

# **NOFO Information Session** *Manufacturing USA competition for the* **AI for Resilient Manufacturing Institute**

Office of Advanced Manufacturing  
National Institute of Standards and Technology

July 25, 2024

# Welcome

# Proposers Day – Save the Date

**Date:** Tuesday, August 20, 2024

**Time:** 8:30 a.m. – 5:00 p.m. EDT

**Location:** Courtyard Gaithersburg  
Washingtonian Center  
Gaithersburg, Maryland



## During the Webinar

Submit questions via  
the Zoom Q&A function

## After the Webinar

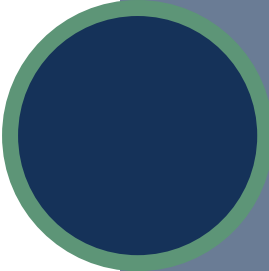
Submit via email to:  
[ManufacturingUSA@nist.gov](mailto:ManufacturingUSA@nist.gov)  
with the subject line '*AI for  
Resilient Manufacturing*'

## Answers to FAQs



## Funding Opportunity

Manufacturing USA Institute focused on the use of Artificial Intelligence (AI) to strengthen the resilience of U.S. manufacturing.



Ensure awareness of funding opportunity published on July 22, 2024, on Grants.gov



Prepare applicants to respond



Provide opportunities to address questions

# Agenda

**Purpose and Manufacturing USA Background**

Artificial Intelligence for Resilient Manufacturing

Funding Opportunity

Next Steps



By statute, NIST must ensure that the technology focus of a Manufacturing USA institute does not substantially duplicate the technology focus of another Manufacturing USA institute.

*Revitalize American Manufacturing Innovation Act,  
codified in 15 U.S.C. § 278s*

# About Manufacturing USA

**VISION:** Securing U.S. Global Leadership in Advanced Manufacturing

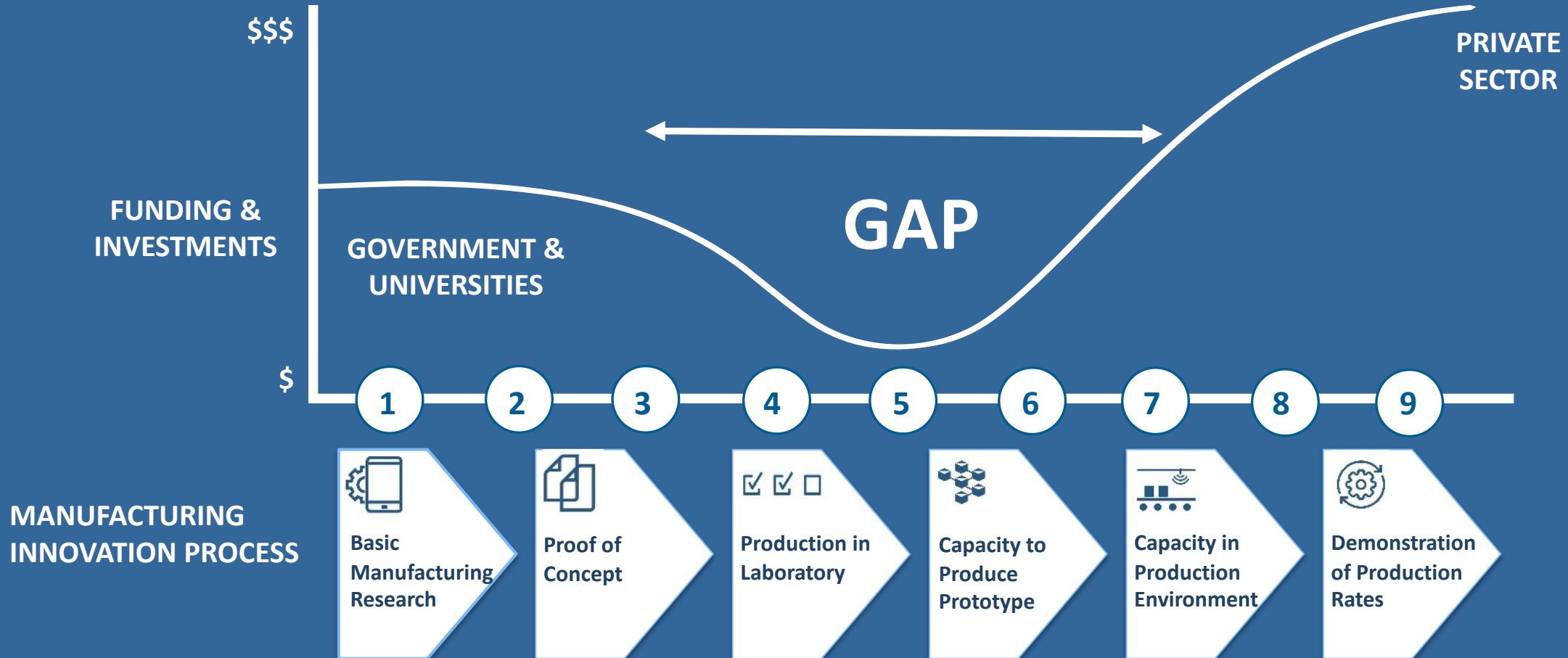
**MISSION:** Connecting people, ideas, and technology to:

- Solve industry-relevant advanced manufacturing challenges
- Enhance industrial competitiveness and economic growth
- Strengthen our economic and national security





# Manufacturing USA: Accelerating Technology Transition





Manufacturing USA® is a national network created to secure U.S. global leadership in advanced manufacturing through large-scale public-private collaboration on technology, supply chain and education and workforce development.

## Program

## Goals

## Annual Impact



**17+** Institutes  
Members in **50 States + Puerto Rico**



**9** Partner Federal Agencies



DOC sponsors 1 Institute  
Serves as overall **Program Office**



DOD sponsors 9 Institutes



DOE sponsors 6 Institutes



Work with **2,500+**  
Member organizations



Collaborate on **670+**  
major applied research  
and development projects



Engage **106,000+**  
people with workforce  
knowledge and skills in  
advanced manufacturing



Invest **\$416M** in these  
activities from state,  
industry, and federal funds

# 10 years of Manufacturing USA

A growing network of 17 Industry-led Innovation Institutes

ELECTRONICS



Integrated Photonics  
Albany, NY  
Rochester, NY



Flexible Hybrid  
Electronics  
San Jose, CA



Wide Bandgap Semiconductors  
Raleigh, NC

MATERIALS



Advanced Fibers and  
Textiles  
Cambridge, MA



Advanced Composites  
Knoxville, TN  
Detroit, MI



Advanced Materials  
Detroit, MI

ENERGY/  
ENVIRONMENT



Modular Chemical  
Process Intensification  
New York, NY



Sustainable  
Manufacturing  
Rochester, NY



Smart Manufacturing  
Los Angeles, CA



Electrified Processes for  
Industry without Carbon

Industrial Process  
Decarbonization  
Tempe, AZ

DIGITAL/  
AUTOMATION



Additive Manufacturing  
Youngstown, OH  
El Paso, TX



Advanced Robotics & AI  
Pittsburgh, PA



The Digital Manufacturing  
& Cybersecurity Institute

Digital Manufacturing  
& Cybersecurity  
Chicago, IL



Cybersecurity in  
Manufacturing  
San Antonio, TX

BIO-  
MANUFACTURING



Regenerative  
Manufacturing  
Manchester, NH



Biopharmaceutical  
Manufacturing  
Newark, DE

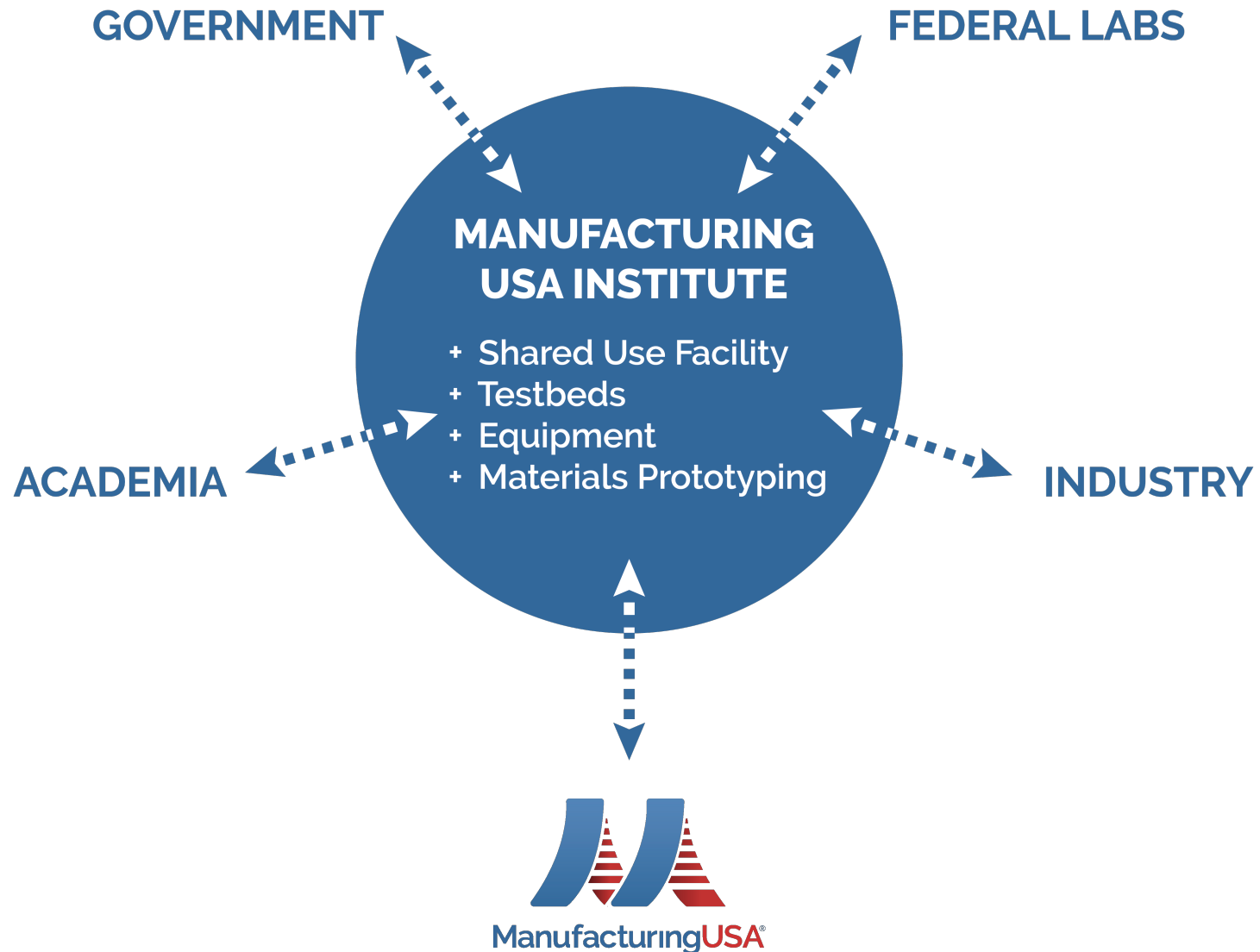


Bioindustrial  
Manufacturing  
St. Paul, MN



Upcoming NIST Institutes: Digital Twin for Semiconductor Manufacturing, CHIPS for America  
Artificial Intelligence for Resilient Manufacturing, NIST OAM

# Institutes Enable Large-Scale Collaboration



## Common Institute Functions:

- + Public-private partnership with industry-driven focus
- + Typically, \$70M-\$120M federal investment
- + At least 1:1 (federal to non-federal resources) co- investment
- + Neutral convener for collaborations
- + Unique technology development
- + Address education and workforce skills gap

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# AI for Resilient Manufacturing

**Resilience:** *the ability of a given system to prepare for and adapt to unexpected events; to quickly adjust to sudden disruptive changes that negatively affect performance; to continue functioning during a disruption (sometimes referred to as “robustness”); and to recover quickly to its pre-disruption state or a more desirable state.*

*–Adapted from Brookings Institute*

*How to build more secure, resilient, next gen US Supply Chains*

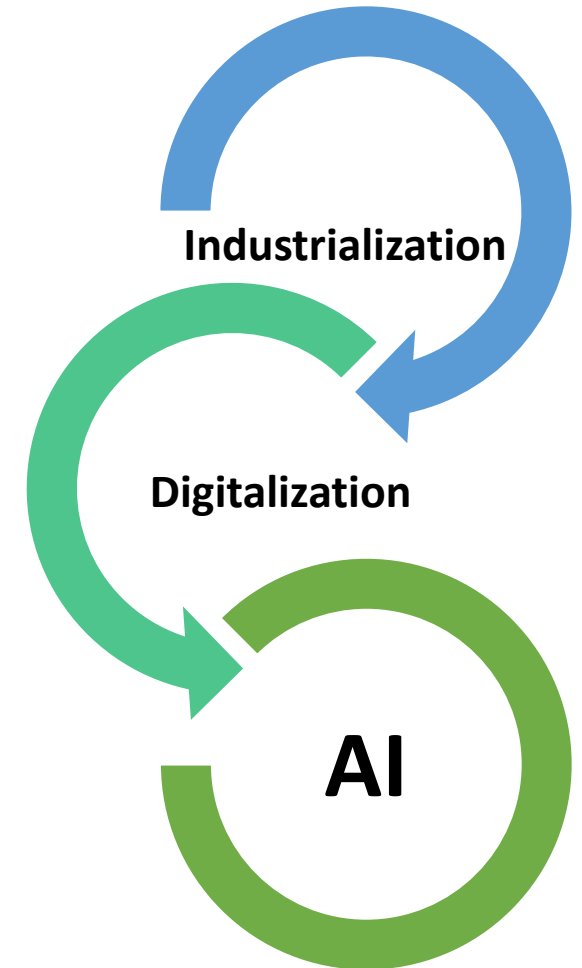
*Dec. 3, 2020*



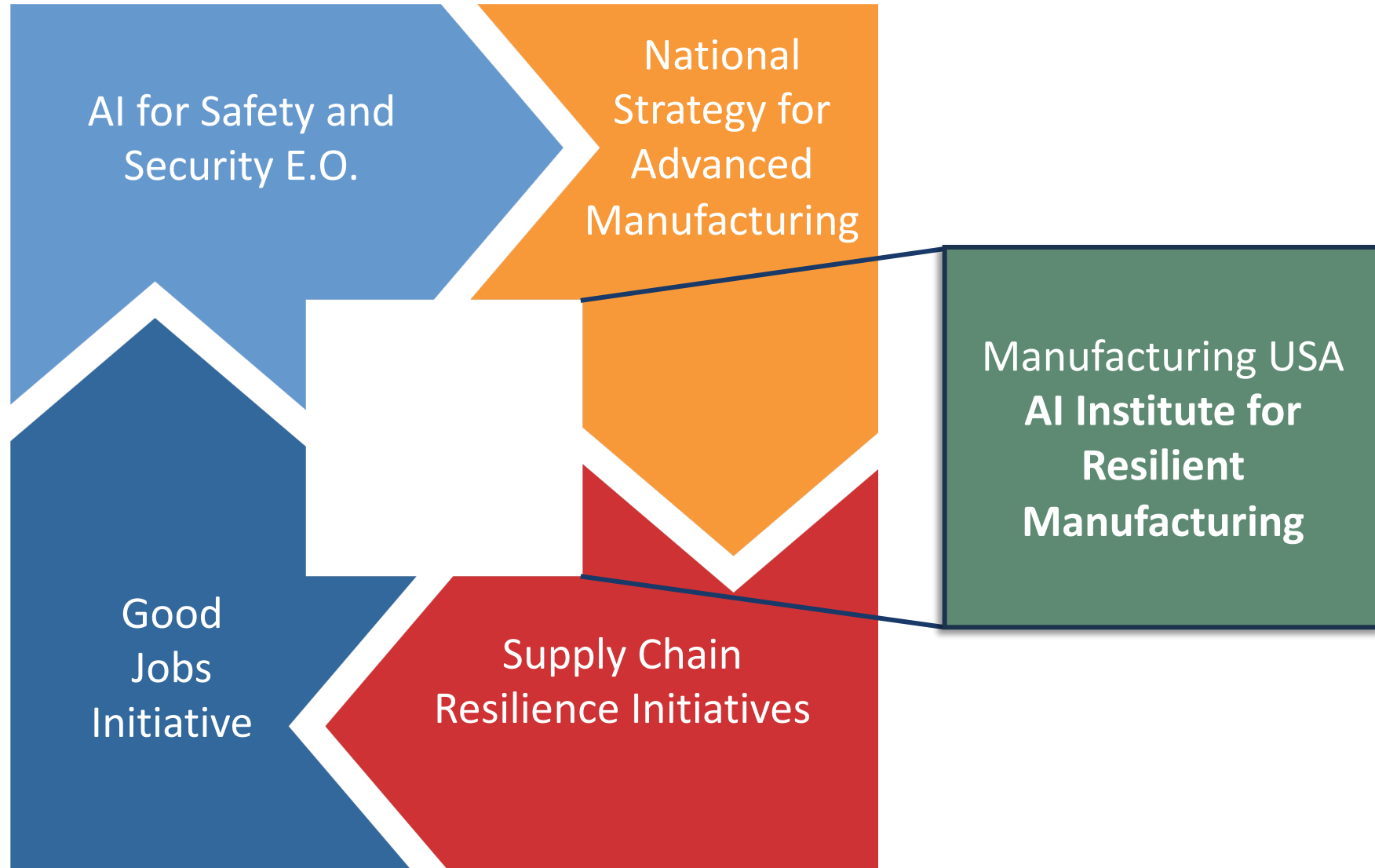
Credit: Adobe Stock

# USG Drivers for AI in Manufacturing

- Resilience of manufacturing is an important element of the Nation's economic prosperity and national security.
- **Timely opportunity and need for the U.S. Government to be a catalyst to ensure that AI innovation for manufacturing:**
  - Addresses resilience, not just cost/quality/agility
  - Is implemented responsibly and reliably
  - Is trusted and accessible
  - Benefits domestic manufacturers, suppliers, and workers



# Convergence on National Priorities





# Competition Outcomes and Impacts

- NIST intends to select an applicant team **most capable of establishing and leading** a public-private partnership that will accelerate innovation by:
  - Integrating expertise in AI, manufacturing processes, and innovation ecosystems
  - Conducting applied R&D projects that address industry-wide needs
  - Preparing a skilled workforce

Applied R&D  
Projects

Trusted Data  
Commons

Tailored Risk  
Assessment  
Tools

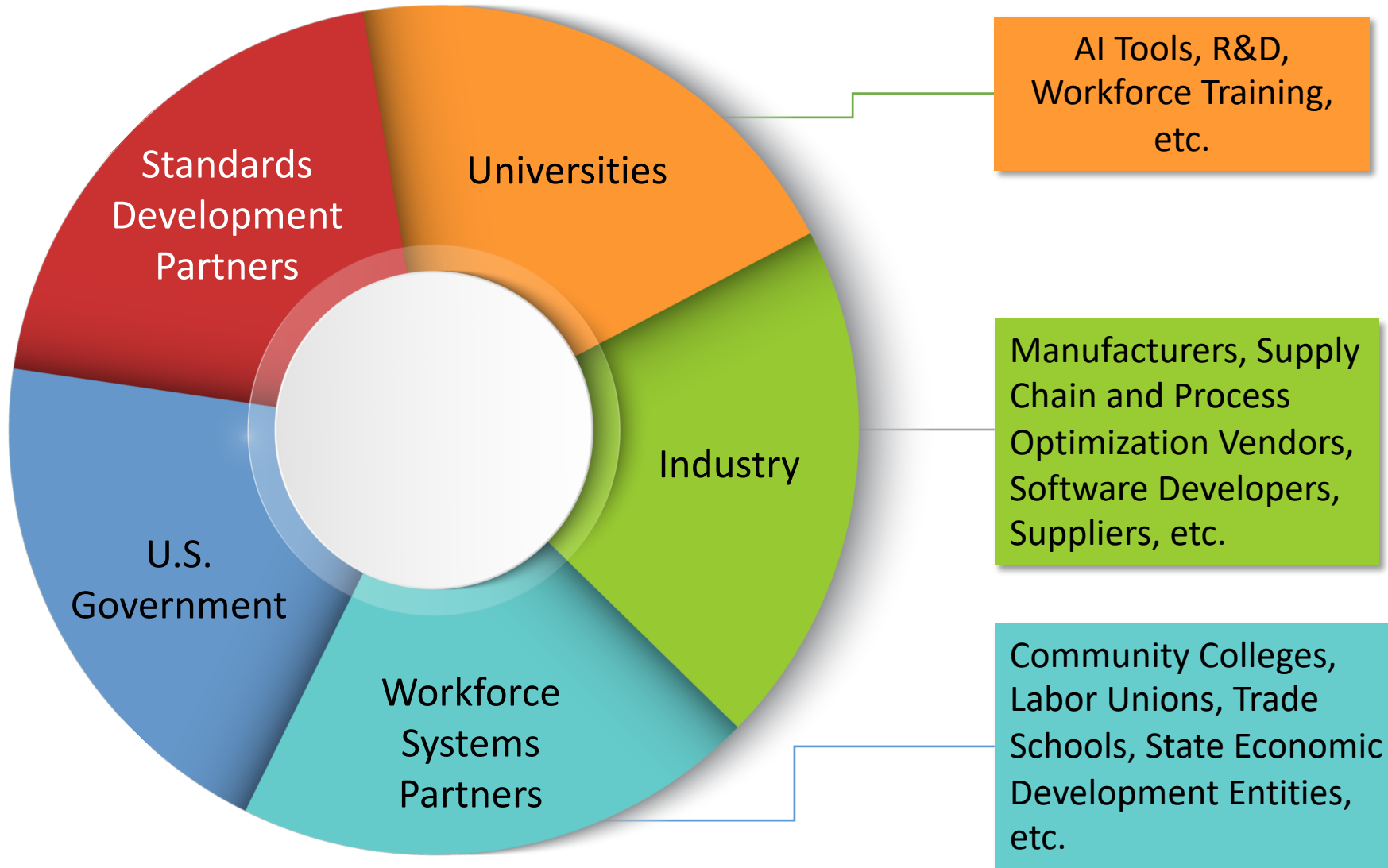
Validated and  
Interoperable  
Models

Shared Testbeds

Support for  
Market  
Transition

Education and  
Workforce  
Training  
Resources

# Ecosystem-level Partners



Applicants will be expected to identify key partners needed to accomplish the work proposed and provide the non-federal co-investment that will be required to match the federal award.

# AI for Resilient Manufacturing

## Rapid qualification

- Accelerate adoption of new production technologies or processes

## Predictive maintenance

- Eliminate down-time due to equipment failure

## Process efficiency and robustness

- Increase yield and reduce resource inputs and quality failures

## Supply chain networks

- Predict and mitigate risks of potential disruptive events

## Working capital needs

- Optimize allocation of inventory relative to demand trends

**Examples are for illustrative purposes solely.**

*Applicants have the flexibility to propose institute concepts incorporating some or none of these application areas as long as they do not substantially duplicate the efforts of an existing Manufacturing USA Institute.*

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If there is a discrepancy between what is presented here, in the published funding opportunity, or in the corresponding Notice of Intent, the published funding opportunity controls.

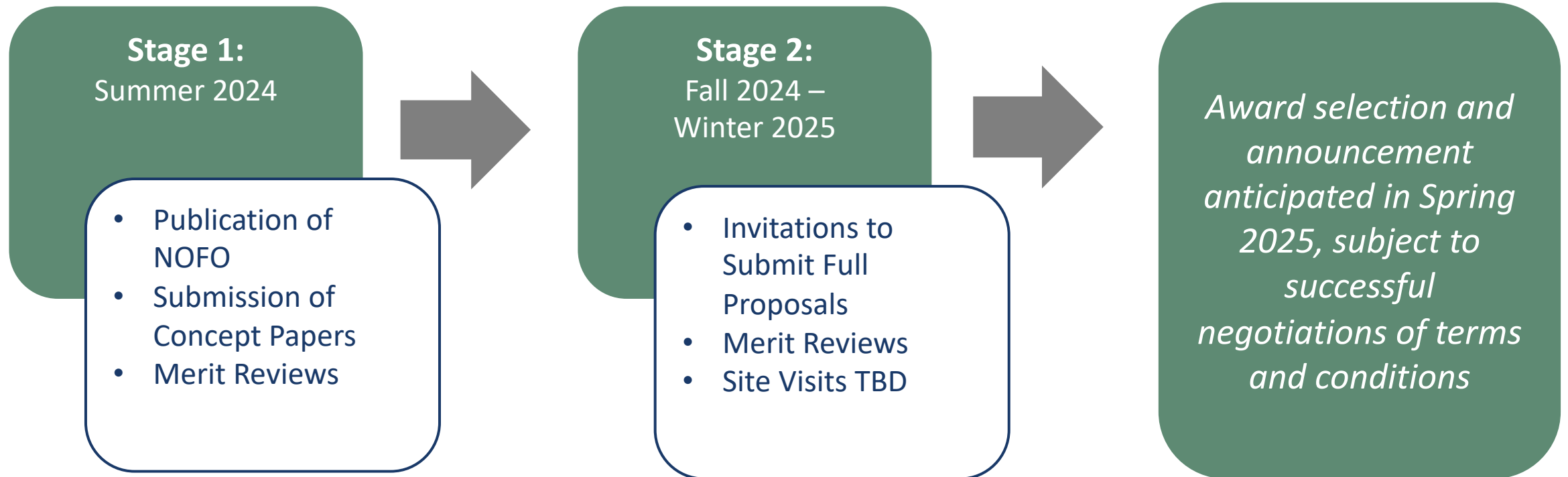
# Funding and Period of Performance

\$70M over 5-7 years

Minimum of 1:1 Non-federal co-investment required by statute

Potential for renewal after initial award

# Two Stage Competition



Open to all  
non-federal  
entities

Excluding individuals or sole-proprietors  
Excluding foreign entities  
Excluding existing MFG USA institutes  
Excluding FFRDCs

Lead applicant is  
limited to a single  
concept  
submission

- ✓ Limit only applies to lead applicant entity
- ✓ Entities may be a partner on multiple proposals



- Applicants for this upcoming funding opportunity may choose:
  - Specific industrial sector of focus for the proposed institute, or a focus on cross-cutting tools that may be tailored for more than one industrial sector
  - Specific application area(s) within the broader topic of AI for Resilient Manufacturing
- Regardless of the applicant's choice, applicants will be required to define clear time-bounded deliverables

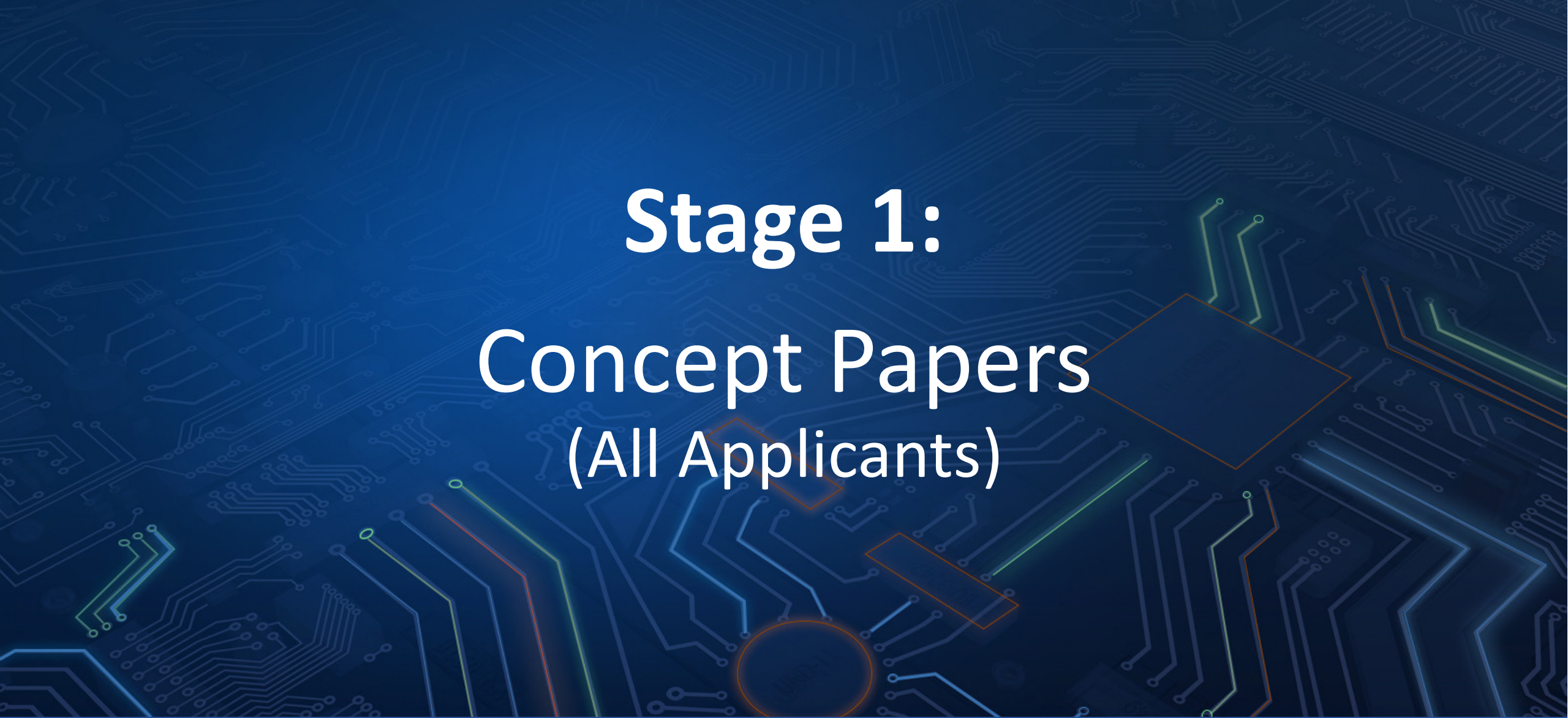
# Non-Duplication Requirement



As **required** by the Manufacturing USA authorizing statute, NIST will ensure that the AI for Resilient Manufacturing institute to be established will not substantially duplicate the work of the existing network of institutes.

**Applicants are encouraged to familiarize themselves with the scope of the existing 17 Manufacturing USA institutes, as well as the planned CHIPS-funded Digital Twins for Semiconductor Manufacturing institute\* prior to developing concepts.**

**\* Funding opportunity launched May 2024**



# Stage 1: Concept Papers (All Applicants)

- *Standard Funding Form – SF 424 R&R*
- *Technical Narrative*
  - Executive Summary (2 pages)
  - Concept Paper Narrative (20 pages)
  - Budget – Rough Order of Magnitude

# Phase 1 - Concept Paper Evaluation Criteria



## National Need, Broad-based Benefits, & Industry Leadership

### Sub-criteria

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- Mission and Technical Scope
- National Impact & Broad-based benefits
- Leadership and Involvement from across ecosystem

**40 pts**

## Proposed Manufacturing USA Institute

### Sub-criteria

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- Business Plan
- Integrated Education and Workforce Development

**30 pts**

## Resources, Qualifications, and Experience for the Proposed Institute

### Sub-criteria

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- Rough Order of Magnitude (ROM) Budget
- Cost-Share or Matching
- Qualifications and Experience

**30 pts**

# Stage 2:

# Full Proposal Applications

(Invitation Only)

# Differences in evaluation criteria between concept paper vs. full application



Evaluation Criteria	Concept Paper	Full Application (invitation only)
Potential to Fulfill a Recognized National Need with Substantial Broad-Based Benefits and Demonstrated Industry Leadership	✓	✓
Proposed Manufacturing USA Institute	✓	
Institute Operations and Management		✓
Education and Workforce Development		✓
Leadership, capabilities, qualities, and experience		✓
Resources, Cost-share, and Sustainability	✓	✓

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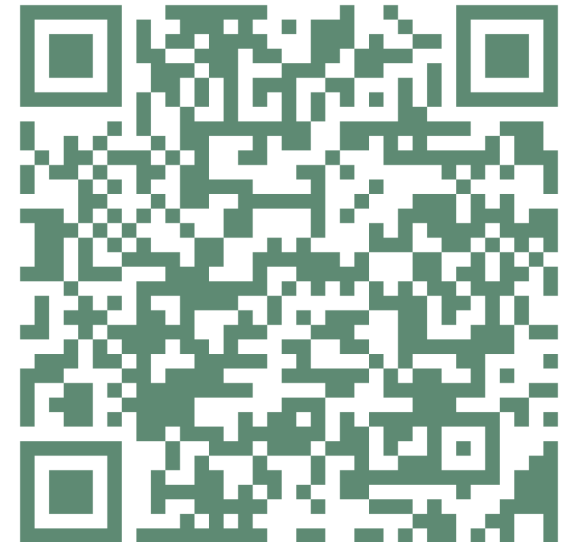
# Opportunity to Engage With Others - Voluntary and Optional

## AI for Resilient Manufacturing Institute Teaming Partner List

- Enable entities to share their contact information and capabilities, foster collaboration, and advance shared goals
- The list allows interested organizations, either applicants or collaborators, to connect and discuss utilizing their experience to advance the Manufacturing USA objectives.



Credit: Adobe Stock, C.Blasioli/NIST



- System for Award Management (SAM.gov):
  - Ensure that your organization is registered with a **Unique Entity Identifier (UEI)** with SAM.gov.
  - Obtain a special password called an MPIN
  - Update your SAM Registration (annually)
  - Designate an Electronic Business Point of Contact (EBiz POC)
- Grants.gov:
  - Register for an account
  - Sign up for automatic updates under 'Manage Subscriptions'

*The UEI has replaced the previous DUNS number – check <https://www.sam.gov/content/entity-information>*

# Key Dates

Milestone	Date
<b>NOFO Published</b>	July 22, 2024
<b>Informational Webinar</b>	July 25, 2024 (today)
<b>Proposers Day</b>	August 20, 2024
<b>Concepts due</b>	September 30, 2024
<b>Proposal Invitation</b>	November 2024
<b>Full Proposal Due</b>	January 2025 (deadline will be specified in the invitation to submit Full Proposals)
<b>Selection Announcement &amp; Anticipated Award</b>	Spring 2025

# Questions?

Answers to Frequently Asked Questions can be found on the OAM website:

<https://www.nist.gov/oam/ai-resilient-manufacturing-institute-competition>



[ManufacturingUSA@nist.gov](mailto:ManufacturingUSA@nist.gov)

Subject line: “AI for Resilient Manufacturing”



All questions regarding the Funding Opportunity should be submitted via email.

# Together We Are Securing America's Manufacturing Future



To stay up to date on **Manufacturing USA Institute Competition Information**, subscribe to our mailing list:

[https://public.govdelivery.com/accounts/USNIST/subscriber/new?topic\\_id=USNIST\\_650](https://public.govdelivery.com/accounts/USNIST/subscriber/new?topic_id=USNIST_650)

