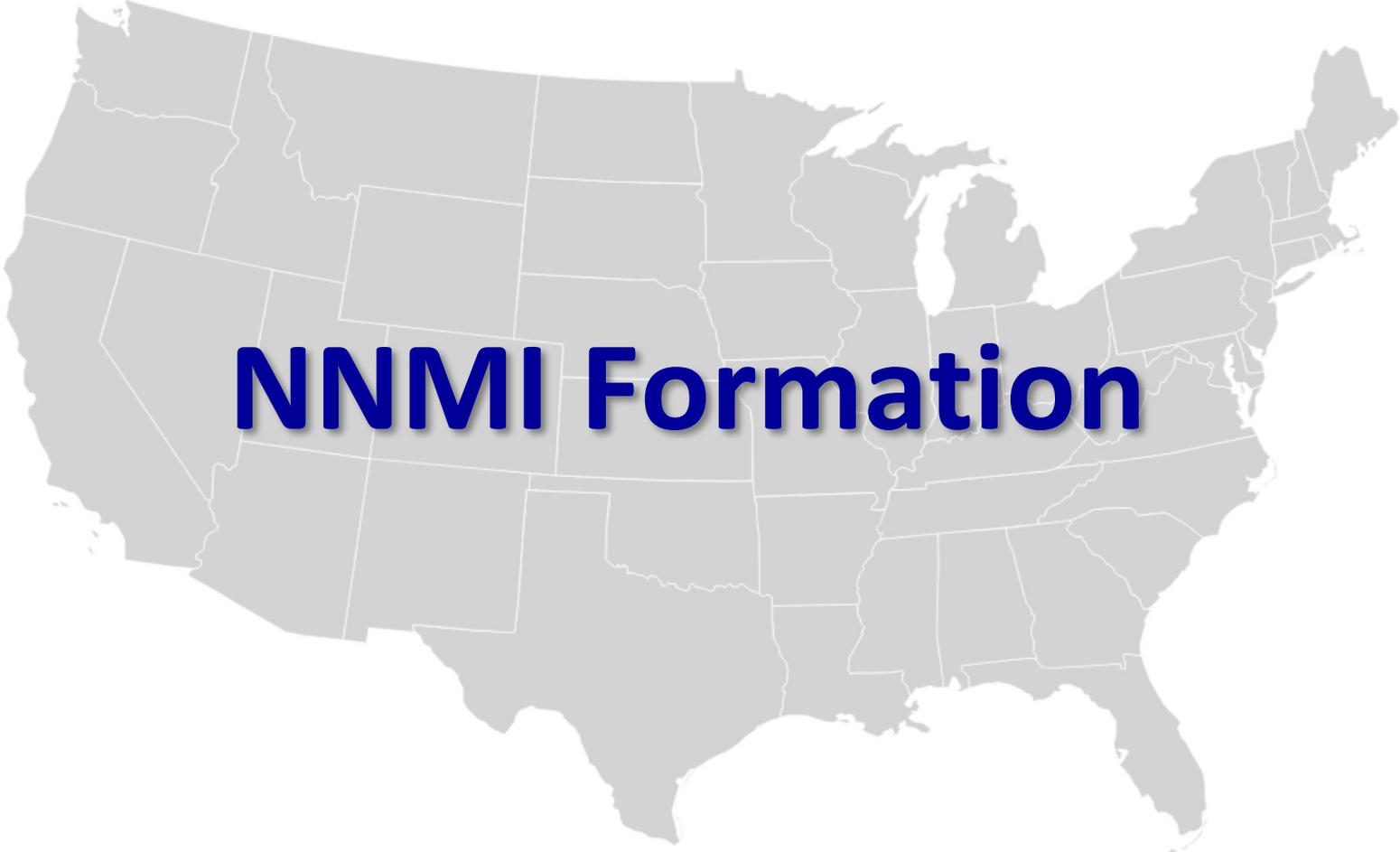
NNMI Formation

NNMI Formation

*"**Sparking this network of innovation across the country, it will create jobs and will keep America leading in manufacturing...**"*

President Obama

March 9, 2012

- President asks Congress to authorize initial network of up to 15 Manufacturing Innovation Institutes

- President directs Agencies to work together on Pilot Institute, while designing Institutes with input from Industry and Academia

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Current Institute Status

NMMI Formation

America Makes
Additive
Manufacturing
DOD–Youngstown OH

DMDII
Digital Mfg & Design
Innovation
DOD – Chicago IL

LIFT
Lightweight &
Modern Metals
DOD – Detroit MI

PowerAmerica
Power Electronics
Manufacturing
DOE – Raleigh NC

IACMI
Adv. Composites
Manufacturing
DOE – Knoxville TN
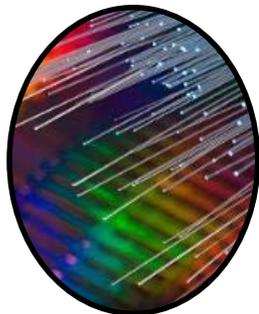
**Integrated
Photonics**
DOD-
Rochester NY
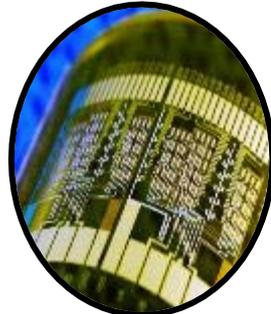
**Flexible Hybrid
Electronics**
DOD
Solicitation

**Smart
Manufacturing**
DOE
Award TBA

**Revolutionary
Fibers & Textiles**
DOD
Award TBA

Open-Topic
NIST
Solicitation

NNMI Congressional Authorization
Revitalize American Manufacturing and Innovation Act

Rep. Tom Reed
R NY-23

Rep. Joe Kennedy
D MA-4

Sen. Sherrod Brown
D Ohio

Sen. Roy Blunt
R Missouri

September 15, 2014 –
Passed House
100 Cosponsors (51D, 49R)

December 11, 2014 –
Passed Senate with 2015
Appropriations
18 Cosponsors (10D, 7R, 1I)

December 16, 2014 –
Signed By President Obama

118 Bipartisan RAMI Bill Sponsors

31

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RAMI – The Purpose of NNMI Program

NNMI Formation

1. to improve U.S. manufacturing competitiveness

2. to stimulate U.S. leadership in advanced manufacturing research, innovation, and technology;

3. to facilitate transition of innovative ~~technologies~~ es into scalable, cost-effective, and ~~high~~ ~~quality~~ ~~manufacturing~~ capabilities;

4. to facilitate acc~~ess~~ ~~of~~ ~~enterprises~~ to technolog~~ical~~ ~~supply~~ chains

5. to a~~ssist~~ ~~development~~ of an advanced manu~~facturing~~ ~~workforce~~;

6. to faci~~litate~~ ~~best~~ practices in addressing advanced manufacturing challenges;

7. to leverage non-Federal sources for sustainable operations

8. And, to create and preserve jobs

Catalyze an Advanced Manufacturing Hub

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Proposers' Day, March 8, 2016

NNMI Institute Example

Example Institute: Composites Manufacturing
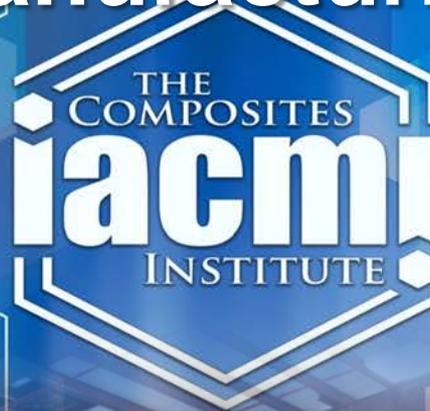
Institute of
Advanced Composites Manufacturing Innovation

Composites Institute Launched June 2015

IACMI, The Composites Institute Knoxville, TN Launched June 16, 2015

Agency sponsor: DOE
Startup funding: $70M public, $159M co-investment

+344,000 square feet in five core regions – composite manufacturing, laboratory, instructional and collaboration space

1) Unique Institute Focus / Charter

NMMI Institute Example

Each Institute has a clear mission based on a critical Industry need

Opportunity

Lightweight composites offer benefits to energy efficiency and renewable power generation, overcoming limitations through deployment of advanced technologies to make composite lower cost, faster, using less energy that can be readily recycled offer tremendous opportunities for US manufacturers.

Big Idea

The Institute will provide access to world-class resources to partner with industry and develop new low-cost, high-speed, and efficient manufacturing and recycling process technologies that will promote widespread use of advanced fiber-reinforced polymer composites.

At the new Institute, a world-class team of organizations from leading industrial manufacturers, material suppliers, software developers, government and academia will focus on lowering the overall manufacturing costs of advanced composites by 50 percent, reducing the energy used to make composites by 75 percent, and increasing the ability to recycle composites by more than 95 percent within the next decade.

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2) Create Value to Industry

Each Institute creates value for industry participation and funding

- Access to Shared RD&D Resources: Leverage and provide access to equipment from lab to full-scale to enable demonstration and reduce risk for industry investment

- Applied R&D: Leverage significant government, industry, and academic investments to develop innovative solutions to member challenges

- Composites Virtual Factory: Provide access to end to end commercial modeling and simulation software for composite designers and manufacturers through a web based platform.

- Workforce Training: Provide specialized training to prepare current and future workforces for the latest manufacturing methods and technologies

NMMI Institute Example

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3) Build Strong Private-Public Partnership

Each Institute is operated by a consortium; serving a partnership of Industry, Academia and government

NMMI Institute Example

A partnership of **world-class companies** including:

Dow, Ford, GE, BASF The Chemical Company, Dassault Systemes, DowAksa, Boeing, Lockheed Martin, Volkswagen, DuPont, Local Motors

Top universities including:

THE UNIVERSITY of TENNESSEE RESEARCH FOUNDATION, University of Tennessee, Michigan State, Vanderbilt University, Iowa State, Purdue University, Colorado State University, University of Kentucky, CU, U of L, School of Mines Colorado 1874, Ohio State

Economic Development Council to leverage state support and investment

JobsOhio, Colorado Innovation network, The State of Indiana, Pure Michigan (Michigan Economic Development Corporation), Kentucky Innovation Network, TN Economic & Community Development

Collaboration of state development leaders seeding economies worth $2 trillion

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4) Address Industry-relevant Challenges

By workshops and Technology Roadmaps, Each Institute works on the industry priorities and big challenges only solvable by collaboration

NMMI Institute Example

Five/Ten Year Technical Goals

- 25/50% lower carbon fiber–reinforced polymer (CFRP) cost
- 50/75% reduction in CFRP embodied energy
- 80/95% composite recyclability into useful products

Impact Goals

- Enhanced energy productivity
- Reduced life cycle energy consumption
- Increased domestic production capacity
- Job growth and economic development

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5) Address Industry-relevant Challenges

NMMI Institute Example

From Technology Roadmaps and Strategic Investment Plan, Each Institute manages a balanced portfolio of real projects for Industry

Activity	Result

1. First Projects
Identified in proposal to DOE
	• Strengthen infrastructure capacity:
	  - Materials and processing - Modeling and simulation
	
	• Innovation and workforce development in strategic areas with national benefit:
	  - Automotive - Wind - Compressed gas storage

2. Technology Roadmap Driven by IACMI CTO, Industry and Technology Advisory Board	• Identifies key hurdles to high -impact, large scale advanced composites manufacturing • Prioritizes opportunities across the materials and manufacturing supply chain
3. Strategic Investment Plan Driven by IACMI BOD and Technical Advisory Board	• Changing the innovation cycle to enable rapid adoption and scale-up of advanced composites manufacturing
4. Open Project Call	• Aligns with strategic investment plan and technology roadmap • Emphasis on projects with high near term impact. • **Project Call-** open NOW

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Network Status and 2016 Plans

Future Network Goal: 45 Regional Hubs

Forthcoming Awards
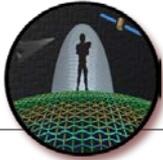
Advanced Textiles

Smart Manufacturing

New Institutes Planned for 2016

Open topic competitions

Selected topic competitions supporting agency mission, using agency authorities and budgets

Flexible Hybrid Electronics
San Jose, CA

America Makes
Additive Manufacturing
Youngstown, OH

INTEGRATED PHOTONICS
Integrated Photonics
Rochester, NY

DMDII
Digital Manufacturing & Design
Chicago, IL

lift
Lightweight Metal Manufacturing
Detroit, MI

iacmi
Advanced Fiber-Reinforced Polymer Composites
Knoxville, TN

POWERAMERICA
Wide Bandgap Semiconductors
Raleigh, NC

Proposers' Day, March 8, 2016

NNMI Overview Conclusion

NNMI – Bringing it Together

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**National Institute of
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U.S. Department of Commerce

To understand more… NNMI Reports

NATIONAL NETWORK FOR MANUFACTURING INNOVATION PROGRAM ANNUAL REPORT

Executive Office of the President
National Science and Technology Council
Advanced Manufacturing National Program Office

February 2016

NATIONAL NETWORK FOR MANUFACTURING INNOVATION PROGRAM STRATEGIC PLAN

Executive Office of the President
National Science and Technology Council
Advanced Manufacturing National Program Office

February 2016

First Annual Report on the NNMI Program
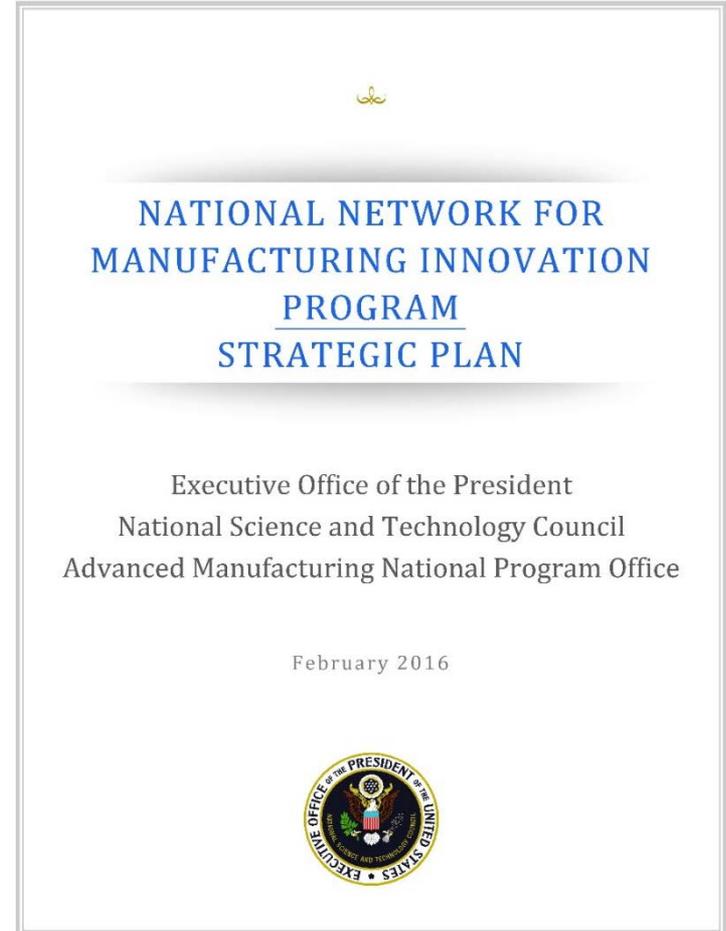
First Strategic Plan on the NNMI Program

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Returning to the NNMI "elevator speech"

Applied Research + Education/Workforce Skills = Development of Future "Manufacturing Hubs"

The Federal investment in the National Network for Manufacturing Innovation (NNMI) serves to create an effective manufacturing research infrastructure for U.S. industry and academia to solve industry-relevant problems. The NNMI will consist of linked Institutes for Manufacturing Innovation (IMIs) with common goals, but unique concentrations. In an IMI, industry, academia, and government partners leverage existing resources, collaborate, and co-invest to nurture manufacturing innovation and accelerate commercialization.

As sustainable manufacturing innovation hubs, IMIs will create, showcase, and deploy new capabilities, new products, and new processes that can impact commercial production. They will build workforce skills at all levels and enhance manufacturing capabilities in companies large and small. Institutes will draw together the best talents and capabilities from all the partners to build the proving grounds where innovations flourish and to help advance American domestic manufacturing.

Federal startup investment: A Cooperative Agreement *[NOT a Grant]* providing at least $70M over 5-7 years. Institute Consortium owners must have minimum 1:1 co-investment

NNMI: Enabling a Manufacturing Renaissance
Accelerating Discovery to Application to Production

- Establish a presence, at scale, in the "missing middle" of advanced manufacturing research

- Create an Industrial Commons, supporting future "manufacturing hubs", with active partnering between all stakeholders

- Emphasize/support longer-term investments by industry

- Combine R&D with workforce development and training

- ***Overarching Objective: Unleash new U.S. advanced manufacturing capabilities and industries*** *– for stronger global competitiveness and U.S. economic & national security*

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Are you ready to propose your topic?

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Complete and Competitive Apps

NNMI: The Power To Compete

Elements of a Complete and Competitive Application
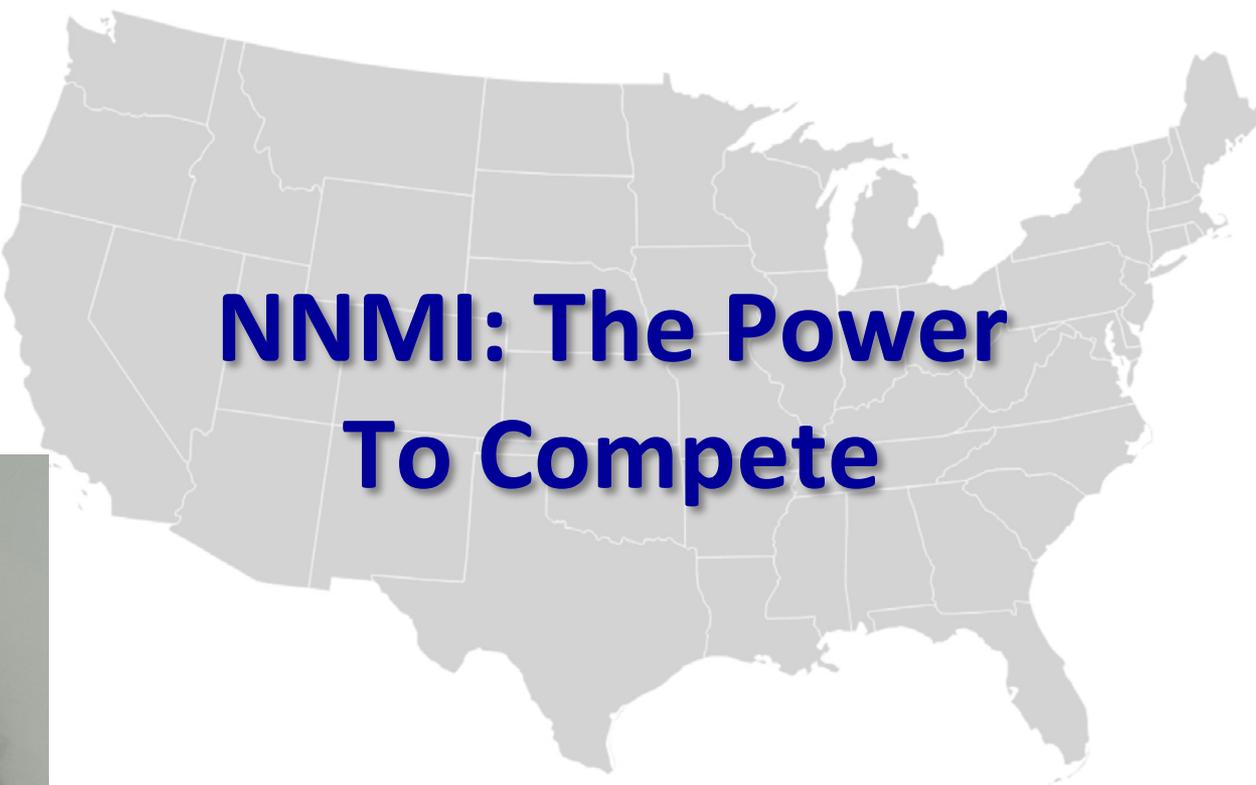
Lisa Jean Fronczek
Competition Chair
NIST Advanced Manufacturing Office

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Competition – Two Stages

Complete and Competitive Apps

2016 Competition

Pre-Applications

Full Applications

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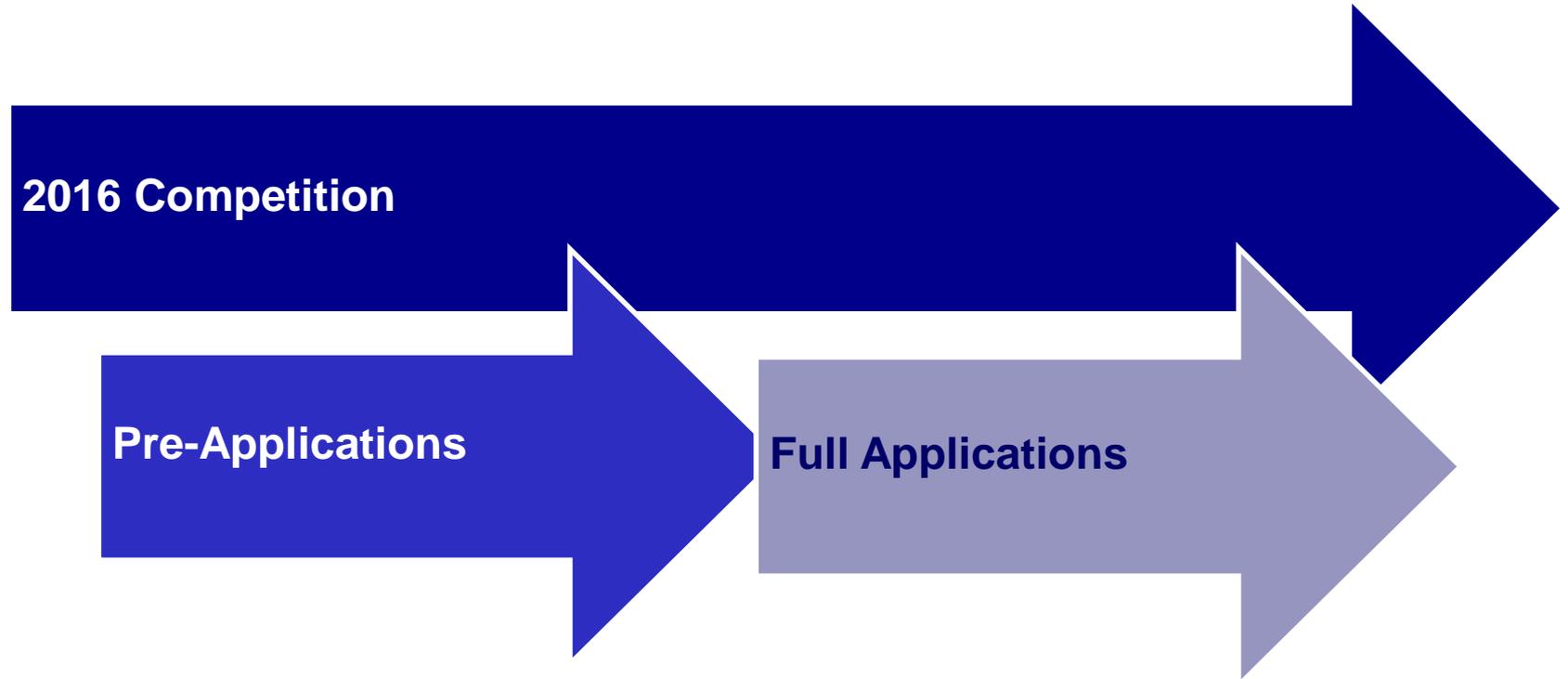
<u>Pre-Application</u> – Complete Submission

1. **Federal Forms: (only two needed!)**
   – SF-424 Application for Federal Assistance
   – SF-424A Budget Information – Non Construction Programs
     • Include a preliminary Rough Order of Magnitude (ROM) budget that reflects the anticipated expenses for all project years (up to 5 years)
     • Consider all potential cost increases and cost of living adjustments

2. **Executive Summary (one single-side page)**
   – A concise summary of the proposed effort suitable for public dissemination
   – Make sure to include objectives, description, the potential impact of the proposed Institute (i.e., benefits, outcomes), and major participants

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Complete and Competitive Apps

3. **Abbreviated Application Narrative**

– No more than 20 pages

– Describe the relevance of the proposed Institute:

- A description of the proposed NNMI Institute sufficient to permit evaluation in accordance with the Pre-Application Evaluation Criteria, including:

  – Uniqueness and complementary nature of the technical scope with regard to the other NNMI Institutes or in-progress competitions and other Federal programs

- The degree of alignment of the proposed Institute to U.S. advanced manufacturing needs, and/or research programs and goals of NIST and the Department of Commerce advanced manufacturing programs

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Complete and Competitive Apps

- **Who**
  - Eligible Applicants & Subrecipients
    - State, local, or tribal Governments;
    - Institutions of Higher Education (IHE);
    - non-profit and for-profit organizations,
    - organized and operated in the U.S. with majority domestic ownership or control
  - Ineligible entities
    - Pre-Award - may be included as an unfunded participant
    - Post-Award, may be included on a case-by-case basis

- **Where**
  - Here in the U.S. unless there is compelling reason

- **Cost Share**
  - At least 50% match of Federal Funding

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Full Application – Complete Submission

1. Federal Forms: (Full set needed)

- SF-424 Application for Federal Assistance
- SF-424A Budget Information – Non-Construction Programs
  - Budget should that reflects the anticipated expenses for the 1st 5 years
  - Consider all potential cost increases and cost of living adjustments
- SF-424B Assurances – Non-Construction Programs
- CD-511 Certification Regarding Lobbying
- SF-LLL Disclosure of Lobbying Activities (if applicable)
- Project/Performance Site Location(s)

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Full Application – Complete Submission (cont'd)

2. Technical Volume

– <u>Executive Summary</u> (one single-side page)

- A concise summary of the proposed effort *suitable for public dissemination*

- Make sure to include objectives, description, the potential impact of the proposed Institute (i.e., benefits, outcomes), and major participants

– <u>Table of Contents</u>

– <u>Application Narrative</u>

- Description of the proposed NNMI Institute

- Address evaluation criteria in Section V.1.b for FFO (pages 41 – 55)

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Complete and Competitive Apps

2. Technical Volume (cont'd)

- Annual Institute Plan – an example plan that demonstrates:
  - How the capabilities of the Institute and its members will be organized
  - How quality technical projects will be generated
  - At minimum, it must include:
    - Summary of annual technical work and proposed accomplishments
    - Organized representation of Institute's technical work including:
      » project calls,
      » technical thrusts, and
      » technical projects with examples
    - Rough Order of Magnitude Research and Related budget
    - Integrated Project-level schedule, milestones, and deliverables
- Gantt chart or Timeline

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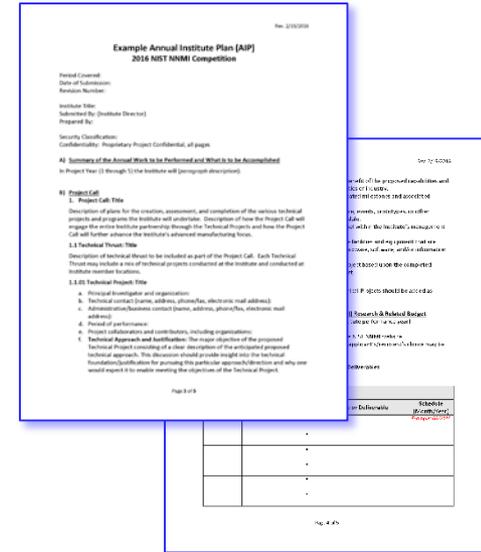
3. **Table of Abbreviations and Acronyms**

4. **Bibliographic List of References**

5. **Compliance Matrix**
   – In a table, explain how and where each merit review criterion is addressed in the application
   – Use this as a checklist for a complete application

6. **Table of Funded Participants and Unfunded Collaborators**
   – All participating (FUNDED) or collaborating (UNFUNDED) organizations (*known at submission*)
   – For FUNDED participants - Identify scope of work and funding amounts

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7. **Table of Cost Share Components and Contributors**
    – Details of contributing cost share sources and type
    – Include rationale for selection this set of cost share

8. **Resumes of Key Personnel**

9. **Letters of Commitment**
    – Required from:
        • Any known subrecipients or contractors indicating willingness to participate
        • Key personnel who will fill vacancies on the applicants or subrecipient's staff noting relationship to the applicant and how this person will help fulfill the efforts of the Institute
        • Cost-sharing or matching by applicant
    – Encouraged from any third-party entity who is providing cost-share or matching

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Full Application – Complete Submission (cont'd)

10. Letters of Interest (optional)

– Indicate willingness from any 3rd party to support your Institute

– Outline nature & importance of the collaboration/support being offered

– May also vouch for applicant's knowledge, skills, and abilities to conduct the work

11. Estimated Funding by Work Breakdown Structure (WBS)

– WBS is a tool used to organized and describe the work to be performed composed of tasks, sub-tasks and task descriptions

– Breaks the work into manageable segments to facilitate Program management, schedule management, cost estimating and budgeting, and reporting of Institute operations

– Tasks should correspond to items listed on Gantt Chart or Timeline

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12. Detailed Budget Table and Budget Narrative

– For the Startup Phase and 1st year of Ongoing Institute Operations broken down by SF-424A object class categories

– Budget Table needed for subsequent years

– Budget narrative only needed for Startup Phase and 1st year of Ongoing Institute Operations

13. Indirect Cost Rate Agreement (if established)

14. Data Management Plan (NOT to exceed 2 pages)

– Summaries of activities that generate data and the type of data generated

– A storage and maintenance plan for the data

– A description of whether or how data will be reviewed and made available to the public

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Application Page Limits – What Counts?

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- **Pre-Applications - Maximum of 20 pages**
- **Full Applications - Maximum of 90 pages**
- **Page limit includes :**
  - Figures, Graphs, Images, and Pictures
  - Project Narrative (Abbreviated or Full)
  - For the Full Application, page count also includes:
    - Annual Institute Plan (for Full App)
    - Estimated Funding by Work Breakdown Structure

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Application Page Limits – What Counts? (cont'd)

- **Page limit excludes:**
  - All Federal Forms
  - Executive Summary
  - Tables of: Contents, Abbreviations and Acronyms, Funded Participants and Unfunded Collaborators, and Cost Share Components
  - Gantt Chart/Timeline
  - Bibliographic List of References
  - Compliance Matrix
  - Resumes of Key Personnel
  - Letters of Commitment or Interest (if applicable)
  - Budget Narrative
  - Indirect Cost Rate Agreement (if applicable)
  - Human and Animal Subject material (if applicable)
  - Data Management Plan

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Research Involving Human Subjects or Live Vertebrate Animals

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- **Research involving human subjects or live vertebrate animals, including research that involves:**

    bodily materials, data about bodily material, testing research prototypes (products, usability, HMI, etc), data collected through digital or image recording, private information or data (genetic, medical records, surveillance – even if you didn't collect it), human subjects, or clinical studies) or live vertebrate animals

- **Will require extra documentation and Administrative Review by the NIST Human Subjects Protection Office (HSPO) - see FFO, pp. 62-69**

- **NIST Grants Officer must give written approval before any research can be initiated or costs incurred for those activities under an award**

- **Proposers may also contact HSPO as indicated in the FFO:**

    – Anne Andrews; anne.andrews@nist.gov; (301) 975-5445

    – Linda Beth Schilling; linda.schilling@nist.gov; (301) 975-2887

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Common Weaknesses to Avoid

Complete and Competitive Apps

- **Poor alignment to the scope of an Institute**
- **Incomplete packages - check and double check!**
- **Ineligible applicant**
- **Incomplete proposal or missing documents**
- **Does not differentiate current proposal from existing NNMI Institutes or other agency announced competitions**
- **Does not address necessary aspects of the evaluation criteria**
- **Insufficient detail and/or unsupported assertions regarding key requirements**
- **Failure to submit by the proposal deadline via grants.gov**

Remember, last minute upload to grants.gov is very risky!

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Complete and Competitive Apps

- **Suggested Templates**
  – Annual Institute Plan
  – Budget Narrative and Budget Table
  – Work Breakdown Structure
  – Estimated Funding of Work Breakdown Structure
  – Rough Order of Magnitude Budgets
  – Table of Funded Participants and Unfunded Collaborators

- **Guidance**
  – Budget Narrative
  – Merits and Uncertainties of Cost Share

- **How-To Instructions**
  – Submitting a Pre-Application
  – Getting a DUNS number
  – Getting and Understanding the EIN
  – SAM Registration

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Proposers' Day, March 8, 2016

Important Highlights

- ▪ **Website and Resources**
  - – Visit www.nist.gov/amo/nnmi/2016competition.cfm
  - – Resources to assist Applicants, include:
    - • Documents, FAQs, Suggested Templates and Guidance, and How-To's
    - • Cooperative Agreements & Award Requirements, and Publications
  - – Send questions to NIST hotline at nnmifund@nist.gov or (301) 975-0404

- ▪ **Competition Timeline**

February 19, 2016	Announced on Grants.gov *(2016-NIST-NNMI-01)*
April 20, 2016, 11:59 p.m. ET	Pre-Applications due through Grants.gov
May 23, 2016 (on or about)	Pre-Application review and selection notification
July 22, 2016, 11:59 p.m. ET (on or about)	Full Applications due through Grants.gov
Q1, CY 2017	Anticipated start date for awards

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Evaluating Applications

NNMI: The Power To Apply

How Applications Will Be Evaluated

Dr. Michael Schen
Associate Director for Programs
NIST Advanced Manufacturing Office

65   3/8/2016

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Application Evaluation

- **NNMI Institutes**

- **Two-Step Application Process**

  – Key Attributes and Anticipated Timeline

  – Pre-Applications

  – Invited Full Applications

- **Evaluating Applications**

  – Pre-Applications

  – Full Applications

- **Pre-Selection Interviews, Negotiations, and Awards**

- **Notifications and Updates**

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Manufacturing Innovation Institutes

Public-private partnerships that co-invest in developing world-leading advanced manufacturing technologies and capabilities

- **Has a clearly defined focus**

- **Provides needed state-of-the-art facilities**

- **Enables collaborative, mostly pre-competitive development of promising technologies**

- **Strengthens and leverages regional resources**

- **Carries out workforce development education and training**

- **Increases non-Federal R&D investment**

- **Promotes the creation of a stable and sustainable innovation ecosystems.**

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A Space for Industry and Academia to Collaborate

National Network for Manufacturing Innovation (NNMI)

Academia and National Labs
- Universities
- Community Colleges
- National Labs

Manufacturing Innovation Institute
- Applied research
- Technology development
- Prototype labs/shops
- Manufacturing software development
- Education and workforce development

Shared Use Facilities
- Manufacturing demonstrations
- Technology workshops
- Manufacturing technology services

Industry
- Large Manufacturing Companies
- Small and Mid-Sized Enterprises
- Start-ups

Government
- Federal Government
- State and Local Government
- Economic Development Organizations

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Benefits that Extend Beyond the Participants

- **Improves U.S. Competitiveness by Filling the Gap Between Basic Research and Commercialization.**
  - Stimulate U.S. leadership in advanced manufacturing research, innovation, and technology.
  - Transition innovative technologies into scalable, cost-effective, and high-performing manufacturing capabilities.

- **Increases production of goods within the U.S.**
  - Facilitate access by manufacturers to capital-intensive infrastructure and needed supply chains.

- **Creates and preserves jobs.**
  - Accelerate the development of an advanced manufacturing workforce.

- **Facilitates sharing of best practices.**

- **Transitions promising technology through the manufacturing scale-up phase — manufacturing readiness levels (MRLs) 4 through 7.**

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Application Evaluation

Areas of Primary Function

1. **Technical operations**

2. **Business operations – including sustainability**

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Ongoing Institute Operations Phase (cont'd)

Technical Operations include:

1. **A balanced portfolio of projects and strategic investments using existing or Institute-developed roadmaps that provide an effective national response to the challenges and opportunities in advanced manufacturing.**

2. **Research, development, and demonstration activities - including proof-of-concept development and prototyping - to solve pre-competitive industrial problems with economic or national security implications:**

   a) Reduce the cost, time, and risk of commercializing new technologies;

   b) Improve existing technologies, processes, products; and

   c) Research and development of materials.

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Application Evaluation

Technical Operations include (cont'd):

3. **Education, training, and workforce recruitment courses and materials and programs to build workforce skills at all levels that enhance manufacturing capabilities in companies large and small.**

4. **Innovative methodologies and practices for supply chain integration and introduction of new technologies into supply chains.**

5. **Outreach and engage with small and medium-sized manufacturing enterprises, including women and minority owned manufacturing enterprises, in addition to large manufacturing enterprises.**

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Ongoing Institute Operations Phase (cont'd)

Business Operations include:

1. **Business structure, organization, management, and operations models**

   a) Operate as an independent, neutral and non-biased entity able to coordinate and convene a broad range of stakeholders, including small and medium-sized enterprises (SMEs);

   b) Become a unique component of the Nation's innovation infrastructure

   c) The development and usage of the Annual Institute Plan (AIP) for how Project Calls will be conducted

2. **Management, governance and membership structures**

3. **Cost sharing from specific (known and anticipated) non-Federal sources and the Institute's transition strategy and sustainability towards attaining self-sufficiency**

4. **Physical facility that meets the needs of U.S. manufacturing, innovation infrastructure, and the nation**

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Transforming and Transitioning Promising Manufacturing Capabilities to the U.S. Industrial Sector

Application Evaluation
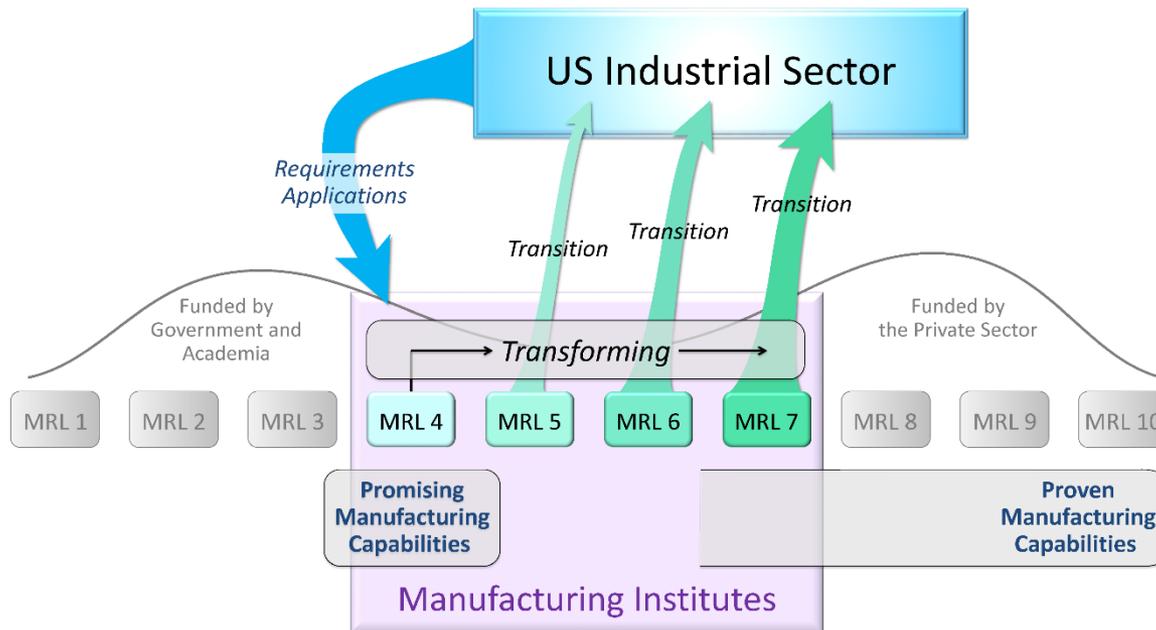
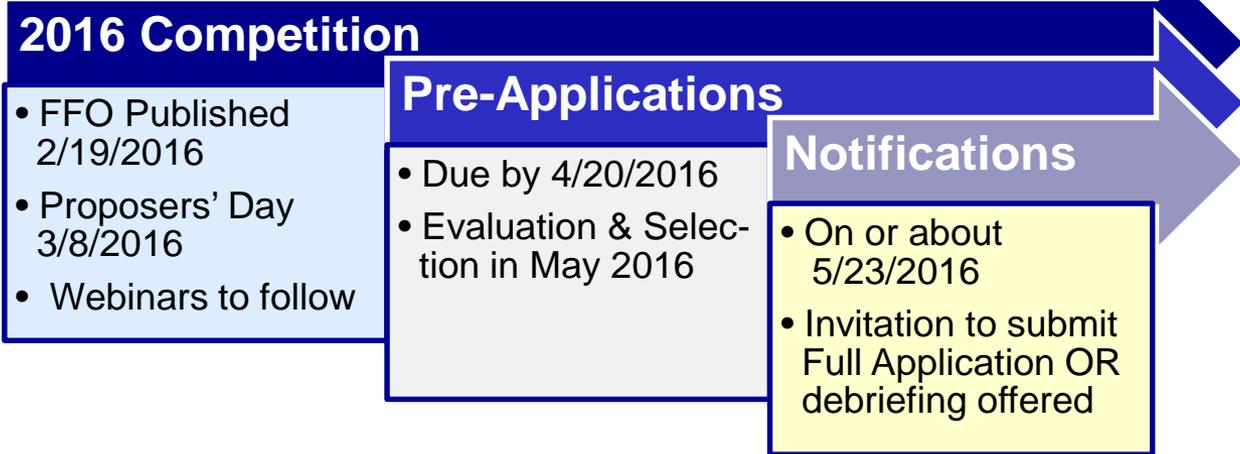*To effectively and efficiently assemble sufficient capabilities, resources, and controls to accomplish the Institute's mission and scope of work and begin ongoing (technical) Institute operations.*

1. **Finalizing and gather operational infrastructure to commence operations**
2. **Gather the Institute's non-federal cost-sharing resources—should significantly exceed the federal financial assistance**
3. **Finalize risk assessment and risk mitigation policies and procedures**
4. **Methods to track and evaluate the Institute's performance and within-Institute reviews**
5. **Industry road-mapping to identify technical and non-technical challenges that should be addressed by the institute**
6. **Clear and appropriate milestones and deliverables for Startup**

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Two-Step Process

Step 1: Pre-Applications

2016 Competition

- FFO Published 2/19/2016
- Proposers' Day 3/8/2016
- Webinars to follow

Pre-Applications

- Due by 4/20/2016
- Evaluation & Selection in May 2016

Notifications

- On or about 5/23/2016
- Invitation to submit Full Application OR debriefing offered

Step 2: Full Applications

Full Applications

- Due by 7/22/2016
- Reteaming in Advance
- Evaluation July-Sept. 2016

Interviews & Negotiation

- Interviews in early Oct. 2016
- Negotiations likely Sept.-Dec. 2016
- Selection to follow

Awards-Startup

- Announcement & Notifications in Q1 CY 2017
- Institute Startup in Q1 CY 2017

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Application Evaluation

Step 1: Pre-Applications

- **Submitted through Grants.gov only**
- **Due by April 20, 2016, 11:59 PM ET**
- **One Pre-Application per applicant**
  - Applicant entities may participate as a subrecipient, contractor, or unfunded collaborator within applications submitted by other entities
- **Selected applicants will then be invited to submit a Full Application**
- **Invitation notifications are expected on or about May 23, 2016**

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Application Evaluation

Step 2: Full Applications

- **ONLY selected Pre-Applicants will be invited by NIST to submit a Full Application** *(Full Applications submitted by applicants who were not selected by NIST within the Pre-Application phase, and Full Applications submitted by applicants who did not submit a Pre-Application, will be returned without review.)*

- **Submitted through Grants.gov only**

- **Due by July 22, 2016, 11:59 PM ET**

- **Changes in applicant, requested budget and reteaming are permitted prior to submission of the Full Application**

  - Change lead entity, revise the requested budget amount, or reteam (subrecipients, contractors or contributors to the Institute)

  - Applicants <u>must</u> provide <u>written notice</u> of its intent in advance of the Full Application due date by mail or email to <u>jessica.strickler@nist.gov</u>

Full Applications must stand on their own and should not rely on information presented within a Pre-Application

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Application Evaluation

Pre-Application Process

1. **Initial screening to determine eligibility, completeness, and responsiveness to the FFO.**

    a) Any Pre-Application determined to be ineligible, incomplete, and/or non-responsive may be eliminated from further review.

    b) NIST may continue the review process for a Pre-Application that is missing non-substantive information which may easily be rectified or cured in a Full Application.

2. **Those passing:**

    a) Reviewed by an Evaluation Team composed of five or more independent, objective, federal employees

    b) With relevant professional and technical expertise from both the private and public sectors,

    c) Are knowledgeable in the subject matter and are able to review.

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Application Evaluation

Pre-Application Process (cont'd)

3. **Review will be based on:**

   a) How well narrative meets the definition, goals, and mission of an Institute and the technical scope of the funding opportunity.

   b) How well the narrative meets the Pre-Application Evaluation Criteria.

   c) The degree of alignment of the Pre-Application and proposed Institute to U.S. advanced manufacturing national needs, and/or its complementarity to the research programs and goals of NIST and the Department of Commerce advanced manufacturing programs.

4. **The Evaluation Team will select applicants with merit and invite them to submit a Full Application**

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Application Evaluation

Full Application Process

1. **Initial screening to determine eligibility, completeness, and responsiveness to the FFO.**

   a) Any application determined to be ineligible, incomplete, and/or non-responsive may be eliminated from further review.

   b) NIST may continue the review process for an application that is missing non-substantive information that may easily be rectified or cured.

2. **Those passing will undergo the following using a diverse group of individuals with relevant expertise from both the private and public sectors:**

   a) Merit Review

   b) Program Review

   c) Ranking

   d) Selection

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Full Application Process (cont'd)

a) **Merit Review**

– Reviewed by at least three (3) independent, objective individuals with appropriate professional and technical expertise

– Limited to technical and cost matters, based on the Evaluation Criteria

– Any mix of Federal and non-Federal reviewers

b) **Program Review**

– Conducted by an Evaluation Panel (EP) that considers the merit review and determines the strengths and weaknesses of the applications

– The EP will consist of at least five (5) persons, comprised of any mix of NIST staff and other Federal agency employees, with relevant professional and technical expertise from both the private and public sectors

Application Evaluation

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Evaluation

Application

Full Application Process (cont'd)

c) Ranking

– Prepared by the EP and provided to the Selecting Official, consists of written evaluations and a final adjectival ranking of the applications

– Four adjectival rankings: Fundable, Outstanding;

Fundable, Very Good;

Fundable; or

Unfundable

– Considers

• Application's responsiveness to the FFO,

• Results of the merit reviewers' evaluations, including scores and written analytic assessments,

• Public information, and

• Any additional information obtained from the applicant by the EP

Full Applications must stand on their own and should not rely on information presented within a Pre-Application

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Application Evaluation

Full Application Process (cont'd)

d) Selection – The NIST Director or his designee

– Shall generally select and recommend the most meritorious Full Application(s) based on the EP's final adjectival rankings and one or more Selection Factors

– Selection Factors:

1) Merit reviewer results;

2) EP evaluation and adjectival ranking;

3) The availability of funds;

4) Complementarity and uniqueness of the Institute within the NNMI network;

5) The degree to which the Institute optimizes the use of available funding to achieve program objectives, with weighted preference to applications seeking less than the maximum Federal share of funds;

6) The degree of alignment to U.S. advanced manufacturing national needs, and/or its complementarity to the research programs and goals of NIST and DOC advanced manufacturing programs.

– Retains the discretion to select and recommend a Full Application out of rank order based on one or more of the Selection Factors, or to select and recommend no applications for funding

Application Evaluation

Pre-Applications

1. **Potential to fulfill a recognized national need with substantial broad based benefits and demonstrated industry leadership (40 pts)**
   a) Proposed mission and technical scope.
   b) National impacts and broad-based benefits.
   c) Leadership and involvement from industry, academia and small-and medium-sized enterprises.

2. **The proposed manufacturing innovation institute (30 pts)**
   a) Business plan.
   b) Integrated education, workforce development and technology transfer.

3. **Resources, qualifications and experience for the proposed institute (30 pts)**
   a) Rough Order of Magnitude (ROM) budget.
   b) Cost sharing or matching.
   c) Qualifications.

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Application Evaluation

Full Applications

1. **Potential to fulfill a recognized national need with substantial national impacts and broad based benefits (20 pts)**
   a) Proposed national needs and scope
   b) National impacts and broad-based benefits

2. **Institute operations and management (25 pts)**
   a) Business structure, organization, and management
   b) Institute startup.
   c) Ongoing Institute operations

3. **Integrated education, workforce development and technology transfer (15 pts)**
   – Education and workforce development
   – Technology transfer

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Application Evaluation

Full Applications (cont'd)

4. **Leadership, cost-sharing and sustainability (20 pts)**
   a) Leadership and involvement from industry, academia and small- and medium-sized enterprises
   b) Cost-sharing or matching
   c) Self-sufficiency

5. **Resources, capabilities, qualifications, and experience (20 pts)**
   a) Budget and resources
   b) Award management
   c) Qualifications and engagement

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Application Evaluation

- **The EP may conduct pre-selection interviews with some Full Applicants during the program review phase.**

- **Purpose:**
  - Allow the applicant to provide clarifications on their Full Application,
  - Provide NIST an opportunity to ask questions.

- **Information provided during the interview will contribute to NIST's evaluation.**

- **Tentatively set for early October, 2016** *(subject to change)*

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Negotiations

- **Negotiations with selected applicant(s) will precede an award!**

- **Negotiations may begin within the program review phase and continue thereafter until an award is issued.**

- **Negotiations may include:**
  - Provide supplemental information required prior to an award
  - Budget costs
  - Modify objectives or work plans
  - Request fundable applicants consider working together in a single combined award if this approach might more effectively advance the program mission

- **Note:**
  - NIST may reject an application where information is uncovered that raises a reasonable doubt as to the present responsibility of the applicant.
  - NIST may select some, all, or none of the applications, or part(s) of any particular application.

Application Evaluation

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Application Evaluation

Expectations

- **One (1) Institute award, with FY 2016 funds** *(subject to the multi-year award funding policy).*

- **Additional Institute award(s) from the competition** *(subject to the availability of funds).*

- **Each award - $70 million Federal funds across five (5) years** *(with the possibility of renewal for an additional two (2) years).*

- **Timing** *(subject to change)*
  - Initial Awards: first calendar quarter of 2017
  - Earliest Start date: same

- **Successful performance of Institute Startup is required before subsequent Federal funds for ongoing Institute operations will be made available.**

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Application Evaluation

Updates

- **Any competition updates will be published on Grants.gov and/or NIST competition website *(www.nist.gov/amo/nnmi)***

- **Regular FAQ updates are expected**

Notifications

- **Applicants for both Pre-Applications and Full Applications will be notified in writing.**

- **Unsuccessful applicants will be given the opportunity to request a debriefing of their application's evaluation.**

3/8/2016

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2016 NIST NNMI Institute Competition

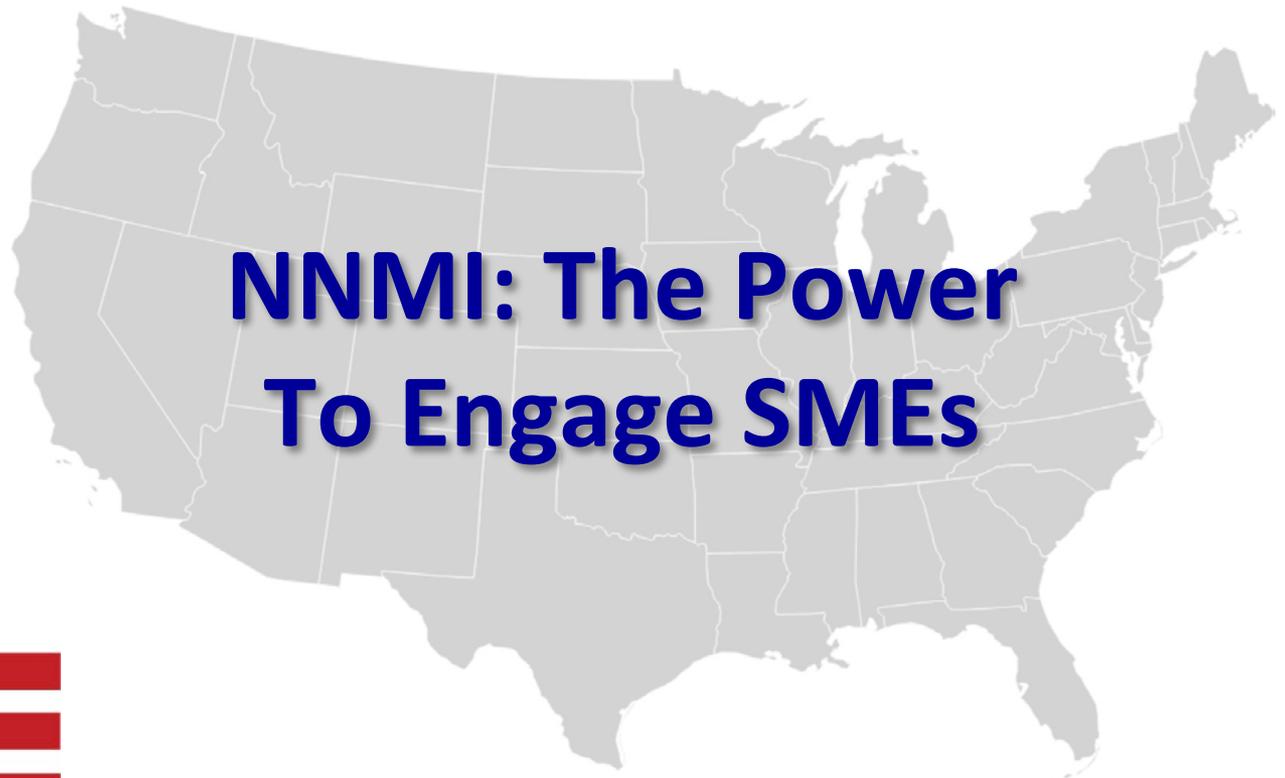Proposers' Day, March 8, 2016

- **Website and Resources**
  - Visit www.nist.gov/amo/nnmi/2016competition.cfm
  - Resources to assist Applicants, include:
    - Documents, FAQs, Suggested Templates and Guidance, and How-To's
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Hollings Manufacturing Extension Partnership (MEP) Program
Accelerating Technology to Small U.S. Manufacturers

NNMI Institute Proposers' Day
NIST, Gaithersburg, MD
March 8, 2016

David Stieren
Technical Manager, Program Development
NIST MEP

david.stieren@nist.gov
301-975-3197
www.nist.gov/mep

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MEP: A National Resource to Help Connect NNMI Institutes with Small Manufacturers

- **RAMI Legislation**

  "The Secretary shall ensure that the National Program Office incorporates the **Hollings Manufacturing Extension Partnership** into Program planning to ensure that the results of the Program reach small and medium-sized entities."

- **FFO pg 43**, "National Impacts and Broad-based Benefits" section:

  "When preparing its Full Application, the applicant may want to consider addressing the following topics, as examples, to further illustrate its approach to this sub-criterion:

  - Engaging U.S. small- and medium-sized manufacturing enterprises (SMEs) and global supply-chains, including but not limited to the **NIST Hollings Manufacturing Extension Partnership** program and regional centers, to meet their needs and to ensure results reach small and medium-sized entities."

MEP: How We Can Help

- NIST MEP manages an existing network of manufacturing assistance centers in all 50 U.S. states and Puerto Rico
  - MEP provides hands-on technical, business assistance to small U.S. manufacturers – annually serving >29,000 companies

- For proposals being prepared in response to this FFO, MEP Centers are available to help Proposal Teams connect small U.S. manufacturers with the proposed Institutes

- MEP Role in NNMI Institutes (framework from NIST MEP – DOD MOU):
  - ✓ *Increase small manufacturer awareness of Institute focus areas, resources*
  - ✓ *Facilitate small manufacturer informing Institute research*
  - ✓ *Facilitate small manufacturer participation in Institute research*
  - ✓ *Help deploy results of Institute research to small manufacturers*

MEP Summary

National Network
MEP Center in all 50 U.S. states plus Puerto Rico. System-wide non-Federal staff of over 1,200 individuals in >400 service locations assisting U.S. manufacturers. Contracting with >2,500 3rd party service providers

Local ⟶ National Connection
System of Centers providing localized service to manufacturers in each State – with National reach and resources

Partnership Model
Federal, State and Industry

MEP Strategy: Global Competitiveness and Growth
Mission to provide direct, hands-on tech & business assistance to domestic manufacturers to help them compete and grow

MEP Budget & Business Model
$130M FY16 Federal Budget with Cost Share Requirements for Centers

Technology Acceleration
MEP connects U.S. mfrs with technology opportunities, solutions they require to grow and compete in the global marketplace.
MEP is connecting small U.S. manufacturers w/NNMI Institutes.

MEP National Network

www.nist.gov/mep
301-975-5020
… and …
manufacturing.gov

MEP Client Impacts

29,101
Manufacturers served in FY15
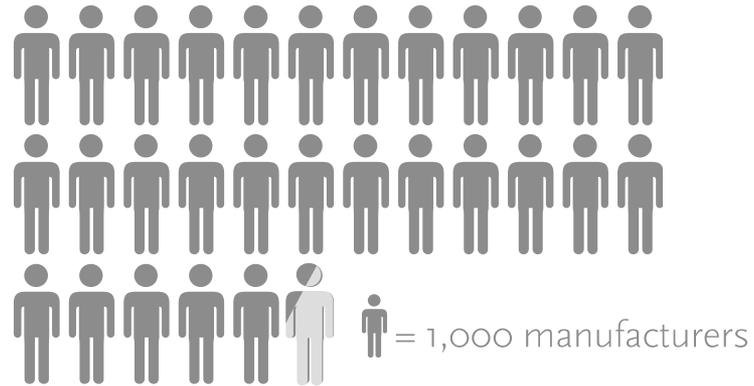
= 1,000 manufacturers

JOBS RETAINED	JOBS CREATED	NEW CLIENT INVESTMENTS	COST SAVINGS	RETAINED SALES	NEW SALES
49,011	19,466	$3.2 Billion	$1.2 Billion	$5.7 Billion	$2.3 Billion

MEP: Connecting and Assisting U.S. Manufacturers

Production, Engineering Capabilities & Capacities & Business Interests

U.S. Manufacturers

MEP Making the Connection

Business Opportunity Sources

Technology Sources, Supply Chain Needs
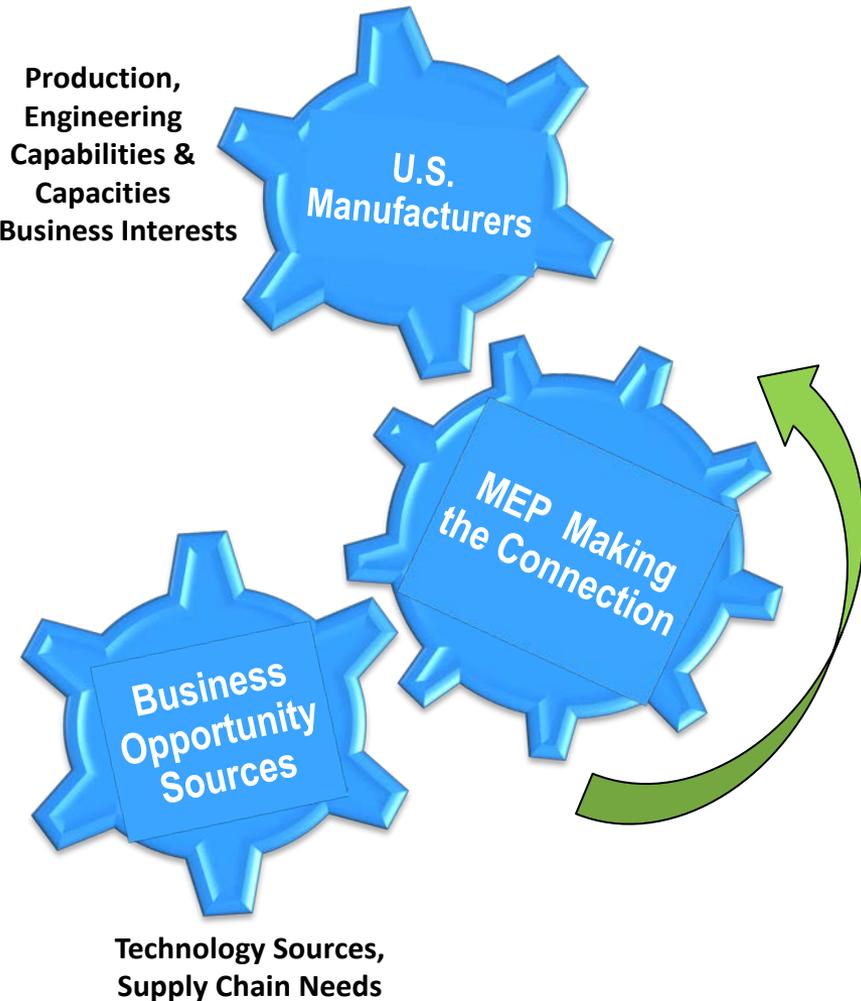
- Enhance business opportunities for U.S. manufacturers

- *Connect* products, capabilities, capacities of U.S. (small) manufacturers with:

  ✓ *Resources available from Nation's technology sources, including NIST Labs, other Federal Labs, NNMI Institutes*

  ✓ *New market opportunities*

  ✓ *Supply chain needs of OEMs, Tier 1s, gov agencies*

- Provide *assistance* to manufacturers, including:

  ✓ *Technical manufacturing services for products, processes*

    ▪ *Manufacturing Strategy, Scale-up*

    ▪ *Production Optimization, (Re)tooling (Lean/Quality/Automation)*

    ▪ *Engineering Practices*

  ✓ *Innovation and Product/Process Development*

  ✓ *Supply Chain Development*

  ✓ *Market Diversification, Marketing*

  ✓ *IP Management and Financing/Access to Capital*

  ✓ *Workforce Development*

  ✓ *Environmental Sustainability*

  ✓ *Exporting*

MEP and Established NNMI Institutes

- NNMI Institutes, MEP have mission-centric focus on U.S. manufacturers – especially small manufacturers

  - ✓ *Institutes need to connect with small manufacturers on large scale to maximize impact*

  - ✓ *MEP is an existing, nationwide network of hands-on assistance Centers managed by NIST that serves tens of thousands of small U.S. manufacturers annually*

- MEP is currently actively working w/several NNMI Institutes in different manners, and plans to expand its engagement with Institutes in the near future

MEP and DOD-Sponsored NNMI Institutes
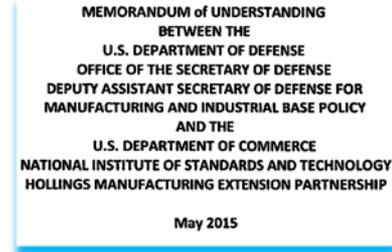
- **DOD-NIST MEP MOU** executed summer 2015
  - ✓ PURPOSE: Provide overarching framework to identify opportunities for synergy and collaboration among programmatic efforts of DOD, DOD-led NNMI Institutes, NIST MEP
  - ✓ Defines collaboration framework – 4 areas identified on slide 3

- **EXAMPLE Collaborations**

  - ✓ <u>LIFT</u>
    - o Michigan MEP Center (MMTC) operating Call Center at LIFT to address needs of small manufacturers in region surrounding LIFT operations in Detroit

  - ✓ <u>DMDII</u>
    - o 9 MEP Centers working joint Digital Manufacturing Pilot with DMDII to create training, tools, mechanisms / assessments to enable MEP Center practitioners to engage small manufacturers about digital manufacturing

MEP and DOE - Sponsored NNMI Institutes

- **MOU in process between NIST and DOE**
  - ✓ Incorporate tenets of NIST MEP – DOD MOU
  - ✓ Likely to include other NIST NNMI functions, including network building and coordination in conjunction with AMNPO

- **EXAMPLE Collaborations**
  - ✓ <u>Power America</u>
    - o NC MEP contracting with Power America to conduct specific outreach to small manufacturers about technologies and manufacturing opportunities occurring at / in conjunction with wide bandgap semiconductors

MEP and NNMI Institutes SUMMARY

- MEP operates existing network of assistance centers in all 50 U.S. states and Puerto Rico.
  - MEP provides hands-on technical, business assistance to small U.S. manufacturers – annually serving >29,000 companies.

- MEP is currently working with established NNMI Institutes to help them scale impacts for the benefit of small U.S. manufacturers, and has plans to expand these relationships.

- MEP Centers are available to help connect proposal teams with small U.S. manufacturers for this NNMI Institute FFO.

Thank You

Stay Connected
Search NISTMEP or NIST_MEP

VISIT OUR BLOG!
http://nistmep.blogs.govdelivery.com

Get the latest NISTMEP news at:
www.nist.gov/mep

manufacturing.gov

Administrative and Award Requirements

NNMI: The Power To America

Administrative and Award Requirements

Andrew Klein
Grants Specialist
NIST Grants Management Division

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Administrative and Award Requirements

- **Grants Office and the NIST Advanced Manufacturing Office (AMO) are two distinct organizations at NIST with differing regulations governing operations**

- **Transparency regarding NNMI pre-application and application process to assist applicants navigating the Federal granting system**

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Administrative and Award Requirements

- **The Available Federal Award**
  - Funding Availability and Period
  - Startup Phase and Multiyear Funding with Renewal Option
  - NNMI Network Meetings
  - Indirect Costs
- **Eligibility Considerations - as Required by the FFO**
  - Applicants, Subrecipients, Contractors and Unfunded Collaborators
  - Cost-sharing or Matching
  - Decreasing Federal Funds
- **Submissions and Requirements**
  - Pre-Application Package
  - Full Application Submissions
- **Awards**
  - Reporting Requirements
  - Audit Requirements
  - Award Rules and Regulations
- **Summary and Contact Information**

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Funding Availability and Award Period

- **Period of Performance**
  - 5 year award for up to $70 million
  - An additional 2-year possible renewal based on:
    - Availability of funds
    - Required approval of spend plans

- **Institutes will leverage non-federal sources of support to promote a stable and sustainable business model without the need for long-term NIST NNMI Federal funding**
  - NNMI Institutes can always apply for non-duplicative Federal Funding from other sources

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Startup Phase and Multiyear Funding with Renewal Option

- **Startup Phase**
  - Initial period of the Institute shall be considered the startup phase
  - Part of the initial 5 year award, anticipated to take up to 12 months
  - Will account for the first increment of funds

- **Multiyear Funding Policy**
  - Funding is only available for the 1st year and then incrementally thereafter

- **Two Year Renewal**
  - Awards expected for up to 5 years, with a possibility for 2 additional years at the end of the initial award period on a noncompetitive basis

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Administrative and Award Requirements

- **Kick-Off Conference**
  - Each awardee will be required to attend a 1-2 day kick-off conference held at the beginning of the award period (location to be determined)
  - Year 1 budget should reflect costs associated with all key personnel attending the meeting

- **Networking Meetings**
  - Semi-annual basis to share best practices, new and emerging trends and additional topics of interest
  - Budget should reflect associated relevant costs

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Indirect Costs

- **NIST will reimburse applicants for proposed indirect (F&A) costs in accordance with 2 C.F.R. § 200.414**

- **Applicants requesting indirect costs who have an approved indirect rate agreement from a cognizant Federal audit agency are to provide a copy with the application**

- **If no established indirect cost rate, the applicant will be required to obtain one in accordance with the Department of Commerce Financial Assistance Standard Terms and Conditions, available at: http://go.usa.gov/hKbj**

- **Alternatively, applicants that have never received a negotiated indirect cost rate may choose to use a de minimis rate of 10 percent of modified total direct costs (MTDC), in which case a negotiated indirect cost rate agreement is not required**

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Eligibility for the NNMI Program

- **Eligible applicants and subrecipients are:**
  - State, local, or tribal Governments;
  - Institutions of Higher Education (IHE);
  - non-profit and for-profit organizations,
  - organized and operated in the U.S. with majority domestic ownership or control

- **Ineligible applicants and subrecipients at the application phase are:**
  - Federal Agencies
  - Federally Funded Research and Development Centers (FFRDCs)
  - Majority foreign-owned or foreign-controlled organizations

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Additional Eligibility Considerations

- **Majority foreign-owned or foreign-controlled organizations that are organized and operated in the U.S.:**
  - May be initially included in a team or consortium application as an unfunded collaborator
  - Or at post-award, may be included on a case-by-case basis with NIST approval as a subawardee or contractor

- **FFRDCs and Federal Agencies:**
  - Allowed as subrecipients or contractors for post-award, but may not be included at the time of application
  - Institutes are encouraged to utilize federal entities to support program goals

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Administrative and Award Requirements

- **Work Location**
  - Work is expected to be performed within the U.S.; however, specific work outside the U.S. may be permitted on a case-by-case basis

- **Applicants must have a SAM.gov registration, a DUNS number and be registered in Grants.gov (register early)**
  - Below are the websites to register for:
    - DUNS number:
      - http://fedgov.dnb.com/webform/displayHomePage.do
    - SAM.gov registration:
      - https://www.sam.gov/portal/SAM/#1
    - Grants.gov Registration:
      - http://www.grants.gov/web/grants/register.html
      - Pre-Applications due April 20, 2016 at 11:59 pm (ET)

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Cost-Sharing or Matching (Eligibility Only)

- **An Institute's budget and plan to achieve sustainability will:**
  - maintain at least a 50% cost-share on a per year basis from non-federal sources over the lifetime of the award
  - include realistic strategies to increase revenue in the later years of the award period to ensure financial self-sufficiency
  - All cost-sharing must comply with the requirements in 2 C.F.R. §200.306 and DOC Financial Assistance Standard Terms and Conditions

- **Acceptable sources of cost-share include:**
  - Cash contributions from non-federal source
  - Third party-in-kind contributions from non-federal sources

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Administrative and Award Requirements

- **The amount of financial assistance provided will decrease after the 2nd year of funding**

- **It will continue to decrease thereafter in each year in which financial assistance is provided to the Institute**

- **The goal is for the NNMI Institute to be independent and to function without NIST NNMI Federal assistance within 5 to 7 years of when financial assistance to the Institute is first awarded**

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Notional Funding – Example (in millions)

Performance Period	Period 1*	Period 2#	Period 3	Period 4	Period 5	Total
Example 1						
Gov't Funding	$ 12.0	$ 18.0	$ 16.0	$ 14.0	$ 10.0	**$ 70**
Cost Sharing†	$ 12.0	$ 18.0	$ 16.0	$ 14.0	$ 10.0	**$ 70**
Total Institute Funding						**$140**
Example 2						
Gov't Funding	$ 8.0	$ 18.0	$ 16.0	$ 14.5	$ 13.5	**$ 70**
Cost Sharing†	$ 8.0	$ 18.0	$ 16.0	$ 14.5	$ 13.5	**$ 70**
Total Institute Funding						**$140**

Startup Phase (up to 12 calendar months)
 # First full period of operations (could be greater than 12 months)
† Minimum for eligibility, met annually

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Administrative and Award Requirements

- **Application for the NNMI institute award can only be submitted through Grants.gov**

  – NIST will not accept applications submitted via email or regular mail

  – Application forms are available at:
  http://www.grants.gov/web/grants/forms.html

- **Applicants should ensure their registration with Grants.gov* is current. See page 33 of the FFO for more detailed information**

  http://www.grants.gov/web/grants/applicants/organization-registration.html

- **Additional guidance at the links below:**

  – http://www.grants.gov/web/grants/applicants/apply-for-grants.html

  – http://www.grants.gov/web/grants/applicants/applicant-tools-and-tips.html

  *Best to establish as soon as possible

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Pre-Application Package

- **SF-424 Application Form**
  - Signed by an authorized representative of the institute

- **SF-424A, Budget Information - Non-Construction Programs**
  - A preliminary Rough Order of Magnitude (ROM) budget reflecting the anticipated expenses for an Institute award up to 5 years, considering all potential cost increases, including cost of living adjustments

- **Executive Summary / Abstract of Proposed Effort**

- **An Abbreviated Project Narrative**
  - A typed document of no more than 20 pages

- **Please follow the Pre-Application Instructions at the following link:**

  http://www.nist.gov/amo/upload/NNMI-Pre-Application-Instructions.pdf

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Full Application Submissions

- **Applicants who are permitted to submit a full application are those whose:**
  - Pre-Application selected by NIST, and
  - Have been invited by NIST to submit a Full Application
- **NIST will return Full Applications without review submitted by:**
  - Applicants whose Pre-Applications were not selected during the Pre-application Phase
  - Applicants who did not submit a Pre-Application
- **See Section IV.3.a for list of required documents for Full Application phase on the Federal Funding Opportunity (FFO)**

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Administrative and Award Requirements

- **Required reports:**
  - Financial Reports (SF425)
  - Performance Reports
  - Annual Report to Secretary of Commerce (see RAMI)

- **Submitted on a quarterly basis to NIST Federal Program Officer, Grants Officer and Grants Specialist**

Reporting Period End Dates	Submission Deadlines (within 30 days)
March 31th	April 30th
June 30th	July 30th
September 30th	October 30th
December 31th	January 30th

- **Closeout Reporting Requirements**
  - Final Performance Report
  - Final Financial Report
  - Patent Report

123   3/8/2016

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Audit Requirements

- **Any non-Federal entity (i.e. non-profit institutions of higher education and other non-profit organizations) that expends Federal awards of $750,000 or more in the recipient's fiscal year must conduct a single or program-specific audit**

  – Outlined in 2 C.F.R. Part 200, Subpart F

- **For-profit entities must comply the audit requirements specified in the Department of Commerce Financial Assistance Standard Terms and Conditions, dated December 26, 2014**

  – These terms and conditions are accessible at http://go.usa.gov/hKbj

- **Recipients should budget for audit costs as necessary**

- **Recipients are responsible for all subrecipient regulatory compliance**

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Award Rules and Regulations

- **2 C.F.R. 200: Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards**

- **DOC Financial Assistance Standard Terms and Conditions dated December 26, 2014**

- **DOC Pre-Award Notification Requirements**

- **DOC Grants and Cooperative Agreements Manual, March 2013**

- **Special Award Conditions Listed in Award Package**

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Administrative and Award Requirements

- **Applicants should:**
  - Check eligibility requirements
  - Have a DUNS Number
  - Be registered on SAM.gov
  - Be registered on grants.gov

- **For any grants-related questions, please contact:**
  - Husai Rahman, Grants Officer
  - E-mail: Husai.Rahman@nist.gov
  - Phone #: 301-975-0404

- **For any questions related to grants.gov, please contact:**
  - Christopher Hunton, Management and Program Analyst
  - E-mail: Christopher.Hunton@nist.gov
  - Phone #: 301-975-5718

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Developing a Complete Budget Webinar

An information webinar on developing a complete budget will be held solely for applicants who have been invited to submit a Full Application

- **To be held in early June, 2016, tentatively week of June 6-10**
  - Details to be communicated to invited applicants at the time of Pre-Application selection notifications
- **Participation is not required and is not considered as part of the application review process**
- **Questions may be submitted to the competition address at <u>nnmifund@nist.gov</u>**

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Thank you

For questions or comments please contact

Husai Rahman at Husai.rahman@nist.gov

or

nnmifund@nist.gov

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2016 NIST NNMI Institute Competition

Proposers' Day, March 8, 2016

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Wrap Up & Next Steps

NNMI: The Power

- Please ask one question per person at a time
- State your name, title, and organization
- Webcast attendees should submit their questions to nnmifund@nist.gov

Session II: Questions & Next Steps

Dr. Frank Gayle
Deputy Director
NIST Advanced Manufacturing Office

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Proposers' Day, March 8, 2016

Important Highlights

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Thank you

The latest NIST NNMI updates can be found at:
www.nist.gov/amo
and
manufacturing.gov

To Keep Connected follow us via Twitter, LinkedIn, & the NIST AMO Alerts ;

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