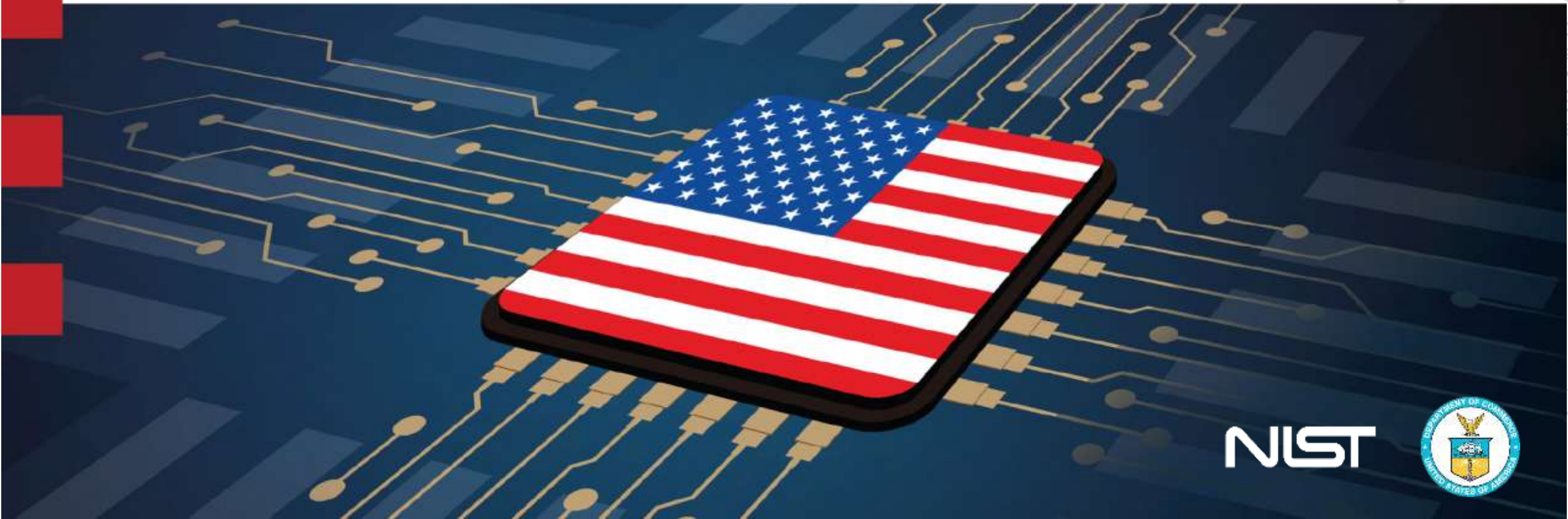
CHIPS for America Program Briefing

Presented by Robinson Pino, CHIPS Program Office

December 2022



CHIPS for America Vision

Chips are the foundation of the modern world

Chips were invented in America

But most chips are made outside of the U.S.

Logic chip production by country, 2021

Memory chip production by country, 2021

H. R. 4346

One Hundred Seventeenth Congress
of the
United States of America

AT THE SECOND SESSION

Begun and held at the City of Washington on Monday, the third day of January, two thousand and twenty-two

An Act

Making appropriations for Legislative Branch for the fiscal year ending September 30, 2022, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. TABLE OF CONTENTS.

The table of contents for this Act is as follows:

CHIPS for AMERICA

The CHIPS and Science Act of 2022

CHIPS for America Vision

Economic Security

This act enables us to build more resilient supply chains for important components.

National Security

This act enables us to bring the most sophisticated technologies back to the U.S.

Future Innovation

Chips are key to the technologies and industries of the future, so we need to be at the forefront. This act will ensure long-term U.S. leadership in the sector.

CHIPS for America Incentives

$39 billion for manufacturing

Two component programs:

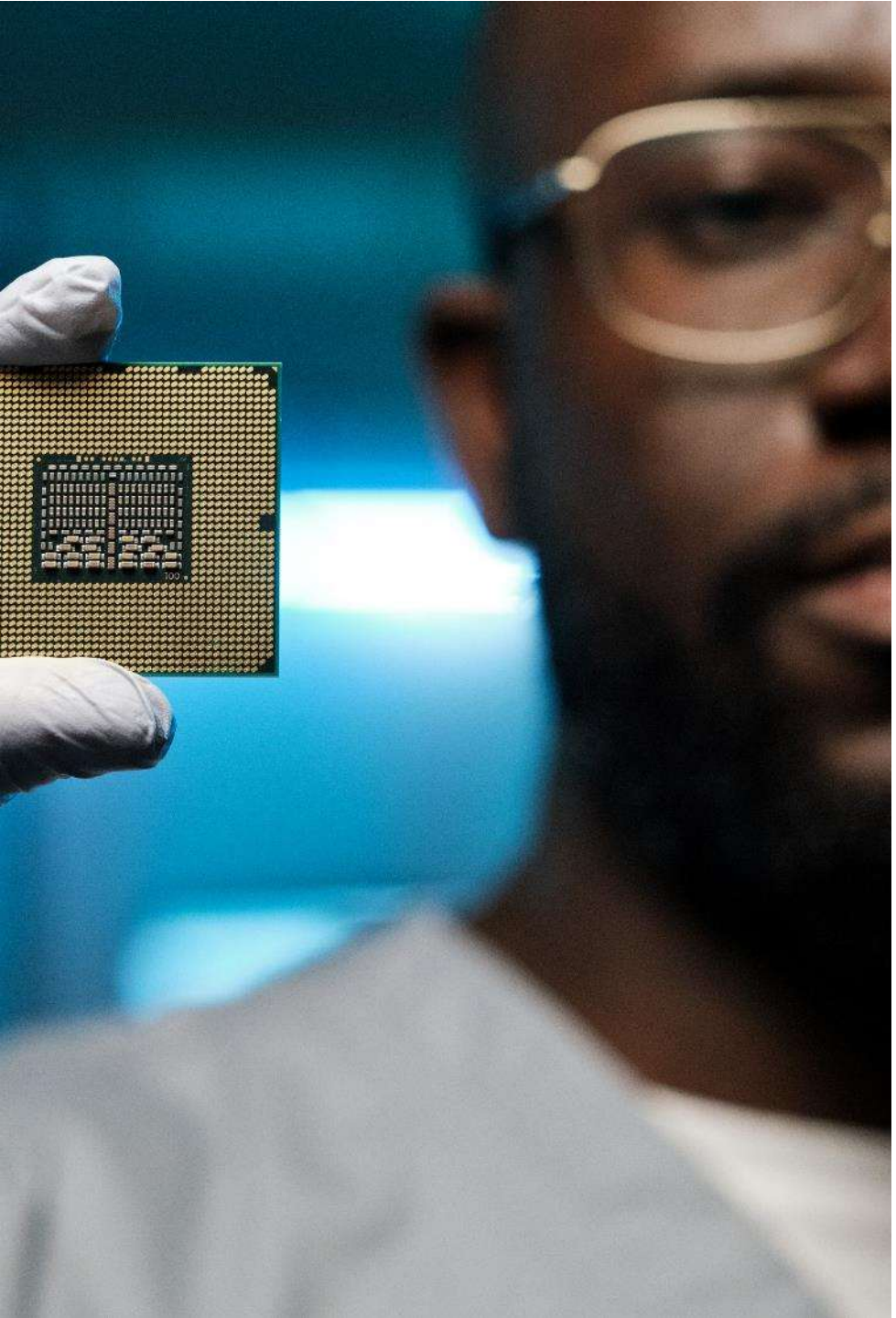
1. Attract large-scale investments in advanced technologies such as leading-edge logic and memory
2. Incentivize expansion of manufacturing capacity for mature and other types of semiconductors

$11 billion for R&D

- National Semiconductor Technology Center
- National Advanced Packaging Manufacturing Program
- Manufacturing USA institute(s)
- National Institute of Standards and Technology measurement science

Together with CHIPS initiatives from other agencies, including DOD, State, NSF, and Treasury

Workforce development



Manufacturing incentives will generate:

Large-scale investments in leading-edge logic and memory manufacturing clusters

Manufacturing capacity for

- Mature and current-gen chips
- New and specialty technologies
- Suppliers to the industry

R&D funding will create:

A national focus on transformative innovations in semiconductor technology

A domestic infrastructure for research and prototyping innovations

Workforce development and training

Guiding Principles

1. Meet economic and national security needs
2. Ensure long-term leadership in the sector
3. Strengthen and expand regional clusters
4. Catalyze private sector investment
5. Generate benefits for a range of stakeholders and communities
6. Protect taxpayer dollars

CHIPS for America
Research and Development

R&D Ecosystem Gaps

Facilities and equipment

Advanced packaging and testing

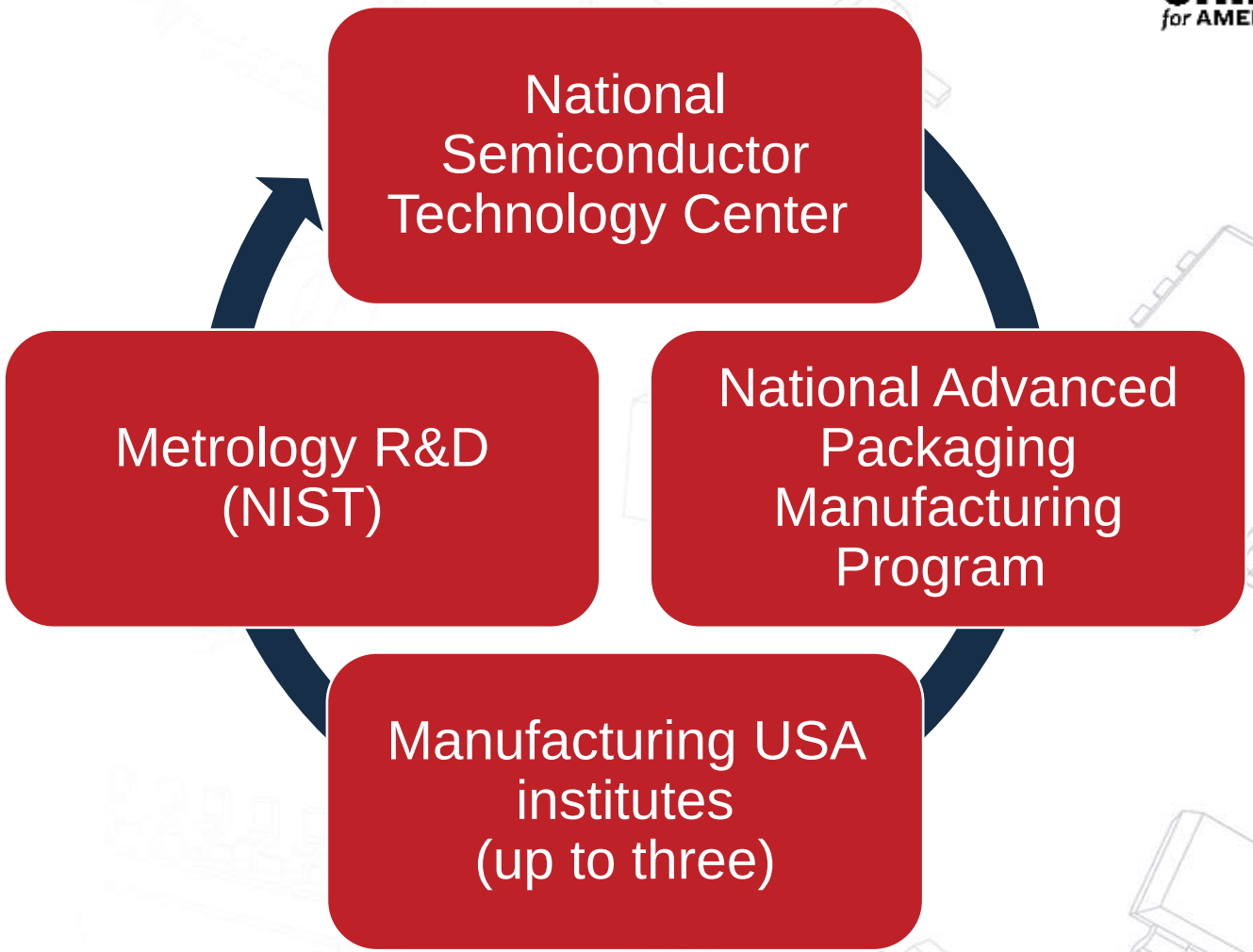
Metrology and characterization

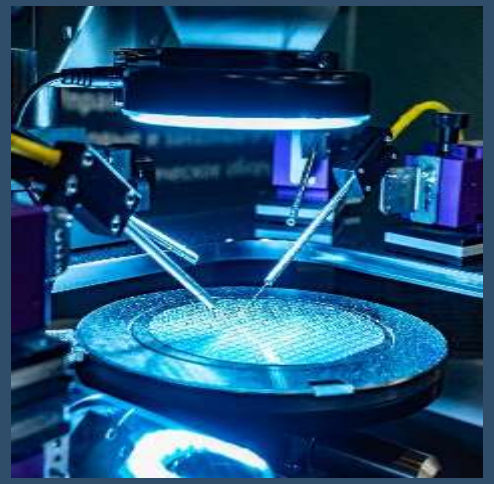
Advanced manufacturing

Workforce development

Research & Development

- To strengthen and advance U.S. leadership in R&D
- An integrated ecosystem that drives innovation
- In partnership with industry, academia, government, and allies
- Informed by the Industrial Advisory Committee





NATIONAL SEMICONDUCTOR TECHNOLOGY CENTER

MISSION

Will serve as the focal point for research and engineering throughout the semiconductor ecosystem, advancing and enabling disruptive innovation to provide U.S. leadership in the industries of the future.

NSTC MISSION ELEMENTS

Focal Point

Research and Engineering

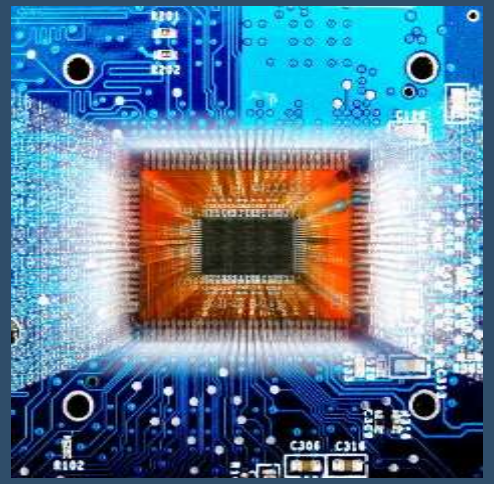
Semiconductor Ecosystem

Advancing and Enabling

Disruptive Innovation

U.S. Leadership

Industries of the Future



NATIONAL ADVANCED PACKAGING MANUFACTURING PROGRAM

- To expand and grow U.S. capacity in advanced packaging
- Capture available market share in packaging revenue
- Pilot facility for testing and integration of new processes
- A network of public private partnerships with universities, industry, and other government agencies focused on a range of issues including:
    - Substrate technology
    - Heterogeneous integration
    - Wafer and panel-based approaches
    - Tooling and automation

NIST METROLOGY R&D

- Measurement science for new materials and packaging
- Physical metrology for next-generation microelectronics
- Computation and data
- Virtualization and automation
- Reference materials and data, and calibrations
- Standards for processes, cybersecurity, and test methods

https://nvlpubs.nist.gov/nistpubs/CHIPS/NIST.CHIPS.1000.pdf

MANUFACTURING USA INSTITUTE(S)

- At least one new public-private partner institute in the Manufacturing USA network
- To advance research and commercialization of semiconductor manufacturing technologies
- Pre-competitive collaboration among researchers and manufacturers
- Virtualization, simulation, and automation
- Workforce training

Request for Information (RFI)

Published October 13, 2022

Comments close on December 12, 2022


NATIONAL ARCHIVES

FEDERAL REGISTER

The Daily Journal of the United States Government

Notice

Manufacturing USA Semiconductor Institutes

A Notice by the National Institute of Standards and Technology on 10/13/2022

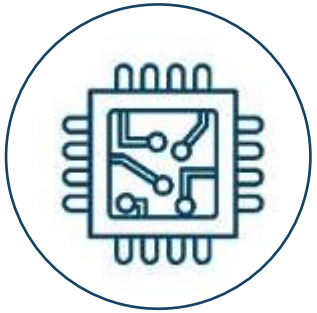
https://www.federalregister.gov/documents/2022/10/13/2022-22221/manufacturing-usa-semiconductor-institutes

Stay Engaged

- R&D next steps
  - NSTC White Paper expected no sooner than February 2023
    (6 months from enactment)
  - Additional steps to be shared after that
- Learn more
  - Visit CHIPS.gov
  - Read the Implementation Strategy
  - Join our mailing list

CHIPS for America Incentives Program

CHIPS for America will:



Return leading-edge chip manufacturing to U.S.

Expand capacity to make current/mature chips and critical supplies

Reinforce U.S. strengths in chip design and equipment

Grow a U.S. workforce and strengthen communities

Create a domestic semiconductor ecosystem for national and economic security

Eligibility Criteria

For organizations that are…	that can substantially…	a U.S. facility for…	of…
☐ private	☐ finance	☐ fabrication	☐ semiconductors
☐ non-profit	☐ construct	☐ assembly	☐ materials
☐ consortia	☐ expand	☐ testing	☐ manufacturing equipment
	☐ modernize	☐ packaging	
		☐ production	
		☐ R&D	

**More details will be released in the funding application document*

Guidance for Incentive Applicants

HOW DO YOU GET STARTED?

Increase scale and attract private capital

Leverage collaborations to build out ecosystems

Secure additional incentives and support to build clusters

Establish a secure and resilient supply chain

Expand the workforce pipeline

Create inclusive opportunities for businesses and communities

Next Steps

- Funding Application Process
  - Will be announced in February 2023 (6 months from enactment)
  - Proposals considered on a rolling basis
- Learn more
  - Visit CHIPS.gov
  - Read the Implementation Strategy, *A Strategy for the CHIPS for America Fund*
  - Join our mailing list

Timeline

We're Just Getting Started…

*Timeline is tentative

Thank you