CHIPS for America Act Programs

Supporting a Strong U.S. Semiconductor Industry

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National Institute of Standards and Technology

NEPP
June 13, 2022

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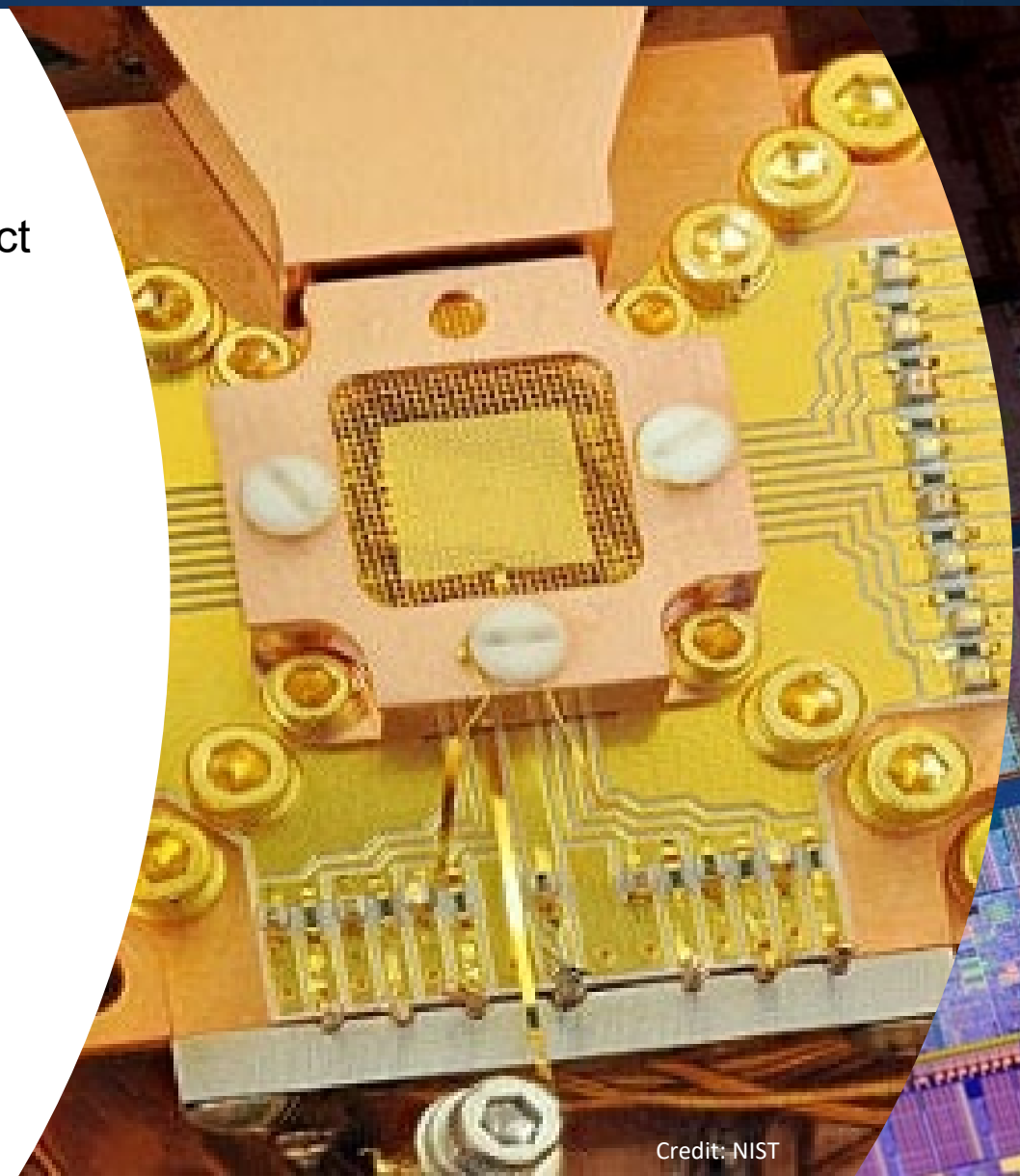
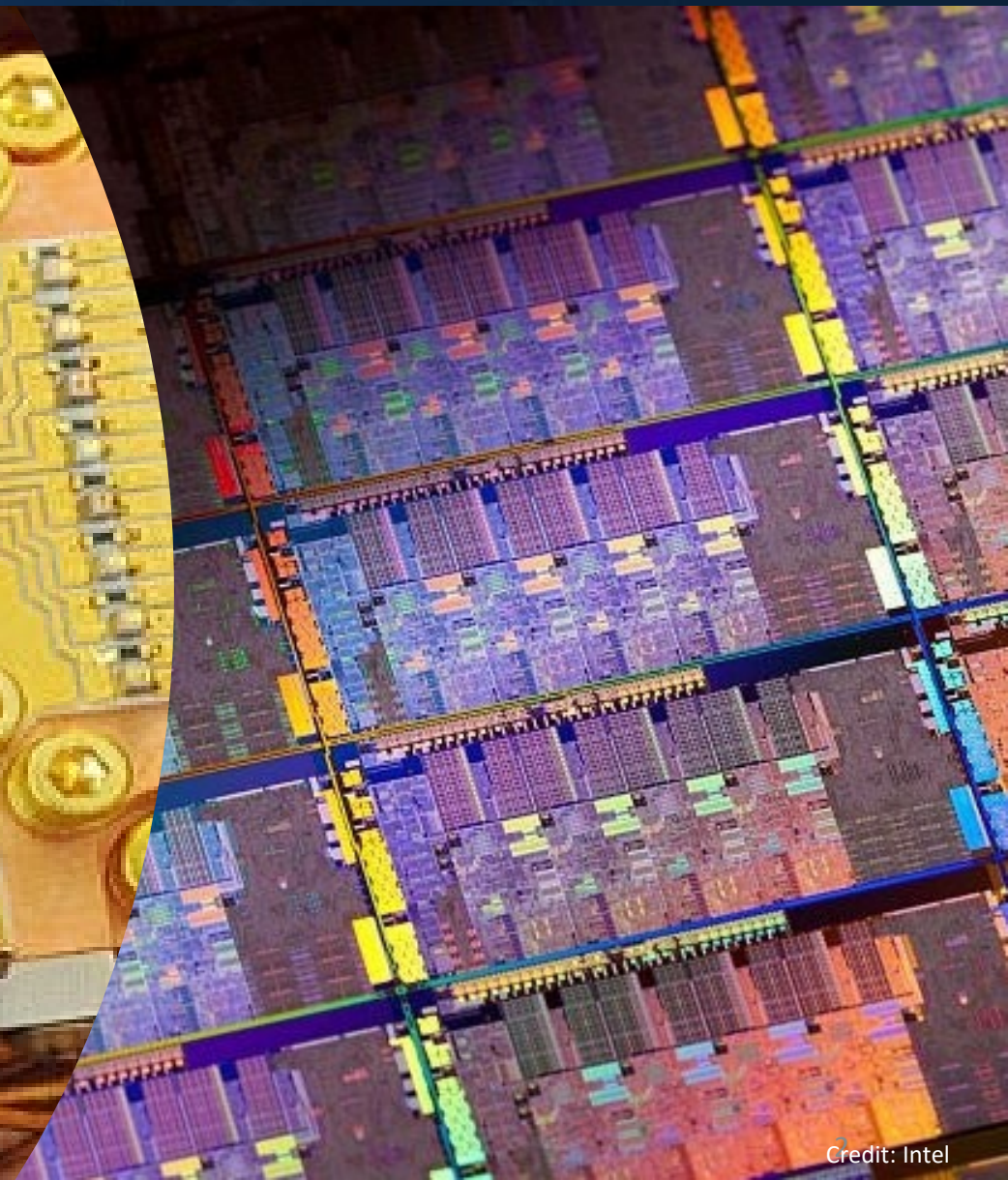


Credit: NIST



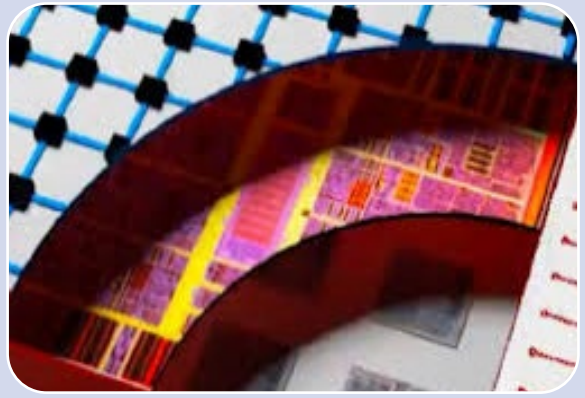
Credit: Intel

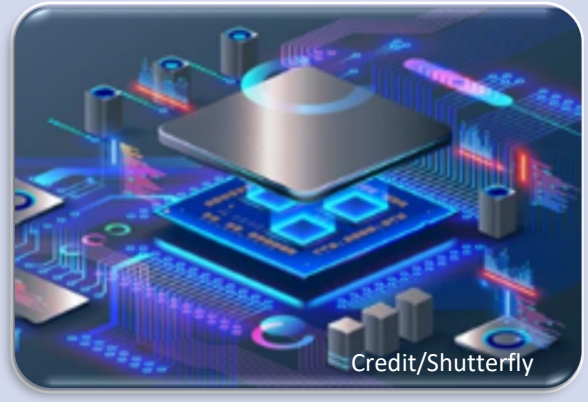
Current Status of CHIPS Act Legislation

- The Senate passed the United States Innovation and Competition Act (USICA) in June 2021. The USICA appropriates funds (among other things) for the CHIPS Act portions of the NDAA.
- The House passed the America COMPETES Act of 2022 (its version of USICA) in February 2022.
- The Senate and House version of the CHIPS Act are almost identical with one significant exception: America COMPETES Act has Other Transaction Authority.
- Several departmental task forces have been established to respond to the congressional questions on the Competes Act and USICA
- Timeframe for conference action is mid April to June.

Credit: Shutterstock/Lucky-photographer

Goals for CHIPS Act





Protect and extend U.S. semiconductor technology leadership

Ensure a secured supply of chips for critical sectors

Promote long-term economic viability of U.S. industry in R&D, manufacturing, and other critical parts of the semiconductor value chain.

CHIPS Act At A Glance

Creating **H**elpful **I**ncentives to **P**roduce **S**emiconductors for America (CHIPS Act)

$52 Billion total budget over 5 years

Financial Incentives Programs

$39 billion

Research and Development

$11 billion

Technology Center
Packaging Program
MFG USA Institute(s)
Metrology program

Workforce Development

US Code: 15 USC 4652: Semiconductor incentives

Financial Incentives Programs

Financial Incentives

- **Finance the construction, expansion, or modernization of a facility or equipment**

- **Support site development and modernization**

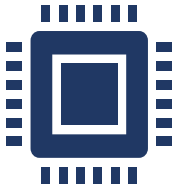
- **Workforce development**

- **Reasonable Operating Cost**

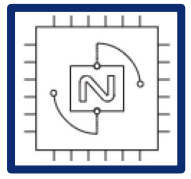
Research and Development

Research and Development for leading edge nodes and Advanced Packaging

- **National Semiconductor Technology Center**



- **National Advanced Packaging Manufacturing Program**



- **Microelectronics Research at The National Institute of Standards And Technology**

- **Creation of a Manufacturing USA Institute**

It is critical that these programs are interconnected and complementary.

Workforce Development

Workforce Development is an integral part of the CHIPS Act and is specifically mentioned in all parts of the Incentives and R&D programs

Financial Incentives Program

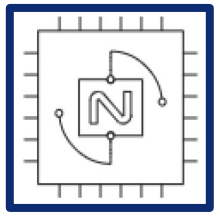
Support workforce development for a facility

R&D Programs

NSTC

Creation of a Manufacturing USA Institute

CHIPS Act Programs - NIST Internal R&D



Section 9906 (e) - Microelectronics Research at NIST

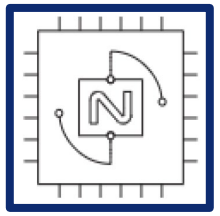
Goal: Accelerate the underlying research and development for metrology of next generation microelectronics

Subject to the availability of appropriations for such purpose, the Director of the National Institute of Standards and Technology shall carry out a microelectronics research program to enable advances and breakthroughs in

- Measurement science
- Standards
- Material characterization
- Instrumentation
- Testing
- Manufacturing capabilities

that will accelerate the underlying research and development for metrology of next generation microelectronics and ensure the competitiveness and leadership of the United States within this sector.

CHIPS Act Programs - NIST Internal R&D



Section 9906 (e) - Microelectronics Research at NIST

We need your input on:

- Key industry needs
- How the program should be structured for maximum effectiveness
- Best models for interactions

Semiconductor Metrology R&D Workshop to engage with stakeholders across the microelectronics innovation ecosystem to identify the optimal approaches in measurement science, standards development, and measurement services to support U.S. industry.

1st Workshop: April 6 -7, 2022 and 2nd Workshop: April 20-21, 2022

- **3 keynote speeches from industry (2) and academia (1)**
- **8 Panel sessions with corresponding breakout sessions**
- **Over 800 attendees**

Key Takeaway: There is an acute need for measurement methods, standards, and services that span broad length scales and validate complex structures from 3D nanoscale devices to 3D integrated systems; new materials; process and modeling data; interoperability protocols; advanced packaging; and security and supply chain.

CHIPS Act - Request for Information (RFI)

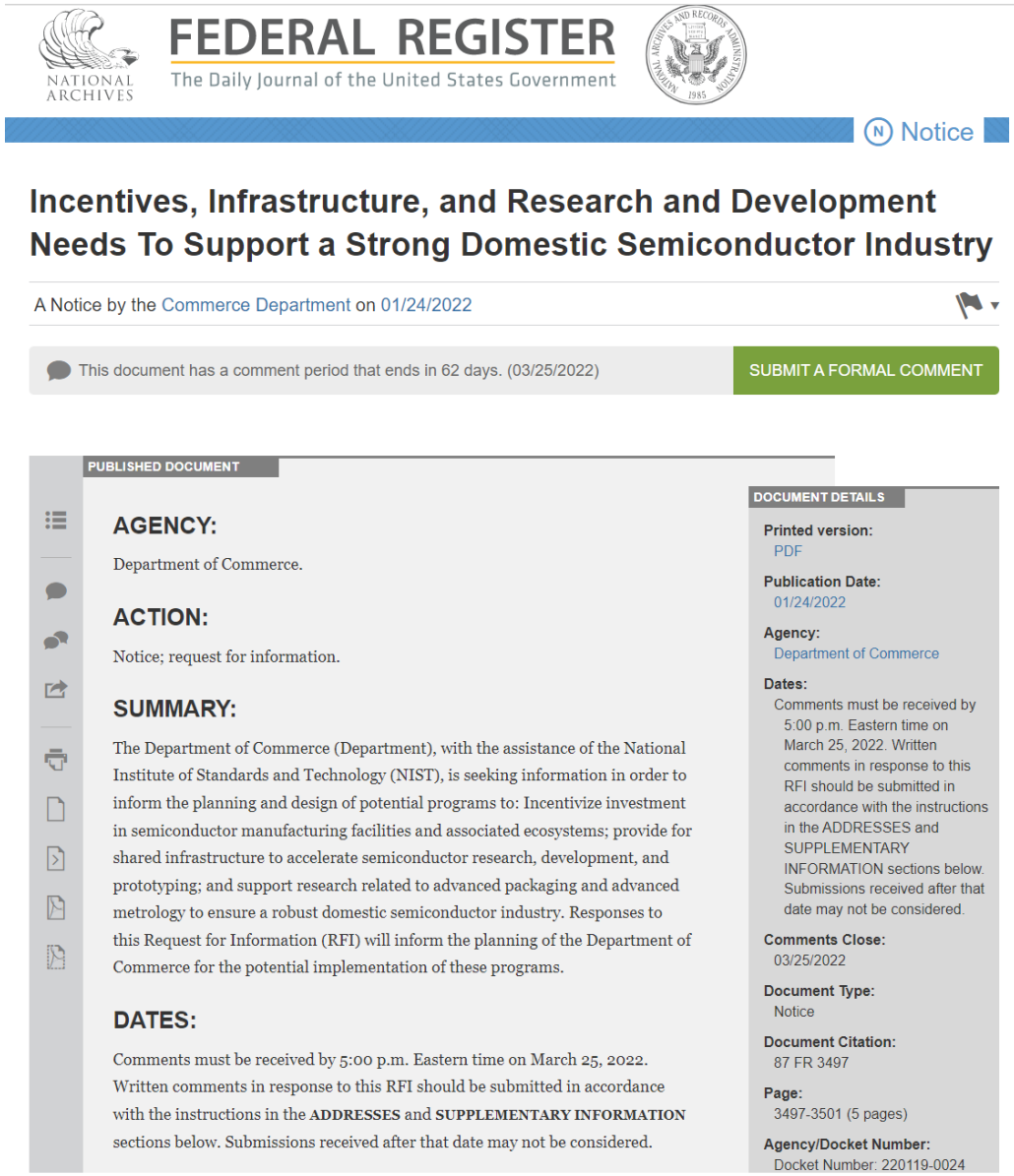
RFI purpose: Receive information to inform CHIPS Act program design

See www.NIST.gov/semiconductors

Department of Commerce invites comments from all interested parties, domestic or foreign, including semiconductor manufacturers; industries associated with or that support the semiconductor industry on:

- The Incentives Program
- The National Semiconductor Technology Center
- The Advanced Packaging Manufacturing Program
- Semiconductor Workforce Issues

Input after March 25 should be sent to CHIPS@NIST.GOV



NATIONAL ARCHIVES

FEDERAL REGISTER

The Daily Journal of the United States Government

Notice

Incentives, Infrastructure, and Research and Development Needs To Support a Strong Domestic Semiconductor Industry

A Notice by the Commerce Department on 01/24/2022

This document has a comment period that ends in 62 days. (03/25/2022)

SUBMIT A FORMAL COMMENT

PUBLISHED DOCUMENT

AGENCY:

Department of Commerce.

ACTION:

Notice; request for information.

SUMMARY:

The Department of Commerce (Department), with the assistance of the National Institute of Standards and Technology (NIST), is seeking information in order to inform the planning and design of potential programs to: Incentivize investment in semiconductor manufacturing facilities and associated ecosystems; provide for shared infrastructure to accelerate semiconductor research, development, and prototyping; and support research related to advanced packaging and advanced metrology to ensure a robust domestic semiconductor industry. Responses to this Request for Information (RFI) will inform the planning of the Department of Commerce for the potential implementation of these programs.

DATES:

Comments must be received by 5:00 p.m. Eastern time on March 25, 2022. Written comments in response to this RFI should be submitted in accordance with the instructions in the **ADDRESSES** and **SUPPLEMENTARY INFORMATION** sections below. Submissions received after that date may not be considered.

DOCUMENT DETAILS

Printed version: PDF

Publication Date: 01/24/2022

Agency: Department of Commerce

Dates: Comments must be received by 5:00 p.m. Eastern time on March 25, 2022. Written comments in response to this RFI should be submitted in accordance with the instructions in the ADDRESSES and SUPPLEMENTARY INFORMATION sections below. Submissions received after that date may not be considered.

Comments Close: 03/25/2022

Document Type: Notice

Document Citation: 87 FR 3497

Page: 3497-3501 (5 pages)

Agency/Docket Number: Docket Number: 220119-0024

Outreach Logistics

Additional workshops and outreach events in conjunction with the CHIPS Act are being planned – updates will be posted on www.nist.gov/semiconductors

THANK YOU

For more information
www.nist.gov/semiconductors

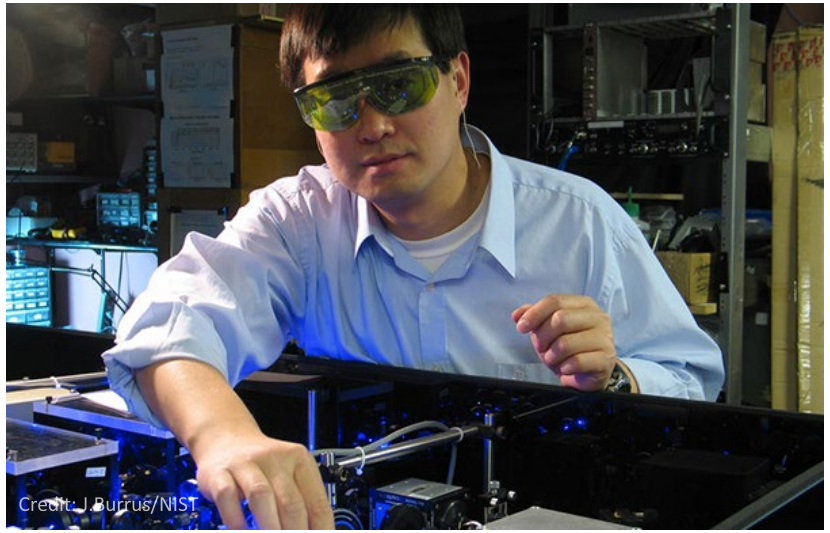
chips@nist.gov

National Institute of Standards and Technology
U.S. Department of Commerce

NIST and Advanced Microelectronics

NIST Mission

To promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life



NIST AT A GLANCE

Industry's National Laboratory

3,400+
FEDERAL EMPLOYEES

5
NOBEL PRIZES

2 CAMPUSES
GAITHERSBURG, MD [HQ]
BOULDER, CO

2,700+
ASSOCIATES

10
COLLABORATIVE INSTITUTES

Thousands
BUSINESSES USING NIST FACILITIES

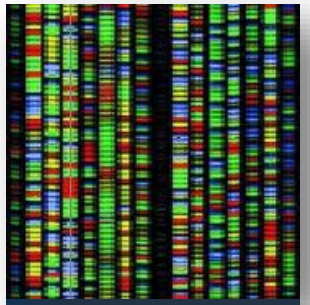
1
NATL OFFICE FOR 16 MANUFACTURING INSTITUTES

51
MANUFACTURING EXTENSION PARTNERSHIP CENTERS

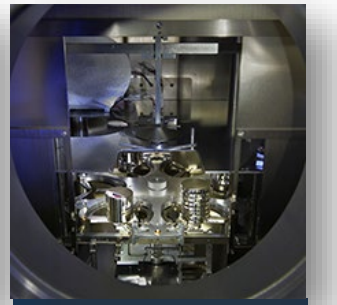
U.S. BALDRIGE PERFORMANCE EXCELLENCE PROGRAM

NIST Laboratory Programs

https://www.nist.gov/labs-major-programs



Material Measurement Laboratory



Physical Measurement Laboratory

Metrology Laboratories

Driving innovation through measurement science

Engineering Laboratory

Information Technology Laboratory

Communication Technology Laboratory

Technology Laboratories

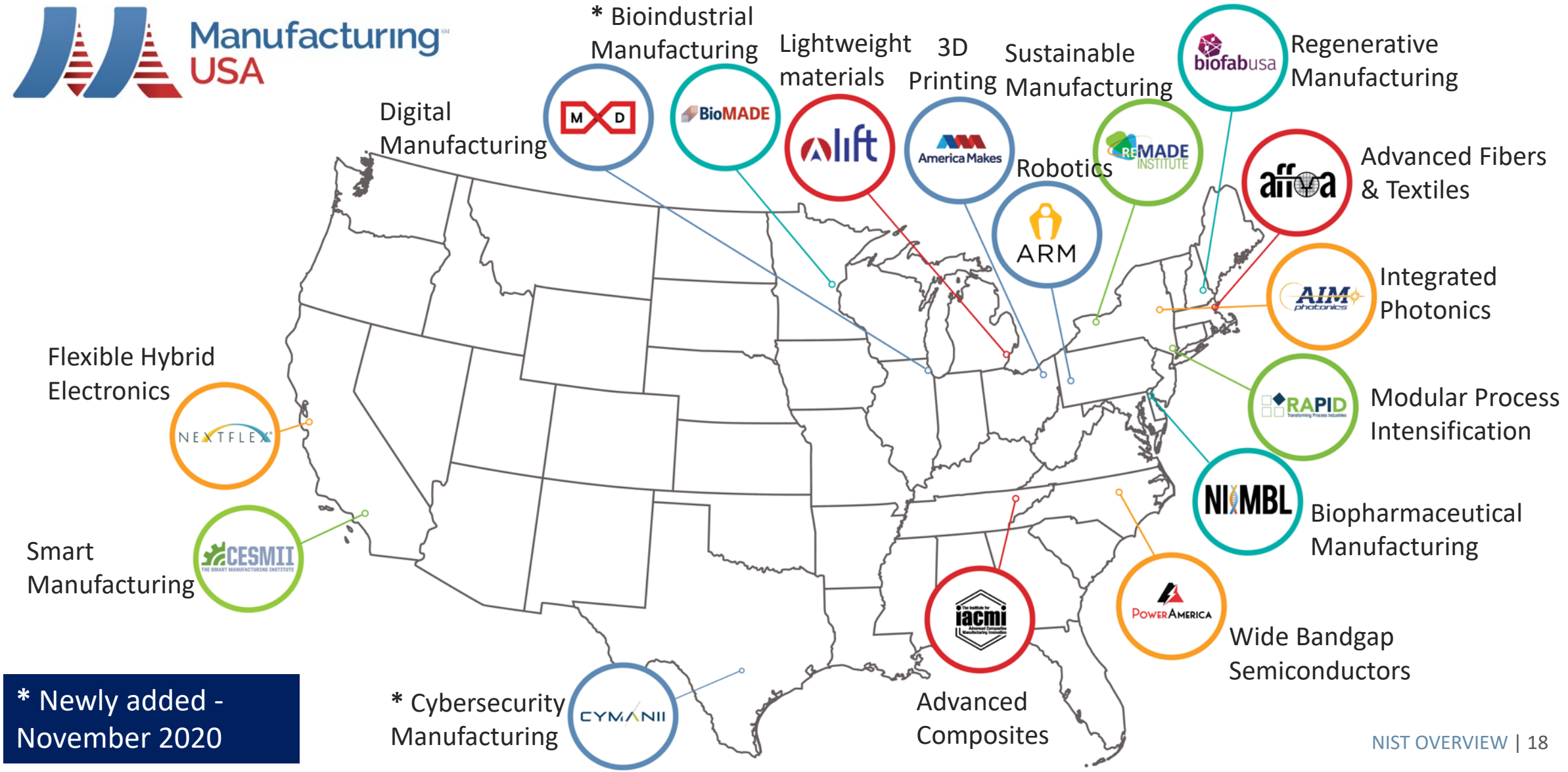
Accelerating the adoption and deployment of advanced technology solutions

NIST Center for Neutron Research

User Facility

Providing world class, unique facilities

Manufacturing USA Network: 16 Institutes



Manufacturing Extension Partnership

51 MEP Centers

In 2018:

Connected to 27,000+ manufacturers

$16 B in sales

$1.7 B in cost savings

$4 B in new client investments

122,000+ jobs created and retained

https://www.nist.gov/mep

SI, Metrology, and Technology Innovation

Many activities are focused on advancing and improving the dissemination of the SI; traceability to the SI; and reducing uncertainty in measurements, while also driving technology innovation

NIST Extramural Partnerships

Public-private collaborations:

- CRADAs/MTAs/NDAs with private industry
- Other agency collaborations: IARPA, DARPA, DoE, NSF, etc.
- JILA & JQI: joint NIST/university research institutes
- NRI/nCORE: a consortia led, NIST supervised collaboration in semiconductor and future computing research

DARPA

IARPA

NSF

Office of Naval Research ONR Science & Technology

JILA

JOINT QUANTUM INSTITUTE

NRI

SRC Semiconductor Research Corporation