UNITED STATES
MANUFACTURING
INNOVATION COUNCIL

Securing the Future of the U.S. Advanced Manufacturing Industry

DISCOVER OUR MANUFACTURING INNOVATION INSTITUTES

PRESENTED
November, 2025

Why Invest in Advanced Manufacturing in the U.S.?

U.S. leadership in advanced technology **is not certain**, and over the past two decades, our country has lost its leadership position

- We invent in the U.S. but we manufacture globally.
- Keys to reverse trend:
  - **Advancing American Innovation** modernizes industry and our military capabilities.
  - **Maintaining Supply Chain Reliability** offers businesses more predictability and faster response times to market demands.
  - **Supporting Local Economies** creates jobs and strengthens domestic industries.
- If the **U.S.** is serious about **combatting** the near-term threats to our economic and national security from China and other competitors, then **the U.S. needs to act**.

Let's establish stable commitments to impactful public-private partnerships that **support domestic advanced manufacturing.**

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Why Invest in Advanced Manufacturing in the U.S.?

Business looks to innovate, invest, and build factories where there are:

- Financial incentives
- Skilled workforce
- Stable policy environments

American competitiveness relies on many factors including trade, taxes, technology, talent, regulations/permitting, strong legal frameworks, and more.

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Network of Manufacturing USA Institutes

Established and sponsored by the Departments of Defense, Energy, and Commerce, institutes focus on key strategic areas for technology innovation, supply chain resiliency, and workforce development.

BioMADE – Bioindustrial Manufacturing and Design Ecosystem
St. Paul, MN, and Emeryville, CA

AMERICA MAKES – Additive Manufacturing
Youngstown, OH

CESMII – the Smart Manufacturing Institute
Los Angeles, CA

NextFlex –Additive Hybrid Electronics
San Jose, CA

EPIXC – Electrified Processes for Industrial Excellence
Tempe, AZ

CyManII – The Cybersecurity Manufacturing Innovation Institute
San Antonio, TX

IACMI – The Institute for Advanced Composites Manufacturing Innovation
Knoxville, TN

LIFT – The National Advanced Materials and Manufacturing Innovation Institute
Detroit, MI

MxD –The Digital Manufacturing & Cybersecurity Institute
Chicago, IL

BioFabUSA – Regenerative Manufacturing
Manchester, NH

AFFOA – Advanced Functional Fabrics of America
Cambridge, MA

AIM Photonics – American Institute for Manufacturing Integrated Photonics
Albany and Rochester, NY

REMADE – Reducing EMbodied-energy And Decreasing Emissions
Rochester, NY

RAPID – Rapid Advancement in Process Intensification Deployment Institute
New York, NY

ARM – Advanced Robotics for Manufacturing Institute
Pittsburgh, PA

NIIMBL – The National Institute for Innovation in Manufacturing Biopharmaceuticals
Newark, DE

Power America – WBG Semiconductor Chips and Power Electronics
Raleigh, NC

SMART USA – Semiconductor Manufacturing
Durham, NC

Department of Defense
Department of Energy
Department of Commerce

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HISTORY

Manufacturing USA was formally established in 2014 as the National Network for Manufacturing Innovation.

The Need: A cutting-edge manufacturing sector was needed for the United States to remain a step ahead of the competition and thrive.

Background: **In June 2011**, the President's Council of Advisors on Science and Technology recommended the formation of the "Advanced Manufacturing Partnership" (AMP)

The partnership was led by Dow Chemical Company President, Chairman, and CEO Andrew Liveris, and MIT President Susan Hockfield.

The Advanced Manufacturing Partnership was charged with identifying collaborative opportunities between industry, academia and government that would catalyze development and investment in emerging technologies, policies and partnerships with the potential to transform and reinvigorate advanced manufacturing in the United States.

In **2012,** the Department of Defense set up the first Innovation Institute, America Makes, followed by LIFT and MxD in 2014.

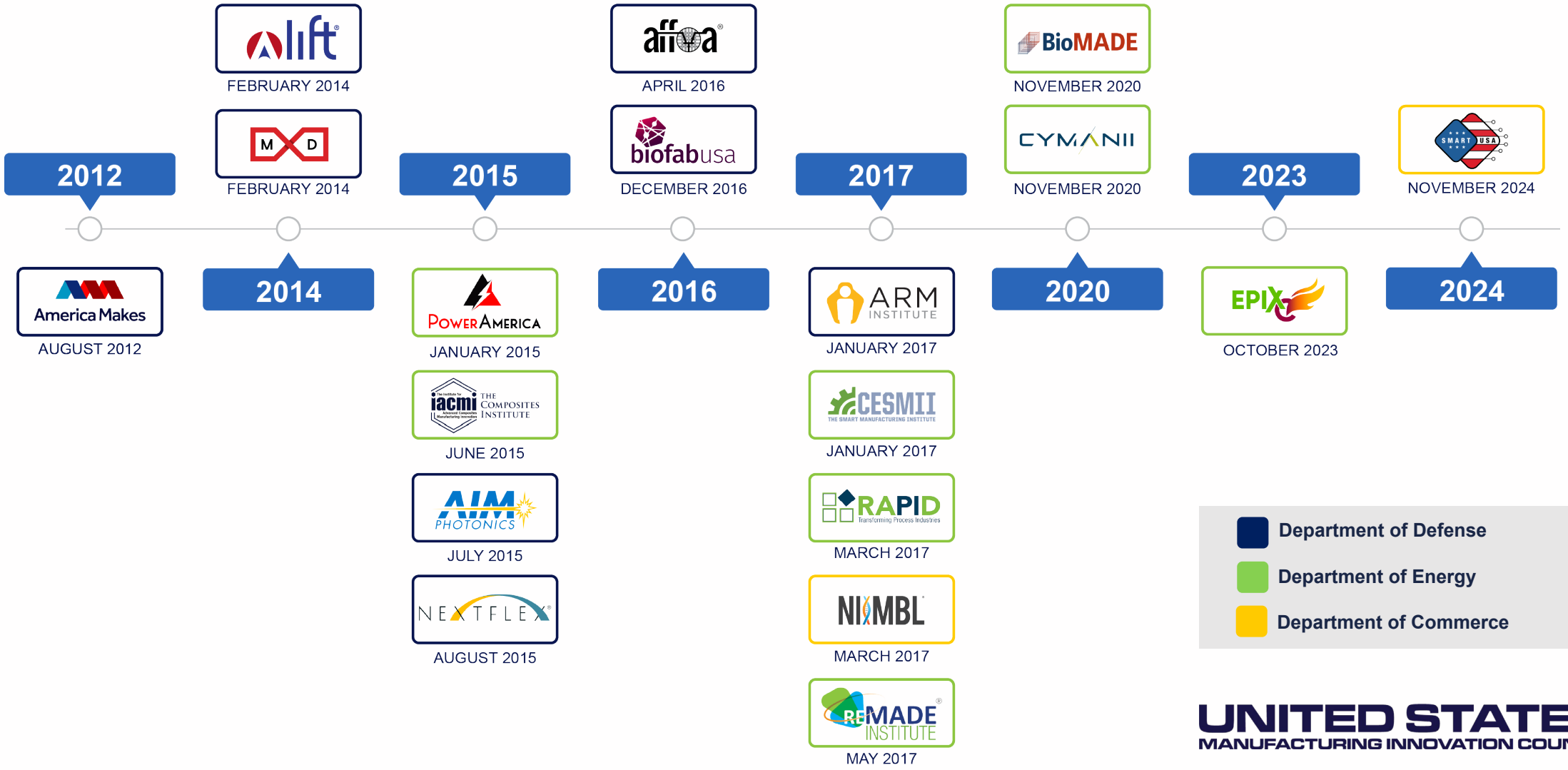
After a nationwide outreach and engagement effort, "The National Network for Manufacturing Innovation: A Preliminary Design," was issued in **January 2013**.

In December 2014, Congress passed the Revitalize American Manufacturing and Innovation Act (RAMI Act) into law, which gave Congressional authorization to the Advanced Manufacturing National Program Office and authorized the Department of Commerce to hold "open-topic" competitions for manufacturing innovation institutes where those topics of highest importance to industry could be proposed.

In February 2016, the 2015 Annual Report and the first 3-year Strategic Plan were released. An Annual Report and/or Manufacturing USA Highlights Report have been subsequently released each year since.

TIMELINE

Network of Manufacturing USA Institutes



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Public-Private Partnerships
A Model for Engagement

Institutes Promote Large-Scale Collaboration

- United in purpose, the institutes accelerate innovation. Overcoming technical hurdles, sharing state-of-the-art facilities and equipment, and training tomorrow's workforce.
- As public-private partnerships, institutes and member networks jointly invest in resources to accelerate progress toward their shared mission.

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USMIC

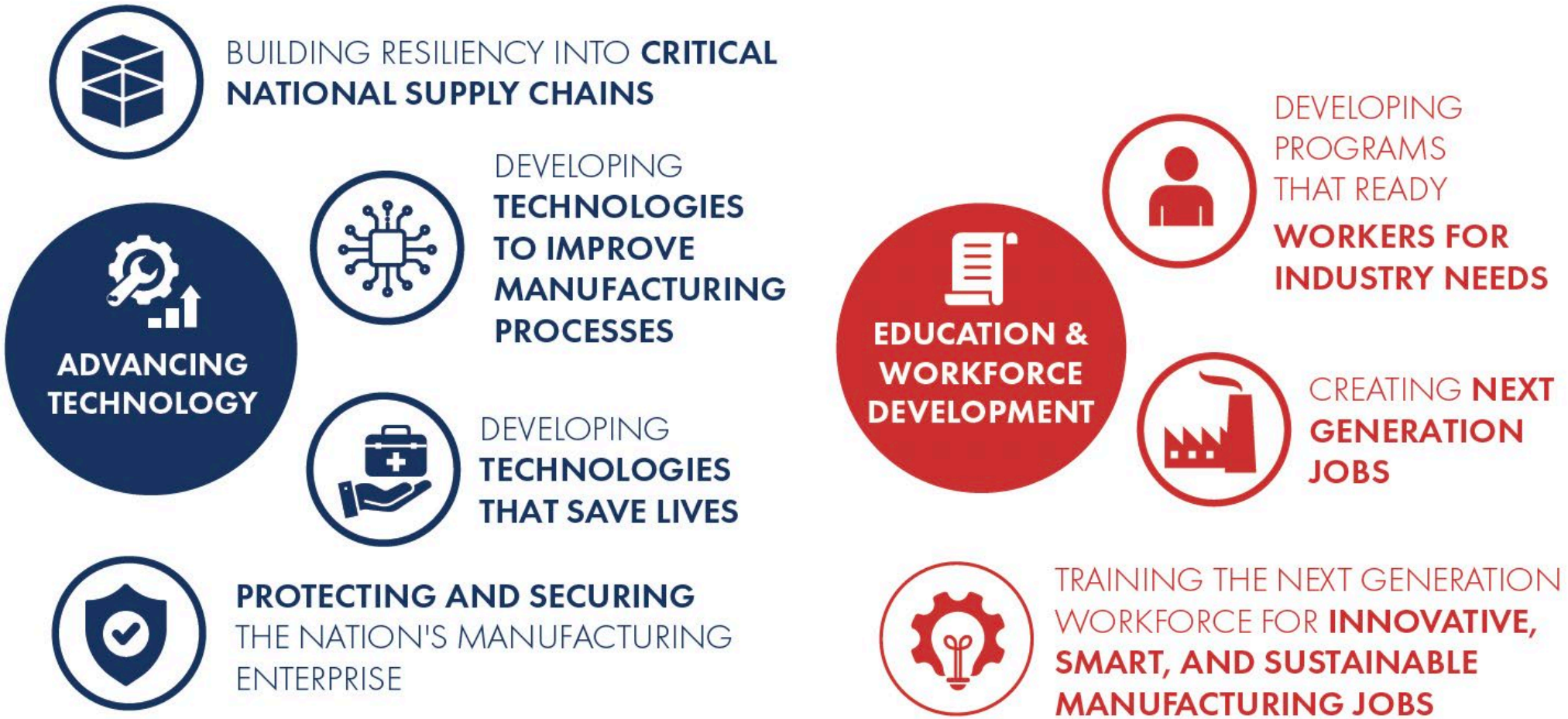
Mission & Impact

Engagement for robust, persistent support of the Manufacturing USA Institutes' growth, value creation, and development

- Secure U.S. global **leadership** in advanced manufacturing
- Support the **growth**, **sustainment**, and **competitiveness** of U.S. manufacturing
- Serve as a national **voice** for advanced manufacturing
- Support **collaboration** and best practice sharing across the institutes in the Manufacturing USA Network
- Enable **innovation** in technology, education and workforce development

USMIC MAKING A DIFFERENCE

Creating a National Innovation Industrial Base



Primary Activities of the Institutes' Impact

- Providing new model for innovation
- Creating industry roadmaps
- Scaling and onshoring emerging industries
- Reinvigorating existing industries
- Creating factories of the future
- Rebuilding supply chains around new tech
- Growing regional economies
- Engineering jobs of the future
- Building platforms for workforce
- Training the next generation of manufacturing talent

Manufacturing Institute's Research Innovation Pipeline

"We are bringing government, industry, and academia together," says John Dyck, CEO of CESMII, the Smart Manufacturing Institute. "It's a convening of the best thinkers – manufacturers, designers, machine builders, and integrators. We are working together to accelerate the democratization of smart manufacturing."

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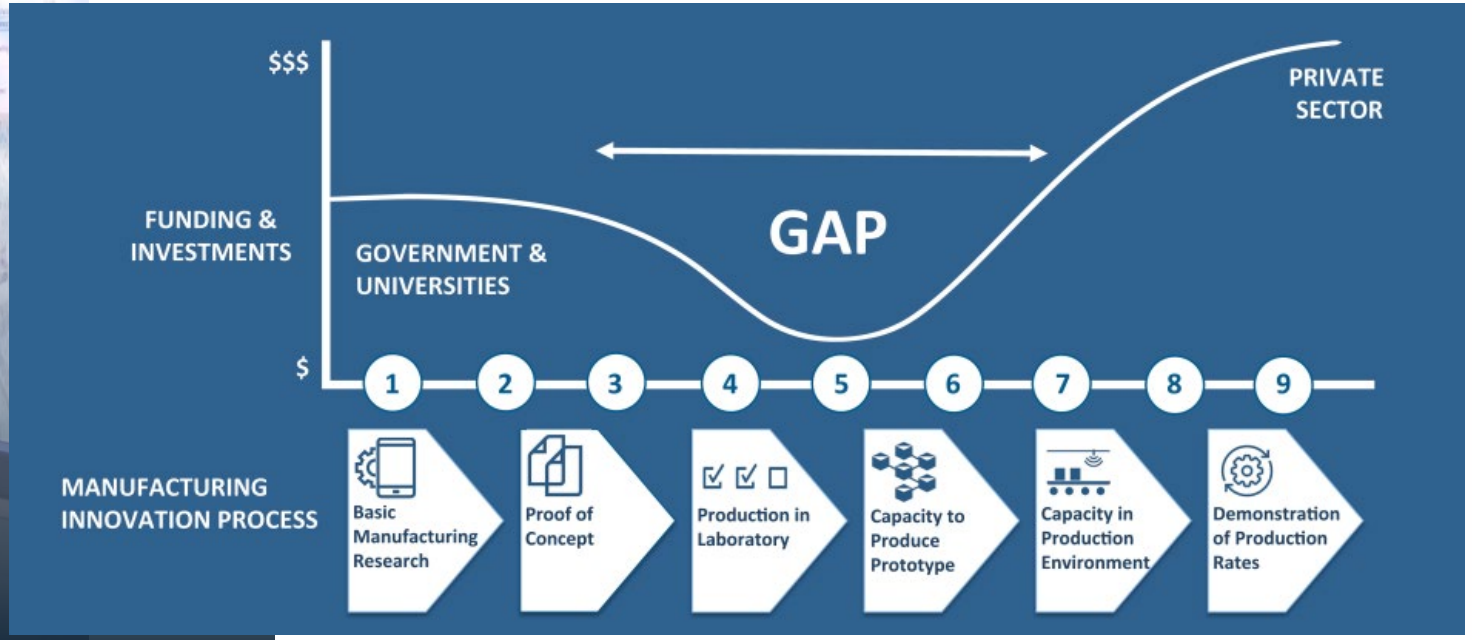
The Institutes partner with industry in a neutral, collaborative setting to solve early-stage manufacturing challenges.

- They focus on advancing technologies through critical stages of development—often referred to as Technology Readiness Levels (**TRLs**)—helping companies bridge the "**valley of death**" between R&D and commercialization.
- As trusted third parties, the Institutes provide a space **for pre-competitive collaboration**, where joint R&D is conducted while leaving commercialization to the private sector. Their shared mission is to prove out concepts and scale solutions that strengthen U.S. manufacturing.



Observations

Untapped Potential for Institutes – The Institutes have great impact despite the relatively small and short-term public investments. They would have greater and far-reaching impact on American national and economic security and leadership with scaled-up investments.

Untapped Potential for Network – The lack of investment in opportunities to create synergy across the network leaves substantial unrealized potential. Solutions are needed to overcome the complex annual appropriations process which looks at each institute individually versus holistically. This can dilute cooperation and efficiency.

Strategies for Strengthening
Institutes & National Goals

Existing institutes are the fastest means of deploying assets to achieve acceleration, development, and adoption of new technologies and are the fastest viable means to create scale up in the U.S. in their domains.

- **Longer-term commitments** to institutes are needed to invest in resources to meet national goals. New mechanisms should be considered.
- Network-enhancing activities require cross-cutting engagement which, at present, is challenging through existing pathways.

How are other nations investing?

Germany

Fraunhofer Institutes are dedicated research entities that concentrate on applied sciences. These institutes play a vital role in furthering Germany's **Industry 4.0** initiative.

Comprising over **75 institutes**, they focus on various domains of applied science and engineering, ranging from artificial intelligence to advanced manufacturing. Their robust collaborations with both industry and academia facilitate the application of research in practical settings. Key areas of concentration include automation, robotics, materials science, and digital manufacturing. The Fraunhofer Institutes have been instrumental in the development of **smart factories** and the enhancement of **cyber-physical production systems**.

UK

The **Catapult Network** comprises multiple specialized research and technology centers throughout the UK, concentrating on sectors such as high-value manufacturing, digital technology, offshore renewable energy, and more.

High-Value Manufacturing Catapult (HVM Catapult): This network includes seven exceptional centers dedicated to enhancing the productivity and global competitiveness of UK manufacturing.

Digital Catapult: This initiative supports businesses in leveraging digital technologies, including AI, cybersecurity, and advanced data analytics.

Connected Places Catapult: This center emphasizes advancements in infrastructure, urban systems, and transportation innovation.

China

Made in China 2025 (MIC2025) is a strategic initiative introduced in 2015 aimed at modernizing its manufacturing industry and decreasing dependence on foreign technology. The objective is to position China as a global frontrunner in advanced manufacturing.

As of May 2025, China has established at least 33 Manufacturing Innovation Centers (MICs), progressing toward its goal of 40 centers by 2025 under the "Made in China 2025" initiative. These centers, modeled after the U.S. Manufacturing USA program and Germany's Fraunhofer Institutes, focus on advancing key sectors such as robotics, aerospace, semiconductors, high-tech shipbuilding, and electric vehicles. Significant investments have been made in areas like AI, 5G, and smart manufacturing to enhance industrial productivity.

Other

Japan – Society 5.0 and the Industrial Value Chain Initiative (IVI)

South Korea – Manufacturing Innovation 3.0

France – Industry of the Future (Industrie du Futur)

India – Make in India and SAMARTH Udyog Bharat 4.0

European Union – Factories of the Future (FoF)

Singapore – Advanced Manufacturing and Industry Transformation Maps (ITMs)

Spotlight on China

Inside China's Manufacturing Innovation Centers: Key Highlights from the Latest Report

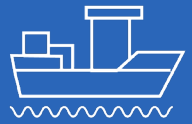
China's Industrial Priorities (2015-2025)

The "Made in China 2025" plan highlights 10 sectors:


New generation information technology

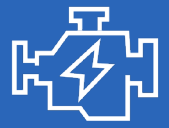

High-end computerized machines and robots


Aerospace


Maritime equipment and high-tech ships


Advanced railway transportation equipment


New energy and energy-saving vehicles


Energy equipment


Agricultural machines


New materials


Biopharma and high-tech medical devices

Source: Notice of the State Council on Issuing Made in China 2025, PRC State Council. (2015). No. 28. [16]

Manufacturing Innovation Programs in the U.S., China, and Germany

Country	Percent 2023 GDP From Manufacturing*	2023 Value Added by Manufacturing (USD millions)*	Manufacturing Innovation Program Name	Owner	Year Started	# of Institutes	Est. Total 2023 Annual Program Budget** (USD millions)	Est. 2023 Government Program Base Funding** (USD millions)	% Program Investment per Manufacturing GDP (USD millions)	Program Investment per Manufacturing GDP - Indexed to the U.S.
USA	10%	$2,840,447	Manufacturing USA	Government Agencies	2014	18	$540	$160	0.019%	1.0
China	26%	$4,781,179	Manufacturing Innovation Centers	Government of China	2016	33	Unknown	Unknown	N/A	N/A
Germany	19%	$838,894	Fraunhofer Institutes	Fraunhofer Society	1949	76	$3,225	$374	0.375%	19.6

*GDP numbers were sourced from the World Bank and U.N. Stats, in USD current prices. [accessed 17 March 2025]. [28, 29] The U.S. 2023 value was sourced from NIST's Annual Report on the U.S. Manufacturing Economy: 2024. [30]
**2023 expenditure estimates for the Manufacturing USA and Fraunhofer Institutes were derived from their respective Annual Reports. [31, 32] China's MICs-specific program budget and government base funding are unknown.

A Legacy of Leadership:

Advancing U.S. Competitiveness Through Innovation

The US has historically been a global leader in industrial competitiveness driven extensively by a robust innovation ecosystem that involves many parties – universities, entrepreneurs, startups, finance, and companies of all sizes. (examples – light bulb, lasers, GPS, Internet)

Institutes and the larger network are national assets.

Building the Innovation Pipeline

3400+
Total Projects

270+
Technologies Advanced Towards Commercialization

>2900
Member Organizations

From all States

100,000s
Participants in Training Programs

Supporting the **advanced manufacturing institutes for future success.**

Agency cuts to key federal programs and loss of expertise undermines the notion of stability **and causes companies to shift operations to other countries.**

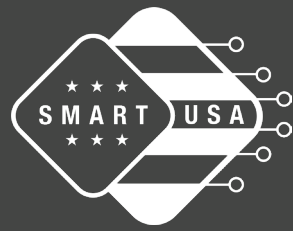
In the U.S., the advanced manufacturing institutes are an important part of this ‘all-of-the-above’ economic competitiveness and national security mission that has been so successful.

Evolutionary approaches lead to evolutionary success. Revolutionary approaches can lead to revolutionary success.

These are ways the U.S.M.I.C. and institutes are seeking to contribute.

Manufacturing Institutes

Partnerships Driving Innovation



Thank You!

For more information:

usmic.org

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