National Network for Manufacturing Innovation

Frequently Asked Questions

(Latest Updates in RED)

1. MAY 2013 ANNOUNCEMENT OF THREE NEW INSTITUTES

Q: When are agencies announcing these new Institutes?

- The Department of Defense (DOD) and the Department of Energy (DOE)will be taking the lead to launch three new manufacturing innovation Institutes in 2013 through an open and competitive process. DoD has the lead to establish two Institutes and DOE has the lead to establish the other Institute. We will release further information about the timeline in the coming solicitations, and expect to award each Institute by the end of 2013.

Q: How much Federal investment will go into each Institute?

- The Obama Administration has announced a Federal commitment of $200 million for the competition on the three new manufacturing Institutes, which will be led by the Department of Defense and Department of Energy in partnership with the Department of Commerce, NASA, and the National Science Foundation. DOD will lead two Institutes, and DOE will lead the other.

- The agencies will provide additional information on the total investment for each new Institute with the solicitations. The NNMI Preliminary Concept Design Paper estimates each Institute's Federal funding contribution will approach $70 million - $120 million. Federal funding for the two DOD Institutes and the DOE Institute will fall within that range.

Q: What are the technology focus areas of these new Institutes?

- The two DOD Institutes will be focused on (1) Digital Manufacturing and Design Innovation (DMDI); and (2) Lightweight and Modern Metals Manufacturing Innovation (LM3I). The DOE Clean Energy Manufacturing Innovation Institute will be focused on wide bandgap semiconductor power electronic devices.

- Given that the three new Institutes will be led by DOD and DOE and funded within existing authorities, these Institutes will focus on cross-cutting manufacturing technologies that address critical national security and energy needs.

- The DOD's DMDI Institute will address the life cycle of digital data interchanged among myriad design, engineering, manufacturing and maintenance systems, and flowing across a networked supply chain. Its LM3I Institute will accelerate the introduction and expand the use of more affordable products made with high strength-to-weight alloys that improve performance and reduce energy consumption.

- The DOE's Clean Energy Manufacturing Innovation Institute will focus on the use and manufacture of materials capable of handling high voltage and power loads in a new generation of highly efficient and reliable semiconductor devices that can improve

performance of the electric grid, renewable power, electric motors, power server supplies and consumer electronics.

Q: Will the National Additive Manufacturing Innovation Institute (NAMII) pilot be funded to the level currently envisioned for NNMI Institutes?

- The NNMI Preliminary Concept Design Paper ("National Network for Manufacturing Innovation: A Preliminary Design"), which the Administration released in January 2013, estimated that each Institute's Federal funding contribution would approach $70 million - $120 million. Federal funding for the two DOD Institutes and the DOE Institute falls within that range, with $200 million spread across three Institutes.

- By comparison, the NAMII pilot Institute received an initial Federal investment of $30 million and a non-Federal funding commitment of $45 million. NAMII was established as a pilot Institute to help demonstrate the need for the development of the broader NNMI. The NAMII cooperative agreement, however, does provide enough flexibility and contractual ceiling to enable scale-up to the size of a full NNMI Institute.

Q: Can an offeror partner with a federal entity, such as an agency, national lab or FFRDC, on a DOD Institute?

- No. The DOD acquisition host is already working with an interagency DOD and civilian agency team and as a signatory to the eventual cooperative agreement is already a partner. For this reason – and the fact that any potential federal partner would have to make itself available to any other proposer, which is impractical -- federal government participating agencies shall not be included on any team responding to a DOD solicitation for the DMDI or LM3I institute.

- This does not preclude solicitation offerors from citing their experience working with other federal activities as a means of demonstrating their ability to work with the DOD and/or civilian agencies. Such references will actually be encouraged.

- Post award, it is plausible that federal agencies, centers or laboratories will be allowed to become members of a DOD Institute if they choose to interact to even a higher degree with that particular institute. That will be a decision left up to the Institute leadership.

- Non-federal entities, including entities who may receive federal funding support, are eligible to participate in an offeror proposal. Such entities include public universities and community colleges, not-for-profits who may have current or prior federal contracts, and Manufacturing Extension Partnership (MEP) centers.

Q: Can a university lead a DOD Institute?

- While the recipient of an Institute award can be a research-oriented entity such as a U.S. university or other not-for- profit research center, that university must form and propose an independent non-profit partnership that includes a cluster of manufacturing firms and associated educational and economic development organizations.

- DOD Institutes must be led by independent, not-for-profit institutions that strongly leverage industry consortia, regional clusters, and other resources in science, technology, and economic development. Institutes are intended to link and leverage all available resources, including institutions funded through existing Federal programs, so that they have national and global impact.

Q: Can Manufacturing Extension Partnerships (MEPs) participate in the DOD Institute Solicitations?

- The organizations that operate MEPs are eligible to participate in the two DOD Institute solicitations; Digital Design and Manufacturing Innovation (DMDI) and Lightweight and Modern Metals Innovation (LM3I). MEPs are largely independent, but do receive up to 1/3 of their funding from federal sources, specifically from the Department of Commerce, National Institute of Standards and Technology (NIST). While MEPs do have a federal affiliation, they are independent with respect to their local engagement. Individual MEP Centers cannot reasonably be expected to be a national resource available to all potential offerors, regardless of locale.

- MEPs are typically run by non-profit organizations. These organizations – not the MEP Center itself -- are eligible to participate in the DOD Institute solicitations (DMDI and LM3I). Such organizations can reference their involvement in managing an MEP Center as part of a proposal.

- That portion of any resources offered in a DMDI or LM3I proposal that are paid for with federal funds contributed to the MEP Center cannot count toward cost share.

2. THE NATIONAL NETWORK FOR MANUFACTURING INNOVATION (NNMI)

Q: What is the NNMI?

- In January 2013, the Administration released a design document outlining a vision for implementing the President's proposal. http://www.manufacturing.gov/docs/nnmi_prelim_design.pdf

- Proposed by President Obama, the National Network for Manufacturing Innovation (NNMI) is a linked network of Institutes to support innovation in manufacturing across the United States.

- The NNMI fills a gap – the "missing middle" - between the nation's R&D, education and training activities and the deployment of technological innovations and a skilled workforce in domestic production of goods.

- At their core, these individual Institutes for Manufacturing Innovation (IMIs) will be world-leading centers that bring together companies of all sizes, universities and other educational institutions, state and local governments, the Federal government, and others to co-invest in the development of technologies that businesses can use to innovate production processes and new products.

Q: Are there other programs similar to the NNMI?

- The President's vision is influenced by models that have worked in other countries. The importance of manufacturing to innovation and a nation's economy is widely recognized and a number of nations have developed programs that nurture this relationship. For example, Germany, Korea, and Japan each have established government-industry-academia partnerships to spur industrial innovation.

- Descriptions of many of these foreign programs are provided in a 2011 report from the non-partisan Information Technology and Innovation Foundation. Some of these programs include the United Kingdom's Manufacturing Advisory Service; Germany's Fraunhofer Institutes; Taiwan's Industrial Technology Research Institute; Japan's Public Industrial Technology Research Institutes; and Australia's Enterprise Connect.

- Understanding and awareness of these other programs informs the U.S. approach to developing a manufacturing infrastructure, but there is no one-size- fits-all approach that should be applied to the United States without careful consideration of the unique needs and resources of our nation.

Q: How does the NIST Advanced Manufacturing Technology Consortium (AMTech) Program differ from the NNMI?

- The new NIST AMTech Program complements the NNMI. AMTech provides grants to industry-driven consortia to identify and prioritize research projects addressing long-term U.S. industrial research needs. Technology roadmaps and related AMTech-enabled outputs will help guide pre-competitive, infrastructural research, some of which will be supported by AMTech in future years through funding for university and government laboratory research. The NNMI is a network of linked collaborative centers (IMIs) that will support innovation in advanced manufacturing nationwide. The focus of the co-funded IMIs will be on the economically damaging gap that separates invention and discovery from manufacturing scale-up and commercialization. Equally important, IMIs will build workforce skills at all levels and enhance manufacturing capabilities in

companies large and small. Finally, AMTech-enabled outputs may serve as the equivalents of action items or works-in-progress for IMIs.

Q: How is the NNMI different from state or local regional clusters?

- The NNMI is not competing with state or regional clusters. Rather, each Institute within the NNMI would serve as a regional asset that strengthens a state or regional cluster while linking that locale into a nationwide infrastructure to support advanced manufacturing.

- The NNMI will build on the existing capacity of and investment in regional and local clusters across the United States, as well as incentivize the creation of new regional capacity. Each IMI will leverage industry, university, community college, and Federal agency, as well as state and local resources to accelerate innovation and scale up of needed manufacturing capacity, including an agile and skilled workforce. With the additional Federal resources and significant buy-in from industry, an IMI will be able to accelerate investment in industrially-relevant cross-cutting product and process technologies.

- The linkage of IMIs into a national network serves to support and expand their individual impact. However, success will also depend on critical partnerships between IMIs and regional and state groups as well as relevant R&D efforts such as NSF Engineering Research Centers, DOE Energy Innovation Hubs, Federal laboratories, and other existing national assets.

Q: Don't we already have many Federal programs that achieve the goals of the NNMI?

- The simple answer is no. There are no current Federal programs that have the required attributes to significantly influence the nation's competitiveness and successfully bridge "the missing middle" in the manner and magnitude proposed for the NNMI. A whole-of-government approach is needed.

- The Federal government has a number of highly effective programs in the area of manufacturing research and development (e.g., NSF Industry/University Cooperative Research Centers and Engineering Research Centers, DOE Energy Innovation Hubs, and other manufacturing demonstration facilities or centers of excellence like those sponsored by the DOD ManTech Program), but these programs tend to be sector- or agency mission-specific, concentrate on early stage R&D, risk and cost reduction for mission critical acquisitions (e.g., DOD), or promote later-stage commercialization.

- These targeted efforts do not possess the size and scope to fundamentally transform the Nation's manufacturing infrastructure.

- The NNMI provides a national infrastructure to effectively integrate research advances, education and training activities, and the deployment of technological innovations that will result in increased domestic production of goods.

Q: How did the Federal government come up with the preliminary design for the NNMI?

- In January 2013, the Administration released a design document outlining a vision for implementing the President's proposal. http://www.manufacturing.gov/docs/nnmi_prelim_design.pdf

- The Advanced Manufacturing National Program Office (AMNPO) conducted an extensive public engagement initiative to communicate with and involve manufacturing broad set

of stakeholders in the design of the NNMI program. This included a Request for Information (RFI) in the Federal Register open for a six-month period. During the RFI open period, the AMNPO created an online "wiki" for public comment, and organized and conducted four "Designing for Impact" workshops across the nation.

- The workshops drew participants from across the United States, representing industry, academia, non-profit organizations, state and local economic development organizations, professional associations, and private individuals. Altogether, the workshops and RFI gathered the input from about 900 leaders. Reports were prepared for each workshop as well as on the RFI responses, and the results were made publicly available on the new manufacturing.gov portal.

- Additionally, for communications and outreach, AMNPO leaders were extensively engaged with industry and academic public events, serving as requested as speakers and panelists. In 2012 the AMNPO provided the keynote speaker in 19 major manufacturing conferences or expositions, communicating the Administration's manufacturing agenda or explaining the NNMI initiative.

- This extensive input was used to develop the "National Network for Manufacturing Innovation: A Preliminary Design," a Federal report issued by the National Science and Technology Council. The report was publicly released at a design review workshop in Huntsville, Ala., on January 16, 2013.

Q: Does the NNMI have a specific focus or can different Institutes under the NNMI have widely varying scopes and focus?

- Each Institute will have a unique and well-defined focus area, such as an advanced material, a manufacturing process, an enabling technology, or an industry sector.

- The focus of each Institute will be on integrating capabilities through collaborations at facilities designed and equipped to address cross-cutting manufacturing challenges, yielding solutions that have the potential to retain, expand, or innovate new industrial production in the United States.

- The proposing teams will be driven by the needs of industry and the opportunities created by new technologies.

3. THE NNMI PILOT INSTITUTE

Q: What is NAMII? How does it relate to the NNMI program?

- NAMII, the National Additive Manufacturing Innovation Institute, is the Pilot Institute announced in August, 2012, and headquartered in Youngstown, Ohio. NAMII was launched as a demonstration of the NNMI concept under existing agency budgets and authorities. NAMII shares many features with the envisioned IMIs. The technology topic is on the field of Additive Manufacturing.

- Additive Manufacturing is an emergent area, sometimes called Digital Manufacturing or 3D-printing, where parts are directly manufactured by computer-controlled equipment using data from descriptive geometry files.

- The NAMII proposal was submitted by a consortium led by a non-profit institution (the National Association for Defense Manufacturing and Machining). Although NAMII is still very young, the Institute continues to rapidly grow, and currently has more than 70 partner entities, including large and small companies, non-profit and professional associations, research universities and community colleges participating in the effort

- NAMII's initial Federal investment is smaller in scale than envisioned IMIs. It was formed with a Federal investment of $30 million, which attracted nearly $40 million in co-investment (cash and in-kind) by industry, academia, state and local entities and other organizations. This was a strong indicator of industry and local participation expected in IMIs.

- Additive manufacturing was pre-selected as a topic to reflect agency needs, while NNMI is designed to maximize impact on the manufacturing sector. Topics will not be pre-selected in NNMI; rather proposals will be openly solicited and will be expected to describe how the proposal topic is driven by industry needs and technological opportunities.

4. THE NNMI INSTITUTES

Q: **What is an Institute for Manufacturing Innovation?**

- The National Science and Technology Council (NSTC) recently published the proposed framework design of these Institutes and the overall network, which describes the mission and objectives. This was arrived at by extensive input from industry and academia by public workshops and open comment. The report is available at: http://manufacturing.gov/docs/NNMI_prelim_design.pdf

- The Institutes will have common goals but unique concentrations. The many partners in an Institute – including Federal, state and local governments, industry, and academia – will leverage their resources to collaborate and achieve advances in manufacturing innovation.

- The Institutes will focus on the industry-relevant challenges in scaling up new technologies and manufacturing processes. Institutes must be industry-led and have substantial co-investment by industry.

- Altogether, these Institutes will form a network – the NNMI – that creates a new and effective manufacturing research infrastructure for U.S. industry, and creates a framework across the country that nurtures the required American manufacturing workforce.

Q: Is an Institute focus defined by the government?

- The NNMI design report, "National Network for Manufacturing Innovation: A Preliminary Design" outlines a program concept that the Institute focus areas should be defined by the proposing teams. This concept, strongly supported by public input, is to allow open solicitations rather than government-selected topics.

- The Institutes that are being launched this year, supported by existing programmatic resources, will be on agency-specified topics given mission needs and consistent with the resources being used.

Q: How will the Institutes engage small manufacturers?

- Small and medium-sized enterprises (SMEs) are a vital part of the manufacturing sector. SMEs are early adopters of transformational technology, and they are well-positioned to innovate and produce significant job growth.

- The shared facility infrastructure provided by the NNMI will be an important asset for SMEs.

- IMIs will encourage SME participation through
  - Direct outreach to partners and intermediaries that work closely with SMEs
  - Information and services tailored specifically to SMEs
  - Tiered fee structures and allowance of in-kind contributions to facilitate access to small companies
  - Staged licensing of intellectual property, and similar arrangements.

Q: How will the Federal government work with state and local governments in establishing and running the Institutes?

- Most Institutes will be led by an independent, U.S. not-for-profit institution with the capacity to lead an industry-wide technology, workforce development, and infrastructure agenda. For not-for-profit led Institutes the preferred model is a consortium with extensive industry participation and leadership.

- Partners in the Institute should include a range of national, state, and local stakeholders. Each IMI proposal will be expected to outline the methods by which decisions will be made, including those decisions related to operations, membership, intellectual property, project selection, funding allocation, and progress toward sustainability. Draft Institute membership and governance agreements should be included in proposals.

- Each Institute should have substantial autonomy from its partner organizations and institutions and should have an independent fiduciary Board of Directors predominantly composed of industry representatives.

Q: What is the ideal mix of partners to compete for a NNMI-funded Institute?

- The ideal mix of partners will depend on the proposed IMI focus, but should include all relevant stakeholders needed to develop the infrastructure envisioned by the NNMI program.

- Most Institutes will be led by an independent non-profit organization. Significant participation by large industry (anticipated to be a significant co-investor in the IMI), local universities and community colleges, research organizations, career and technical institutions, and other state, regional, and local public and private entities are likely to be valuable members of a successful IMI.

Q: What types of activities would an IMI support?

- IMI activities may include, but are not limited to:
  - applied research and demonstration projects that reduce the cost and risk of commercializing new technologies or that solve generic industrial problems;
  - education and training at all levels, from K-12 through professional training;
  - development of innovative methodologies and practices for enhancing the capabilities of and integrating supply-chains; and
  - engagement with small and medium-sized manufacturing enterprises (SMEs).

Q: How will the Institutes under the NNMI be funded?

- The 2013 report “National Network for Manufacturing Innovation: A Preliminary Design” outlines a notional plan for disbursing Federal funds to an Institute.

- It is anticipated that for most Institutes, the level of Federal funding will be larger at the start, and will become progressively lower as the Institute progresses towards self-sufficiency.

- The non-Federal funding is anticipated to be large at the time of award based on in-kind items such as equipment and buildings. Over time, the funding will shift to project, member fees, user fees, licensing and other sources.

- The Institutes will be expected to have a plan to become self-sustaining after their

Federal NNMI funding ends.

Q: What constitutes co-investment from the IMI partners?

- The non-Federal co-investment must be tangible, meaningful, and substantial enough in the aggregate to signal strong and committed industry, regional, and local partnership.

- The co-investment requirement is expected to be met with both cash and in- kind contributions. In-kind and cash contributions may arise from any source, but are only counted as co-investment if they come from non-Federal sources and directly support the function of the Institute.

- The funds may come from the Institute (for example, using revenue from the licensing of intellectual property); the members of the Institute; state, regional, and local sources (such as economic development agencies); private donations; or other non-Federal sources.

5. EVALUATION AND METRICS

Q: How will proposals for Institutes under the NNMI be evaluated? Who evaluates the proposals?

- The IMI selection process will be managed by the interagency Advanced Manufacturing National Program Office (AMNPO). Participating Federal agencies currently include DOD, DOE, the Department of Commerce and its National Institute of Standards and Technology, the Department of Education, NASA, and the National Science Foundation. In the President's proposal for a National Network for Manufacturing Innovation, the inter-agency AMNPO team will be responsible for managing an open, competitive selection process and for executing the award process. However, competitions for Institutes that are launched through executive action will be managed by the lead agency providing the initial seed capital for the Institute.

- Proposals received in response to the solicitation(s) will be evaluated competitively by a review team. The review team may include members of the AMNPO, agency partners, and other experts.

- The merit-based selection process may include pre-proposals, site visits, and economic and business plan analyses.

Q: What criteria will be used to evaluate proposals for Institutes under the NNMI?

- Solicitations for Institute proposals may be staged, and the design and number of solicitations will depend on the availability and timing of funds.

- Detailed selection criteria will be contained in the IMI solicitation(s). It is expected that criteria may include factors such as:
  - The focus on a critical national need or opportunity for U.S. manufacturing
  - The ability of a region to develop partnerships across companies, universities and local government and economic development organizations and to mobilize that region's resources into a coherent plan for industry impact.
  - Proposed activities targeted at the appropriate readiness level (e.g., TRL/MRL 4-7)
  - The proposed Institute plan to achieve significant impact in technology development and scale up to commercialization, anticipating widespread adoption and links to job creation and broad economic impacts
  - The proposed Institute resources (e.g., personnel, facilities, and participating entities) supporting the plan
  - The level of co-investment from non-Federal entities, and the strength of the plan for sustainability beyond the initial Federal funding
  - The adequacy of the financial plan
  - The level of engagement with SMEs
  - The suitability of shared facilities
  - The level of involvement and quality of the proposed efforts in education and workforce development
  - The adequacy of the governance and oversight model

- It is expected that cooperative agreements will be the primary funding mechanism for NNMI Institute awards, although other types of grants and contracts may also be used. Continuing Federal support will be contingent on co-investment by businesses and other non-Federal entities, and on progress toward sustainable operations.

Q: How will the Federal government support the network of Institutes?

- The NNMI will organize a Network Leadership Council composed of representatives of the Institutes, Federal agencies, and other appropriate entities. The Network Leadership Council will actively look for opportunities to leverage existing resources between Institutes.

- Efficient operation of the Network will be facilitated through common policies. Common policies facilitate interaction with SMEs, promote collaboration and movement within the Network, and allow IMIs to share services such human resource management. While recognizing the differing needs of various manufacturing sectors, clusters, and ecosystems, the Network will strive, as far as is practical, to maintain common policies with regard to intellectual property, contract research, operations, accountability, and marketing and branding.

- While each Institute may have its own web presence, they will also participate in and link to the AMNPO hosted "Manufacturing Portal" (www.manufacturing.gov). As the network and funded Institutes emerge, this portal will serve to direct interested parties to the resources and capabilities embodied within the overall Network. Content will include information about the focus of each Institute, structure, governance, contacts, annual reports, news, success stories, member information, and more.

Q: How will the success of an Institute under the NNMI be determined?

- In the near term the success of an IMI and the continuation of Federal funding will be based on a number of measures including: amount of co-investment attracted, membership in the Institute, project portfolio, success stories, and/or other benchmarks.

- In the longer term, success will be measured by a number of outcome metrics such as measures of workforce health and size, the availability of new advanced manufacturing technologies resulting in new products and processes, increased trade exports, on-shoring of foreign companies to the U.S. and many other economic indicators.

Q: How can I be involved if I have a great idea relating to NNMI?

- The Advanced Manufacturing National Program Office (AMNPO) is housed at NIST and serves as the central point of contact for the NNMI efforts.

- More broadly, you will find many resources at www.manufacturing.gov, including links to Federal programs in advanced manufacturing, information about the NNMI, and other publications and resources.

- Any questions or comments about NNMI can be emailed to amnpo@nist.gov. The AMNPO also provides an e-mail alert service that you can sign up for at http://www.manufacturing.gov/contact.html.