

Frequently Asked Questions

Revolutionary Fibers and Textiles Manufacturing Innovation Institute (MII)

1. What are Revolutionary Fibers and Textiles?

- Recent advances in fiber science have created fibers with extraordinary properties. Exceptional strength, flame resistance, electrical and other novel properties have revolutionized the fibers and textiles application space – hence the use of the term ‘revolutionary’. Modern fibers and textiles are a fast growing segment in the overall fiber and textile marketplace, with a wide range of commercial and defense applications. They cover a range of fiber systems that are known as technical textiles, composed of specialty fabrics, industrial fabrics, e-textiles, smart fabrics and other advanced textiles. The core characteristic of technical textiles is that they are built upon a foundation of predominantly synthetic fibers, natural fiber blends and multi-material fibers.

2. What will the Revolutionary Fibers and Textiles Manufacturing Innovation Institute focus on?

- The Revolutionary Fibers and Textiles Manufacturing Innovation Institute (RFT-MII) will serve as a public-private partnership between government, academia and industry to address the spectrum of manufacturing challenges associated with this technology, from design to end products. The Institute will provide leading edge capabilities to rapidly and flexibly produce end-item prototypes based on the use of validated computational design tools, a robust knowledge management system, and a collaborative infrastructure. These design tools and pilot manufacturing capabilities will be integrated to support manufacturing process improvements, maintain a community repository of design and performance data, and testing to improve current and develop new industry standards. The RFT-MII public-private partnership will be used to train a new workforce through educational outreach programs as well as workforce training and re-training to advance this manufacturing sector of the U.S. economy.

3. Why invest in Revolutionary Fibers and Textiles now?

- After a decade of decline in U.S. manufacturing during the 2000s, the American textile industry is adding jobs for the first time in two decades, increasing shipments by nearly a fifth since the recession, and winning globally with a 45 percent increase in exports since 2009. The Revolutionary Fibers and Textiles Institute will build on this momentum and lays the foundation for future leadership in the production of sophisticated fibers and textile technologies.

4. What are specific DOD needs for Revolutionary Fibers and Textiles?

- Defense needs for novel Fiber and Textile components are widespread. They include: soldier clothing (wearable e-textile power and data transport bus), microclimate management and individual equipment, shelters, parachutes, ballistic and blast protection, Chemical, Biological, Radiological and Nuclear (CBRN) protection, flame and thermal protection, environmental protection, safety flotation devices, anti-gravitational suits. Other DOD uses are in the Medical and Engineering fields.

5. How much federal funding will go into this new Manufacturing Innovative Institute?

- The institute’s federal funding contribution will be up to \$75 million across the five years of the cooperative agreement’s full activities. Consistent with the President’s broader proposal, the Institute will be supported with federal funding through the start-up and initial operational phases, after which it is expected to become fiscally self-sustaining.
- This manufacturing innovation institute solicitation will require that applicants match the federal investment on no less than a 1:1 basis.

6. With declining budgets, can DOD afford to use its resources to establish these institutes?

- Yes, this is a matter of funding our highest defense and national priorities. Engaging in sustainable public-private partnerships that build strong innovation capacity around these manufacturing technologies is our chosen

investment strategy. We know that defense requirements alone are often insufficient to underpin the development, growth and sustainment of emerging industries needed to produce leading edge defense systems. We need a vibrant domestic commercial base in these areas as well, and these public- private manufacturing research partnerships will provide that capability. We also leverage other existing and planned federal investments in complementary technologies to create a more powerful and desirable outcome.

7. What happens after the five years of federal funding and the Cooperative Agreement is concluded? What will the government role be at that time?

- While the Cooperative Agreement concludes at the end of the five years, the government hopes to continue to be a customer of the institute. This could include specific project funding applied to the institute from a variety of federal agencies.

8. What is the length of the Cooperative Agreement for the DoD-led institute?

- The Cooperative Agreement for the Institute will include a six month standup period and five years of full activities.

9. What other agencies are participating in the DoD-led institute?

- Currently, the Departments of Commerce, Department of Energy, Defense Logistics Agency, NASA and the National Science Foundation are providing subject matter expertise support in the design of Revolutionary Fibers and Textiles Manufacturing Innovation Institute.

10. Who within the DOD will lead the Revolutionary Fibers and Textiles Institute?

- The Revolutionary Fibers and Textiles Manufacturing Innovation Institute will be overseen by the Office of the Secretary of Defense (OSD) Manufacturing Technology Office. This office oversees the other three DOD Institutes that have already been established (Additive Manufacturing, Lightweight and Modern Metals, and Digital Design and Manufacturing) and the two in solicitation process (Integrated Photonics, Flexible, Hybrid Electronics). As is the case with the existing three DOD-led Institutes, OSD has delegated program management and contracting to a lead service. For this Institute, the US Army contracting command (ACC-NJ-ET) will host the solicitation, the Army (Armament Research Development and Engineering Center) will provide the Program Manager, and the Army (Natick Soldier Research Development and Engineering Center) will provide the Chief Technology Officer.
- A tri-service subject matter expert DOD team, augmented by civilian agency personnel, will be active in the proposal evaluation and follow-on execution phase of the Institute. These component and interagency partners will support the technical advisory board of the Institute. The board will be solicited through and supported by a tri-service, interagency group composed of members from contributing agencies.

11. What will be the role of the DOD in the management of the Institute?

- The Department's overarching role is to support the Institute through federal acquisitions (including the provisioning of federal funding) and provide oversight and stewardship of federal funds. DOD (and civilian agency representatives) will also contribute technical advice and assistance through participation on a technical advisory board. The Institute will have substantial autonomy from its partner organizations and institutions and will have an independent fiduciary board of directors predominantly composed of industry representatives. An Institute leader such as an Executive Director will be in charge of day-to-day operations.

12. What would be the proportion of workforce training and development in the total activity of the Institute?

- Though the proportion is not fixed, the Institute will provide educational opportunities to improve and expand the manufacturing workforce, including K-12 programs, internship opportunities, skills certification, community college engagement, university collaboration, graduate studies, post-doctoral studies, and retraining to meet the requirements set forth by the Institute's mission.

13. What is the vision for small business involvement? How are small companies able to engage the Institute when they typically do not have the resources to pay very much in dues and/or fees?

- A major goal of the Institute is to support the creation, growth, and expansion of small and medium-size enterprises. To that end, the Institute will demonstrate meaningful outreach to and engagement with small and medium-size enterprises. The Revolutionary Fibers and Textiles Institute is expected to engage existing intermediaries, centers, and networks to work with and address the needs of small and medium-size enterprises, to the benefit and success of the Institute's advanced manufacturing agenda.
- Small and medium-size enterprises interested in a broad range of services and an ongoing relationship with the Institute could participate in a tiered membership structure that would minimize barriers to their entry and encourage their membership in the Institute. With membership, small and medium-size enterprises can participate in setting Institute priorities, being selected for projects, networking, gaining access to all events, and having intellectual property (IP) access consistent with the Institute's IP Plan.

14. Will all of the established Manufacturing Innovation Institutes be networked and, if so, how?

- Yes. The agreements signed by each Institute include a requirement to participate in any National Network for Manufacturing Innovation (NNMI) activities, initially involving the established DOD and DOE-led Manufacturing Innovation Institutes. During the course of these agreements, the Network may grow as new institutes are established. The recently enacted Revitalize American Manufacturing and Innovation Act of 2014 calls for the Department of Commerce to convene a "Network for Manufacturing Innovation," and to include the existing institutes established by DOD and DOE. The institutes in the network will share best practices, engage in a dialogue about leveraging common Institute activities, and develop common practices across all institutes.

15. Is the RFT-MII open to foreign companies?

- The recipient of the award must be registered as a U.S. organization. U.S. incorporated companies that are wholly owned subsidiaries of foreign companies – and foreign companies without U.S. incorporated wholly owned subsidiaries -- may be eligible to become members of the Institute, and sub-awardees of federal support if they are able to demonstrate to the satisfaction of the Revolutionary Fibers and Textiles Manufacturing Innovation Institute and the DOD that: 1) their participation is in the best interest of the Institute, U.S. industry, and U.S. economic development; 2) adequate IP and data protection protocols exist between the U.S. subsidiary and its foreign parent organization; 3) the work is conducted within the U.S.; and 4) other conditions that may be deemed necessary by the Institute and the Government to protect U.S. government interests are met.

16. Can other companies/universities/organizations join one of the DoD Institutes after award? If so, how does one become a member?

- Yes. Membership is open to those organizations with an interest in establishing Technical Fibers and Textiles manufacturing and design capabilities as the normal method of operations in the U.S. or who have an interest in manufacturing processes related to Technical Fiber and Textiles. Membership information will be available on the Institute website after award.

17. Do other countries have similar programs in Revolutionary Fibers and Textiles?

- Many countries have active programs designed to inspire innovation and improve manufacturing. Germany has Fraunhofer Gesellschaft, the United Kingdom has Catapult, France has Carnot, Taiwan has the Industrial Technology Research Institute, Canada has the Industrial Research Assistance Program, and Belgium has IMEC (formerly Interuniversity Microelectronics Centre). Specific Textile related applied research institutes are in countries like UK, Germany and Canada.

18. Will this Institute create new jobs?

- The Institute will help develop the ability, skills and knowledge it takes to make our fibers and textiles workforce more competitive in the 21st- century for a wide variety commercial and defense products. It is expected that jobs will be created through the growth of more robust and vibrant manufacturing supply chains related to the expansion of domestic business in this market sector.