



NCDMM

NATIONAL CENTER FOR DEFENSE
MANUFACTURING AND MACHINING

**delivering
manufacturing
innovation**

**Ralph Resnick
President & Executive Director**

Photo by U.S. Army

ncdmm.org

who are we?

- non-profit
- mission focused
- project based
- collaboration
- manufacturing solutions



Photo by U.S. Navy

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...since 2003



NCDMM
NATIONAL CENTER FOR DEFENSE
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celebrating a decade & innovating the future

Photo by U.S. Army

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how do we do it?

collaborate...

*...with government, industry,
and academia to promote
best practices and deliver
them to key stakeholders*

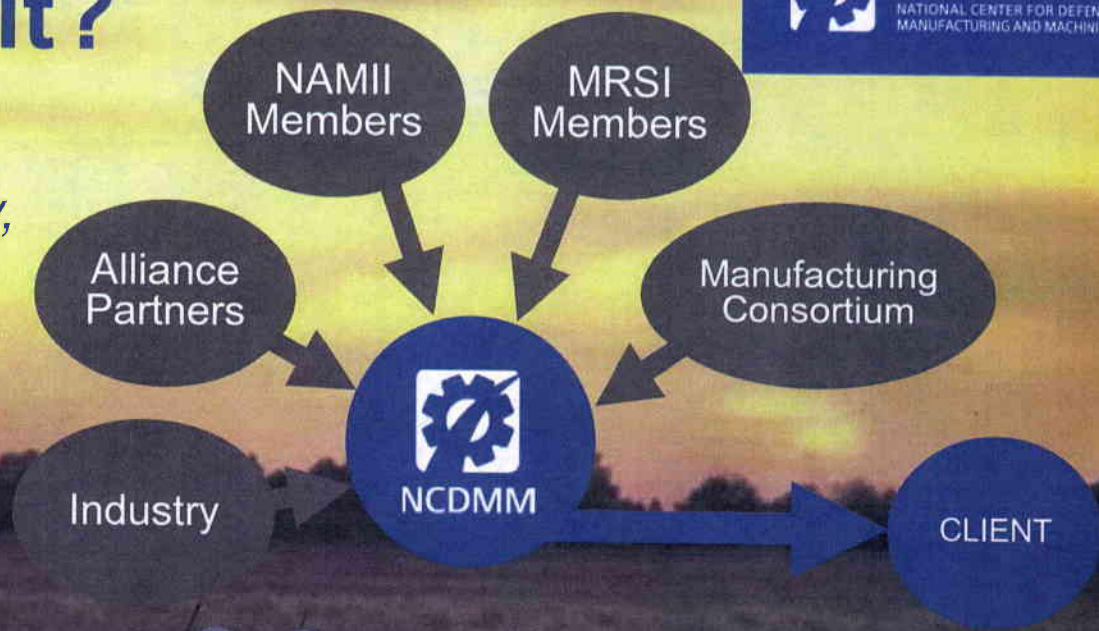
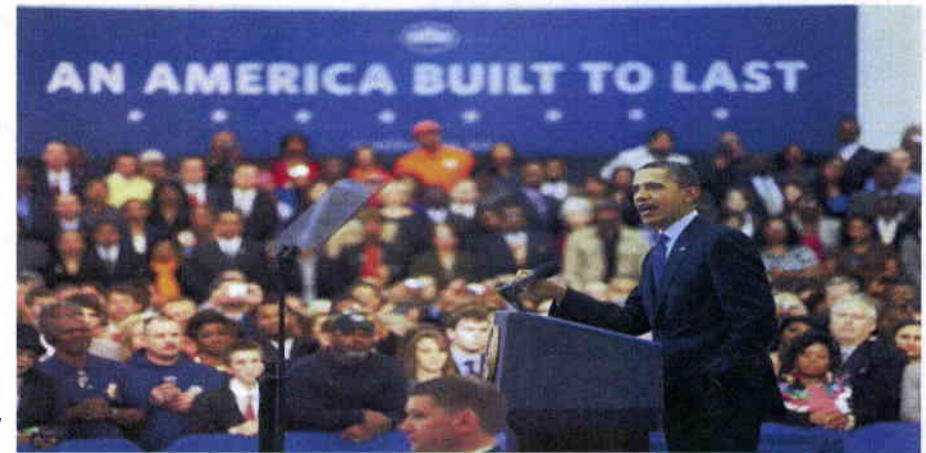


Photo by U.S. Army

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National Network for Manufacturing Innovation (NNMI) and pilot institute Announcement

- Proposed one-time, \$1B investment (FY13) for up to 15 institutes
- Close the gap between R&D and deployment of technological innovations in domestic production of goods
"institutes of manufacturing excellence where some of our most advanced engineering schools and our most innovative manufacturers collaborate on new ideas, new technology, new methods, new processes."



President Obama at Rolls-Royce Crosspointe Petersburg, VA – March 9, 2012

"We Can't Wait" – use existing resources and authorities to demonstrate concept through a pilot institute – select competitively – fit within agencies missions

NATIONAL
NAMII
 ADDITIVE MANUFACTURING
 INNOVATION INSTITUTE

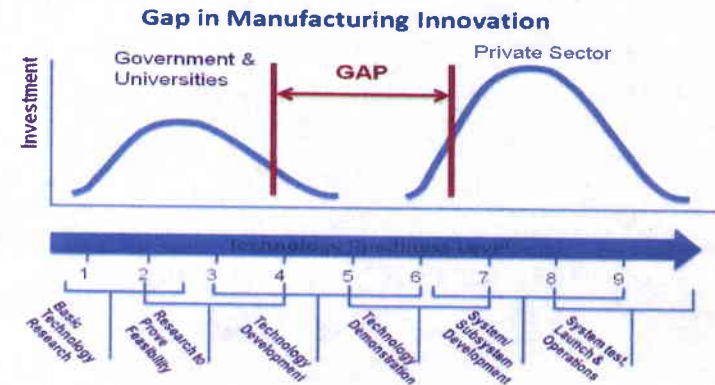
driven by



- A Defense-wide Manufacturing S&T team-led, Multi-agency collaboration between industry, government and universities
- Public-private partnership



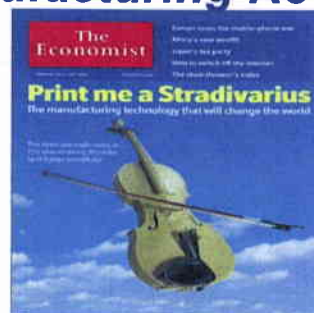
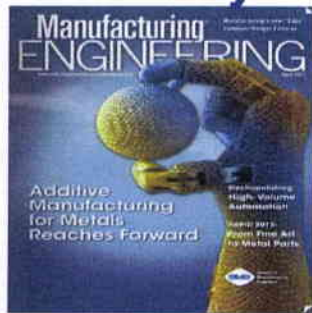
- Shared facilities open to industry
 - Especially attractive to small businesses
- Enabling technology transition and commercialization
- Addressing Technology Readiness Level (TRL) / Manufacturing Readiness Level (MRL) 4-7
 - Bridge the gap in Manufacturing Innovation
- Educational plan to train the future workforce
- Sustainable within 3 years



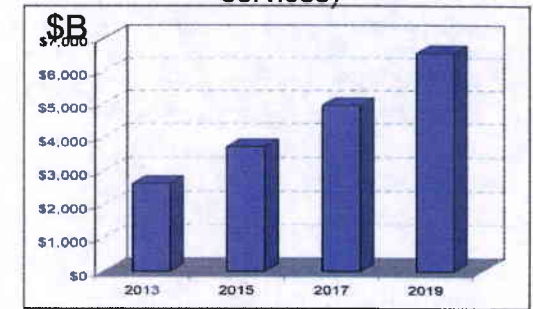
A Model for Manufacturing Innovation Institutes within NNMI



Why Additive? A Manufacturing Revolution!



Projected AM Sales (products and services)



Source: Wohlers Associates, Inc.

"20% of output of 3D printers is now final products, rather than prototypes. By 2020 it may be 50%." – *The Economist* (2011)



Government agency investments and interest - throughout NASA, DoD, and DOE

Consumer Product Market



GE Aviation

100k Additive parts will be manufactured by GE Aviation by 2020



1k lbs. Potential reduction in weight of a single aircraft engine through additive production

300+ 3D Printing Machines currently in use across GE

<http://www.ge.com/stories/additive-manufacturing>

NAMII Initial Proposal Partners

