ACADEMIC INSTITUTIONS

DEPARTMENT OF DEFENSE MANUFACTURING INNOVATION INSTITUTES

Quick Start Opportunities Guide for **Academic Institutions**

Sharpen the focus of your funded research!

Manufacturing USA Proud Member

PARTNER UP TO ADVANCE YOUR IMPACT & REACH

Engaging with the institutes is a unique method for universities, community colleges & other educational institutions to network with and understand the needs of industry and government, so that targeted manufacturing research can be undertaken for the benefit of the institution, individual, and students. Cutting edge sponsored research enhances the reputation of the institution. For students, institutes provide opportunities for hands-on training & access to internship leading to jobs.

"The University of Connecticut is involved in five institutes in the Manufacturing USA network. A major benefit to our faculty is the opportunity to work closely with industry on relatively high TRL projects that have high impact in emerging technology areas in manufacturing."

- Professor Michael Accorsi, Senior Associate Dean, University of Connecticut School of Engineering

STRONG COLLABORATION

- *Collaborate with industry, academia, and government*
- *Collaborate to design & execute innovative apprenticeship & educational programs*
- *Roadmap future technology*

LICENSE RESEARCH & INTELLECTUAL PROPERTY

- *Create IP through institute funded research*
- *Utilize your own organization's research*
- *Use the institutes' state of the art facilities to further manufacturing technology*

FOSTER PREEMINENCE

- *Enhance department reputation by providing employable students trained inline with industry needs*
- *Create content consistent with the latest technology*

SOLVE MANUFACTURING PROBLEMS

- *Create ecosystems that positively impact the U.S. economy*
- *Solve applied research problems faced by industry*

MAKE AMERICA MAKE AGAIN

U.S. manufacturing and innovation is essential to American economic and national security. Maintaining U.S. influence and access to markets in a stable global environment contributes to our prosperity and standard of living. The United States asks its warfighters to put their lives on the line every day to protect and preserve these interests and thus the well-being of the American people. It is the responsibility of the Department of Defense (DoD) to innovate and equip our forces with the best tools possible, made by Americans in the U.S.

The DoD Manufacturing Technology Program sponsors eight manufacturing innovation institutes with headquarters and hubs across the country. Each institute is a public-private partnership designed to overcome the challenges faced by manufacturing innovators in a variety of technology areas (see back for more information). While each institute operates in its own unique ecosystem, the institutes offer common capabilities: providing access to state-of-the-art tools and equipment that are otherwise beyond the reach of most businesses, implementing targeted education and workforce development training programs, and encouraging project investments in applied research & industrially-relevant manufacturing technologies.

The DoD institutes bring new technologies to U.S. warfighters using a combined $600 million in federal investment from the DoD and $1.2 billion matching funds from industry, academia, and state governments. Institute members include nearly 1,000 organizations across defense industry, commercial manufacturers of all sizes, start-ups, universities, community colleges, and state or local economic developers in active partnership with the U.S. Federal Government.

The ability of the military to respond to an emergency depends on our Nation's ability to produce needed parts and systems, healthy and secure supply chains, and a skilled U.S. workforce.

These industry-led public-private partnerships develop these capabilities & are defense-relevant, critical to the U.S. economy, & positioned to deliver value to their customers, & our nation.

DEPARTMENT OF DEFENSE MANUFACTURING INNOVATION INSTITUTES

Quick Start Opportunities Guide for **U.S. Manufacturers**

Strengthen your bottom line!

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Proud Member

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ACCELERATING PRODUCT-TO-MARKET LEADS TO STRONGER PERFORMANCE

In this global marketplace, developing the next generation of advanced manufacturing capabilities requires the U.S. to encourage more collaboration between companies, customers and the government in order to conduct the pre-competitive applied R&D necessary for profitable commercialization. A modern 'industrial commons' is needed, where R&D facilities and key manufacturing information are available to U.S. companies of all sizes, allowing them to affordably develop their products for commercial or defense needs. The DoD Manufacturing USA institutes offer an opportunity to leverage pre-competitive R&D into the manufacturing processes that underpin these future product opportunities. They include materials and manufacturing R&D; product design and development; production capacity; visibility into new markets and manufacturing workforce training and education.

"Overall, Lockheed Martin has realized a very high return on its cost-sharing investments in the institutes."

- Mr. Jeff Wilcox, Vice President for Engineering & Program Operations for Lockheed Martin

HIGH VALUE COLLABORATION & FACILITY ACCESS

- *Technology roadmapping*
- *Manufacturing pilot lines*
- *Extensive lab, testing, and prototyping equipment*
- *Industry apprenticeships*

SUPPLY CHAIN MULTIPLIER

- *Collaborative environment brings in new partners*
- *Co-location with much of your supply chain*
- *Small business incubators*
- *Network with industry, academia and DoD*

NEW CAPABILITIES AND MARKETS

- *Small business access to primes and vice versa*
- *Access to intellectual property*
- *Commercialize technology from federal laboratories*
- *Awareness of DoD requirements & future needs*

INCREASED PERFORMANCE & RETURNS

- *Risk reduction through pooled R&D*
- *Participate in federally cost-shared R&D projects*
- *Develop cutting edge technology*
- *Better trained workforce*

STATE & LOCAL GOVERNMENTS

DEPARTMENT OF DEFENSE MANUFACTURING INNOVATION INSTITUTES

Quick Start Opportunities Guide for **State & Local Governments**

Build your innovation infrastructure!

Manufacturing USA
Proud Member

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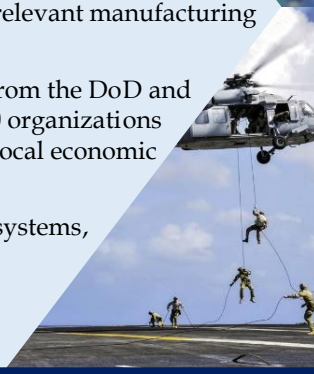

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INNOVATION CLUSTERS BRING LASTING ECONOMIC DEVELOPMENT

Manufacturing Institutes are innovation clusters comprised of numerous partners with a singular technology focus - all committed to building a convergence of expertise. Because these clusters contain all of the elements necessary for product realization (research, design, prototyping and production), they feed off each other's success and become deeply entrenched locally and regionally. Clusters formed around advanced manufacturing facilities inherently persist due to the ability to accelerate product to market using a co-located supply chain. All this growth provides phenomenal opportunities to the region's students and workforce.

The State of Massachusetts has pledged more than $100 million for partnering with manufacturing innovation institutes. The investment is in world class prototyping facilities, open to members of respective institutes and attractive to industry and academia.

GREAT RETURNS FROM ADVANCED MANUFACTURING

- *Manufacturing possesses the highest community economic multiplier for jobs and GDP*
- *Members compete for manufacturing project grants*

RAISING YOUR NATIONAL PROMINENCE

- *Institutes represent a means to increase preeminence*
- *Institutes converge regional members associated with next generation technologies*
- *Clustering helps bring additional Federal grants*

GROW A QUALIFIED WORKFORCE

- *Workforce development is a key objective at each institute*
- *Deliver unique opportunities for regional students, using community colleges and universities*

ATTRACT DIRECT INVESTMENT

- *Hub or node pilot facilities appeal to first adopters*
- *Small businesses receive mentoring and become key suppliers as spin outs*

FEDERAL AGENCIES

DEPARTMENT OF DEFENSE MANUFACTURING INNOVATION INSTITUTES

Quick Start Opportunities Guide for **Federal Agencies**

Partner up to achieve your mission!

Manufacturing USA
Proud Member

PARTNER UP TO ADVANCE YOUR IMPACT AND REACH

Manufacturing USA Institutes offer an array of high-tech leveraging opportunities for the federal professional. From a research and development perspective, the Manufacturing USA institutes provide access to joint DoD-commercial road-mapping activities, pilot manufacturing facilities, and responsive project contracting. From an acquisition perspective, these pre-competitive federal assistance agreements can be utilized to perform technology-related projects, access to cost share and ensure competition. From an operations and sustainment perspective, they can be a source for producing quick-turn complex parts and low cost research & development.

> *"The DoD has needed a concerted effort focused on invigorating manufacturing capabilities for some time. These Manufacturing Institutes address this need and are now providing solutions that DoD should be able to leverage for years to come."*
>
> - Dr. Nicholas Usechak, Government CTO AIM Photonics

RAPIDLY TRANSITION S&T

- *Advance concepts through prototype development*
- *Sponsor projects to meet specific mission needs*
- *Contracting meets all competition requirements*

LOWER RISK FOR TECHNOLOGY INSERTION

- *Apply new manufacturing processes to reduce cycle time*
- *Utilize tools to support legacy systems*
- *Reduce risk on DoD Programs of Record*

SCALE-UP ADVANCED MANUFACTURING

- *Identify domestic sources for components and materials*
- *Advance from prototype to limited-scale production*

ACCESS THE ADVANCED MANUFACTURING ECOSYSTEM

- *Hone your expertise & engage with the best & brightest*
- *Participate in institute-led training programs*

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Department of Defense Manufacturing Institutes Program Office

Office of the Secretary of Defense | Under Secretary of Defense for Research & Engineering

Manufacturing Technology Program

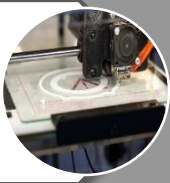
For more information visit: defenseinnovationmarketplace.dtic.mil | www.manufacturingusa.com

Or email inquires to: osd.mc-alex.ousd-atl.mbx.dod-mfg-usa@mail.mil

America Makes: National Additive Manufacturing Innovation Institute

Youngstown, OH | www.americamakes.us

*America Makes strengthens U.S. capabilities in **3D printing** and **additive manufacturing**.*



MxD: Manufacturing x Digital (formerly DMDII)

Chicago, IL | www.mxdusa.org

*DMDII leads the nation's research institute into applying cutting-edge **digital technologies.***

LIFT: Lightweight Innovations For Tomorrow

Detroit, MI | lift.technology

*LIFT speeds development of new **lightweight metal manufacturing processes**.*

AIM Photonics: American Institute for Manufacturing Integrated Photonics

Albany & Rochester, NY | www.aimphotonics.com

*AIM Photonics accelerates development of the **photonic integrated circuit industry**.*

NextFlex: America's Flexible Hybrid Electronics Institute

San Jose, CA | www.nextflex.us

*NextFlex innovates electronic packaging & printing to produce **flexible electronic products**.*

AFFOA: Advanced Functional Fabrics of America

Cambridge, MA | join.affoa.org

*AFFOA accelerates widespread commercialization of **highly functional fabrics**.*

BioFabUSA: Advanced Tissue Biofabrication Institute

Manchester, NH | www.armiusa.org

*BioFabUSA develops next-generation techniques for **cell & tissue biofabrication**.*

ARM: Advanced Robotics Manufacturing Institute

Pittsburgh, PA | www.arminstitute.org

*ARM improves U.S. competitiveness through advancements in **smart collaborative robotics.***