Other Federal Funding Opportunities

Federal funding opportunities for the Manufacturing USA institutes and/or their members

Moderators: Jorge Lamboy and Adrienne Cheng, Office of Advanced Manufacturing

Janis Terpenny, NSF

Huijuan Dai, DOE

Kartik Sheth, NASA

Pam Frugoli, DOL

Eric Smith, EDA

Elden W. Hawkes, SBA

Said Jahanmir, NIST

ManufacturingUSA

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 workforce development.

NSF's Manufacturing Programs

May 1, 2024

Janis P. Terpenny

Program Director, Division of Civil, Mechanical and Manufacturing Innovation
jterpenn@nsf.gov

Dear Colleague Letter: Aligning Fundamental Research and Education in Advanced Manufacturing with the Objectives of the Manufacturing USA Institutes (NSF 24-014)

- Update of the previous Manufacturing USA DCL.
- Over $45 million in research and educational awards to date.
- Joint effort of the Directorates for Engineering (ENG), STEM Education (EDU), and Technology, Innovation and Partnerships (TIP).
- 25 Programs listed, but proposals can be submitted to any relevant NSF program.
- Eight, $3 million Future Manufacturing Research Grants have been awarded under the DCL (ARM/CESMII, CESMII (2), IACMI (2), MxD, NextFlex, RAPID).

Principal investigators are encouraged to think broadly about opportunities for proposal submission to the NSF. Examples include the following DCLs, program descriptions and program solicitations:

Accelerating Innovations in Biomanufacturing Approaches (NSF-DOE/ABF Collaboration)
Advanced Manufacturing (AM)
Advanced Technological Education (ATE)
A New Supplemental Funding Opportunity for Skills Training in Advanced Research & Technology (START)
Cellular and Biochemical Engineering (CBE)
Computational and Data-Enabled Science and Engineering (CDS&E)
Critical Aspects of Sustainability (CAS)
Cyber Physical Systems (CPS)
Designing Materials to Revolutionize and Engineer our Future (DMREF)
Electronics, Photonics and Magnetic Devices (EPMD)
Engineering Design and Systems Engineering (EDSE)
Engineering Research Centers (ERC)
Environmental Sustainability
Foundational Research in Robotics (FRR)
Future of Semiconductors (FuSe)
Future Manufacturing (FM)
Industry-University Cooperative Research Centers (IUCRC)
Manufacturing Systems Integration (MSI)
Non-Academic Research Internships for Graduate Students (INTERN) Supplemental Funding Opportunity
Operations Engineering (OE)
Partnerships for Innovation (PFI)
Process Systems, Reaction Engineering and Molecular Thermodynamics
Research Experiences for Undergraduates (REU) Sites and Supplements
Research on Integrated Photonics Utilizing AIM Photonics Capabilities
Secure and Trustworthy Cyberspace (SaTC)

U.S. DEPARTMENT OF ENERGY

Office of ENERGY EFFICIENCY & RENEWABLE ENERGY

ADVANCED MATERIALS & MANUFACTURING TECHNOLOGIES OFFICE

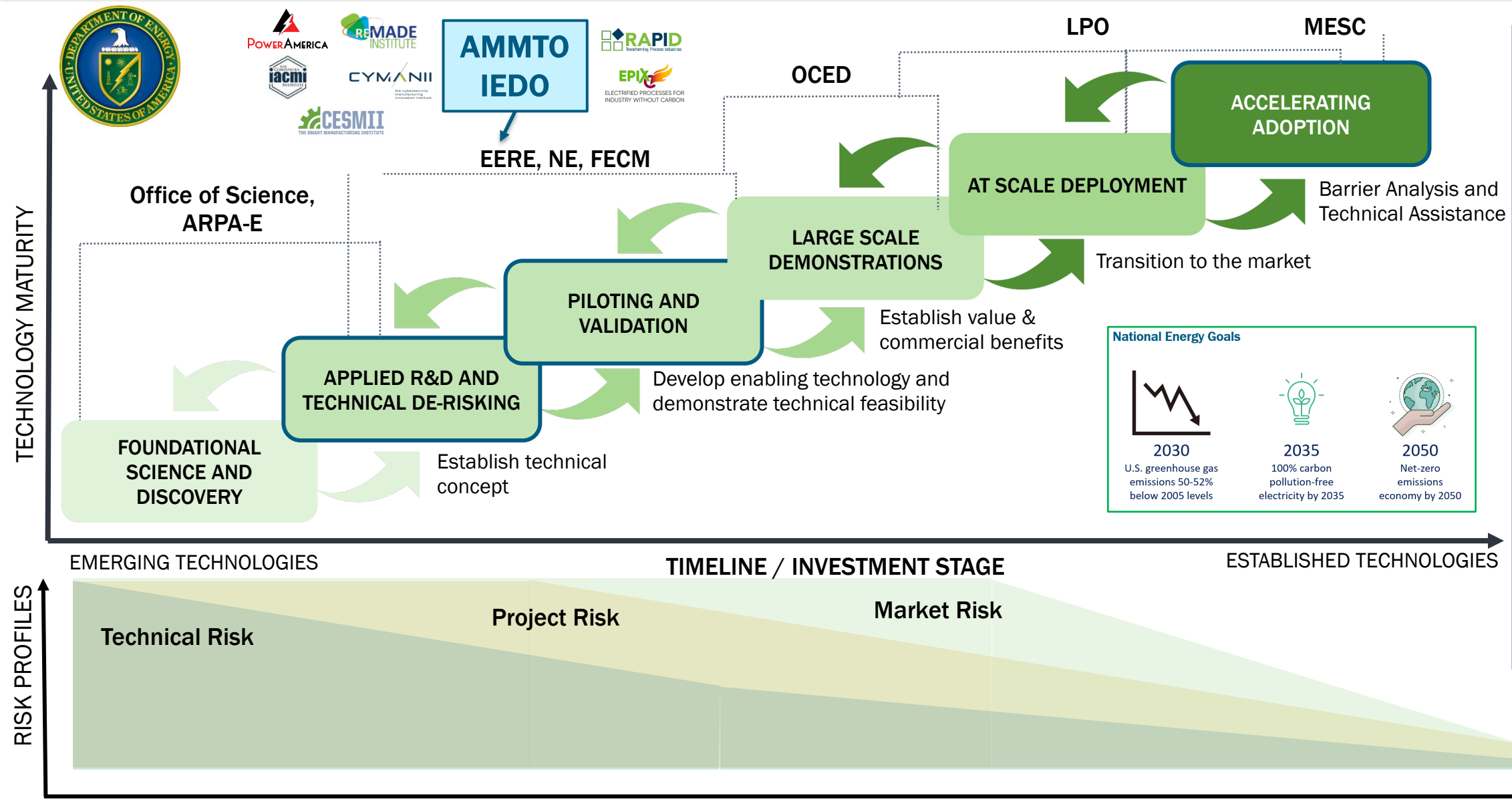
DOE Funding Opportunities Available to Manufacturing USA Institutes

Huijuan Dai, PhD
Program Manager
huijuan.dai@ee.doe.gov

US Department of Energy (DOE)

Advanced Materials Manufacturing Technologies Office (AMMTO)

Research, Development, Demonstration, Deployment



National Energy Goals

- 2030 — U.S. greenhouse gas emissions 50-52% below 2005 levels
- 2035 — 100% carbon pollution-free electricity by 2035
- 2050 — Net-zero emissions economy by 2050

Technology Readiness Level

1. Basic principles observed and reported
2. Technology concept and/or application formulated.
3. Analytical and experimental critical function and/or characteristic proof of concept.
4. Component and/or breadboard validation in laboratory environment
5. Component and/or breadboard validation in relevant environment.
6. System/subsystem model or prototype demonstration in a relevant environment.
7. System prototype demonstration in an operational environment.
8. Actual system completed and qualified through test and demonstration.
9. Actual system proven through successful mission operations.

DOE Open Funding Opportunities

Secretary of Energy *Jennifer Granholm*
Deputy Secretary *David Turk*

- Office of the Under Secretary for Science & Innovation (S4) *Geri Richmond, PhD*
  - Energy Efficiency & Renewable Energy (EERE) *Jeff Marootian*
    - Buildings and Industry (B&I) *Carolyn Snyder, PhD*
      - Advanced Materials & Manufacturing Technologies Office (AMMTO)
      - The Industrial Efficiency & Decarbonization Office (IEDO)
- Office of the Under Secretary for Infrastructure (S3) OCED, MESC
- Office of the Undersecretary for Nuclear Security (S5) & NNSA
- ARPA-E, Assistance Secretary of Congressional & Intergovernmental Affairs, Other

DOE Manufacturing Offices

Advanced Materials and Manufacturing Technologies Office (AMMTO)

- Advance Domestic Manufacturing for Next Generation Batteries
- Re-X Before Recycling Prize
- Electronics Scrap Recycling Advancement Prize
- Smart Manufacturing NOI*

Industrial Efficiency and Decarbonization Office (IEDO)

- Energy and Emissions Intensive Industries

Office of Manufacturing and Energy Supply Chains (MESC)

- DOE Industrial Assessment Centers Implementation Grant Program
- Clean Energy & Manufacturing Workforce Training & Technical Assistance Awards

Office of Clean Energy Demonstrations (OCED)

NASA Funding Priorities and Opportunities Manufacturing USA Network Meeting

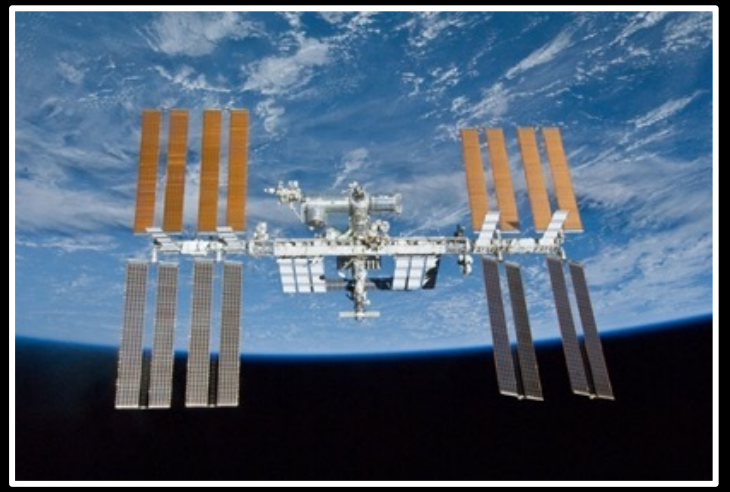
Kartik Sheth | Associate Chief Scientist, NASA
on behalf of…
John Vickers | Principal Technologist, Space Technology Mission Directorate

How We Explore… NASA Mission Directorates

Exploration Systems Development

Space Technology

Aeronautics Research



Space Operations

Science

SPACE TECHNOLOGY PORTFOLIO

EARLY-STAGE INNOVATION AND PARTNERSHIPS

- Space Tech Research Grants
- Early-Stage Innovation
- Center Innovation Fund
- Early Career Initiative
- Prizes, Challenges & Crowdsourcing
- NASA Innovation Advanced Concepts

SBIR/STTR PROGRAMS

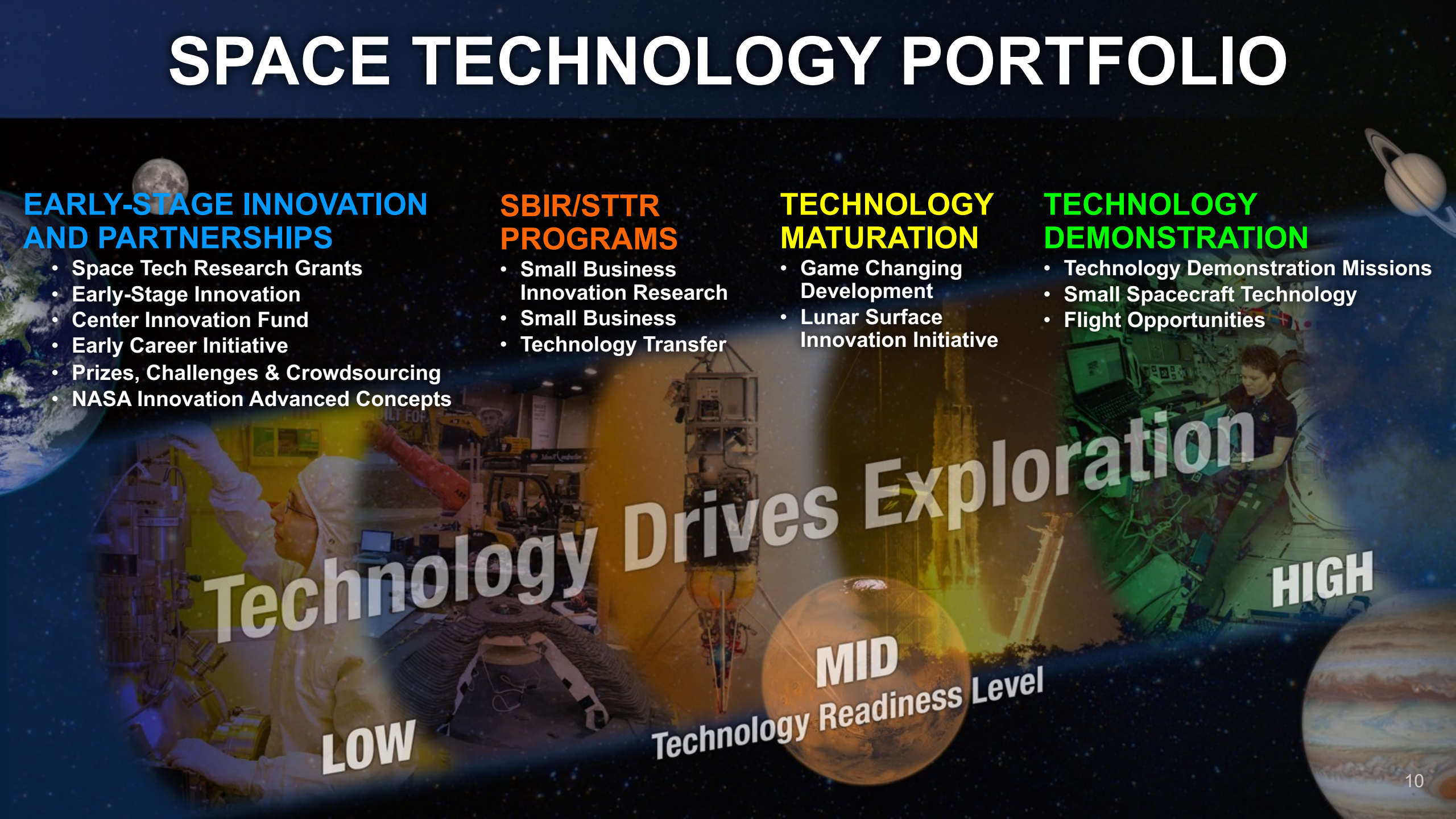
- Small Business Innovation Research
- Small Business
- Technology Transfer

TECHNOLOGY MATURATION

- Game Changing Development
- Lunar Surface Innovation Initiative

TECHNOLOGY DEMONSTRATION

- Technology Demonstration Missions
- Small Spacecraft Technology
- Flight Opportunities



Develop Technologies Supporting Emerging Space Industries

Priorities - Targeted advanced manufacturing outcomes aligned with space industry trends that will shape the course of research and development over many years

In-Space Manufacturing and Space Infrastructure

A catalyst for space infrastructure and economic opportunities
> 50% Mass reduction, > 99% 3D printer readiness.

1

3D Printing / Additive Manufacturing

Revolutionized product design and manufacturing
>50% Cost reduction, accelerated time to market

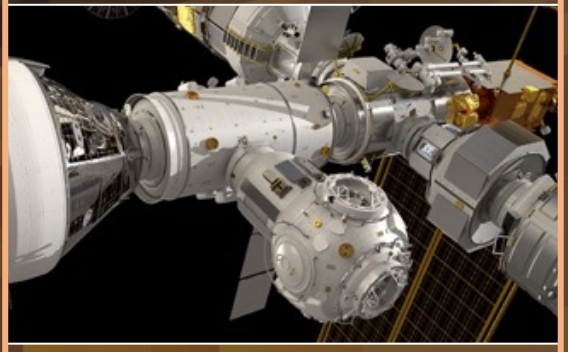
2

Digital Transformation Digital Twins and Artificial Intelligence

More intelligent and more accurate predictions and capabilities
>50% of physical resources replaced with virtual

3

Lightweight Composite Spacecraft

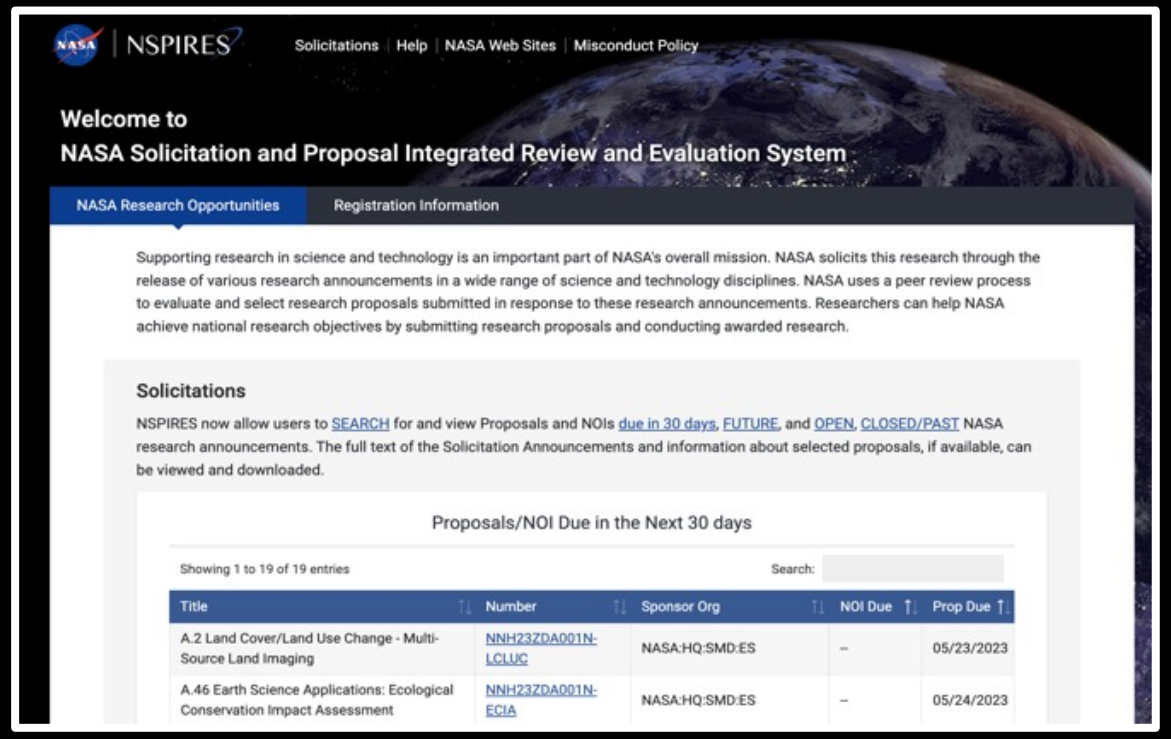


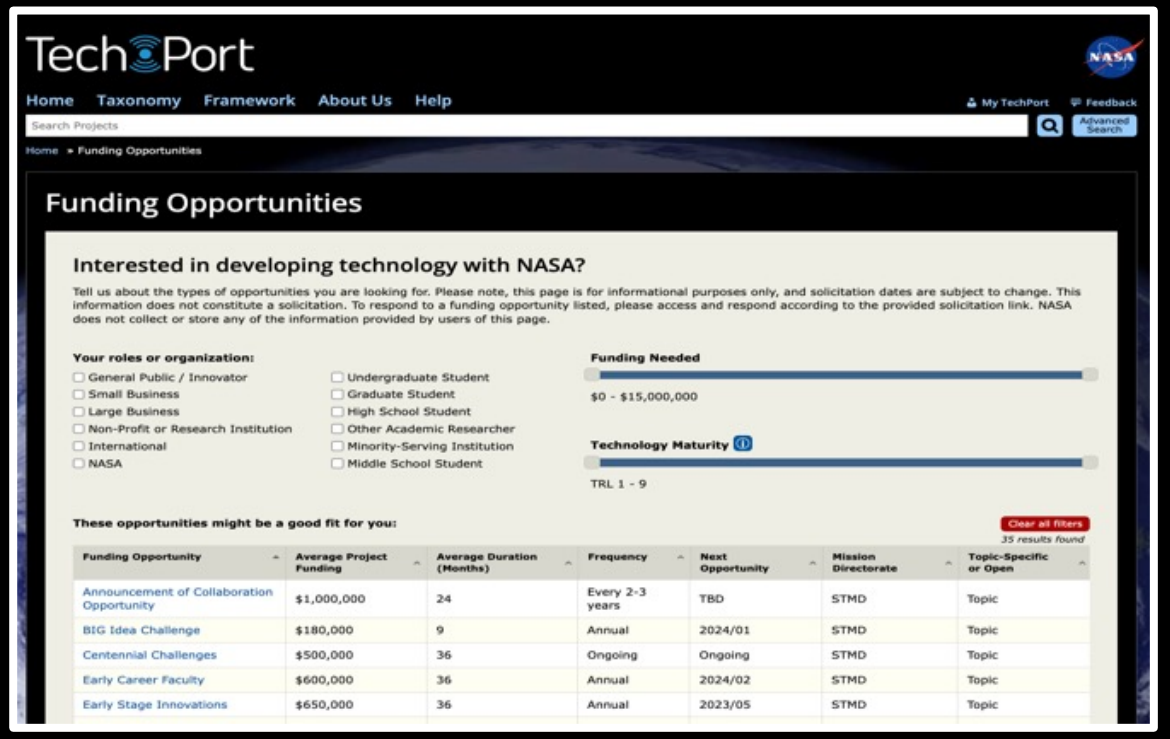
High high strength-to-weight ratio and dimensional stability
50% More payload, equipment, and experiments

4

Funding Opportunities and Announcements

NASA's Notices of Funding Opportunities are located in the NASA Solicitation and Proposal Integrated Review and Evaluation System (NSPIRES) and TechPort (https://nspires.nasaprs.com) (https://techport.nasa.gov/home)





QUESTIONS?

www.nasa.gov
kartik.sheth@nasa.gov
john.h.Vickers@nasa.gov

Workforce development funding

from the U.S. Department of Labor and nationwide public workforce system

Pamela Frugoli
USDOL Employment and Training Administration
frugoli.pam@dol.gov

Workforce Innovation and Opportunity Act (WIOA) provides formula and competitive grants for workforce development

Formula funding to every state and territory every year

- State and Local Workforce Development Boards
- American Job Centers
- Funding for training, career services, and business services
- Funding for wraparound supportive services that can help customers complete training and enter into employment
- Registered Apprenticeship program opportunities and support Registered Apprenticeship Industry Intermediaries | Apprenticeship.gov

Opportunities to **partner** with both formula (boards and AJCs) and competitive grant-funded entities (often community colleges)

Funding Opportunities | U.S. Department of Labor (dol.gov)

Apprenticeship Building America (Round 2) - FOA-ETA-24-04

expand, diversify, and strengthen the Registered Apprenticeship system through support for public and private partnerships designed to serve a range of industries and individuals

State Apprenticeship Expansion Formula (Round 2) - FOA-ETA-24-03

modernize and strengthen the National Apprenticeship System….expanding new opportunities for innovation, equity, expansion, and modernization in Registered Apprenticeship.

Strengthening Community Colleges Training Grants - FOA-ETA-23-15 (SCC4)

increase the capacity and responsiveness of community colleges to meet the skill development needs of employers and equitably support students in obtaining good jobs in in-demand industries

More to come!.....

About Me

Eric Smith

Tech Hubs Director

U.S. Department of Commerce,
Economic Development Administration

- designs and implements policies, programs, and services that enable inclusive, innovation-centric growth and that facilitate the transition of research into the market
- former Chief Customer Officer, NASA SBIR/STTR Program
- co-founder of multiple technology- and innovation-based economic development programs
- recovering computer scientist and lawyer (fintech and other software startups)

Tech Hubs in One Slide

Vision	**strengthen U.S. economic and national security** through place-based investments in geographically diverse regions across the country with a concentration of assets, resources, and capacity aligned with the potential to become globally competitive, within ~10 years, in the technologies and industries of the future—and **for those industries, companies, and the good jobs they create to start, grow, and remain in the U.S.**
Funding	← **$10 billion** program authorization → **$541m** available now **$9.5 billion** remaining to be appropriated
31 Hubs	*Phase 1—247 consortia submitted 379 apps:* 31 Designated; 29 planning grants awarded *Phase 2—31 Hubs applying for ~$40-70m in projects and securing additional commitments*
8 Themes	autonomous systems • quantum • biomanufacturing • precision/predictive medicine energy transition • critical minerals • semiconductors • materials manufacturing
Future	• more designated Tech Hubs across new geographies and technology themes • new implementation funding in additional Tech Hubs • more funding for new or scaled projects in already funded Tech Hubs

EDA Programs*

National Programs

- Build to Scale
- Economic Recovery Corps
- Good Jobs Challenge
- Research & National Technical Assistance
- Recompete Pilot Program
- STEM Talent Challenge
- Tech Hubs

Regional Programs

- Economic Adjustment Assistance
- Local Technical Assistance
- Planning
- Public Works
- University Centers

- EDA's HQ and regional offices each implement a variety of programs.
- Each state and territory has a designated, regional office-based point of contact—an Economic Development Representative (EDR).
- Reach HQ offices via their dedicated emails: techhubs@eda.gov, recompete@eda.gov, oie@eda.gov, etc.

* This is a select list and does not include all programs.

SBA.GOV/SEEDFUND

AMERICA'S SEED FUND
SBIR·STTR

Fund your tech startup.
Keep your equity and IP.

Change the world.

Through the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs, America's Seed Fund awards non-dilutive funding to develop your technology and chart a path toward commercialization. Non-dilutive funding means you keep 100% equity and ownership in your business. The federal government invests in your solution and gives you freedom to run your business according to your vision.

Participating federal agencies.

Explore opportunities to identify the right option for you.

Market-driven

Agencies that invest in technologies to solve problems through the commercial marketplace:

- Department of Energy (DOE)
- Department of Health and Human Services (HHS), including NIH, FDA, CDC
- National Science Foundation (NSF)
- Department of Agriculture (USDA)
- Department of Commerce, including NIST and NOAA
- Department of Education (ED)
- Environmental Protection Agency (EPA)

Mission-driven

Agencies that invest in technologies to solve government defined problems with dual-use, commercial potential:

- Department of Defense (DoD), including Air Force, Navy, Army
- National Aeronautics and Space Administration (NASA)
- Department of Homeland Security (DHS)
- Department of Transportation (DOT)

Notable awardees.

America's Seed Fund played a catalytic role in many American innovation giants including:

- Qualcomm
- illumina
- iRobot
- 23andMe

4,000
Average number of companies funded per year

$4 billion
Total funds invested in FY20

0%
Equity or IP ownership taken by the government

Are you eligible?

Funding through America's Seed Fund is available to small businesses that are:

- For-profit entities located in the U.S.
- Fewer than 500 employees (most are fewer than 10)
- Owned and controlled by U.S. citizens or permanent residents
- Startups or established companies

How it works.

Entrepreneurs apply and are funded through a three-phased process:

I — Proof-of-Concept
6-12 months
$50,000 - $275,000

II — Technology Development
24 months
$750,000 – $1.8 million

III — Commercialization
Unlock sole source access to the $665 billion federal contracting marketplace

About the SBIR & STTR programs.

Both SBIR and STTR support scientific excellence and technology innovation to build a strong national economy. So, how do they differ?

- SBIR encourages entrepreneurs to partner, while STTR requires entrepreneurs to partner with a non-profit research institution.
- 11 agencies fund SBIR awards, while only the 5 largest of those agencies also fund STTR awards.
- Learn more about SBIR and STTR and determine which program is best for you at **SBA.gov/SeedFund**.

Funding areas.

Explore the funding opportunities that are the right fit for your business. The SBIR and STTR programs offer opportunities for funding multiple times throughout the year across multiple topics, such as:

- AgTech
- Artificial Intelligence
- Biotechnology
- Clean Energy
- Climate Sciences
- Cybersecurity
- Microelectronics
- National Security
- Pandemic Readiness & Prevention
- Quantum Information Science
- Robotics
- Sensors
- Space Exploration & Technology

More diversity means more innovation.

America's Seed Fund provides equitable access to funding based on the quality of your technological solution and its ability to advance federal missions—regardless of your race, ethnicity, gender, orientation, geography, or other affiliation.

Whether you're a new entrepreneur or existing small business, if you have a new technology, we want to hear from you.

SBA
U.S. Small Business Administration

Looking to change the world?
We're looking for you.

Visit **SBA.gov/SeedFund** to learn more about America's Seed Fund and find local assistance from our network of more than 500 partner organizations across the nation.

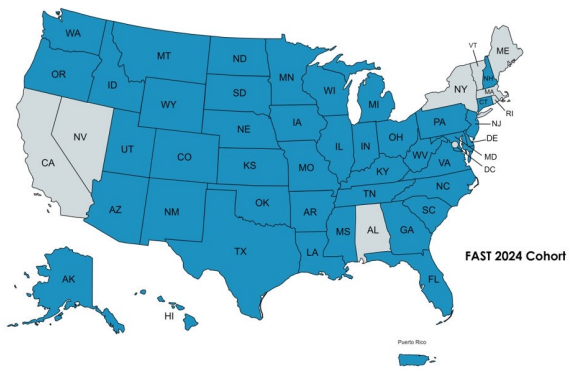
Find local assistance.

America's Seed Fund relies on a powerful network of nearly 500 local partner organizations across the nation to support you through the process. From application assistance to customer discovery, if you need help you are not alone.

To find support, visit **sbir.gov/local-assistance**.

Federal and State Technology Partnership (FAST) Program

FAST organizations conduct outreach, training, and mentoring for potential SBIR/STTR applicants and awardees, with a focus on increasing successful applications from underserved communities.



Notable awardees.

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Qualcomm **illumina** **23andMe** **iRobot**

Whether you’re a new entrepreneur or existing small business,
if you have a new technology, we want to hear from you.

Looking to change the world?

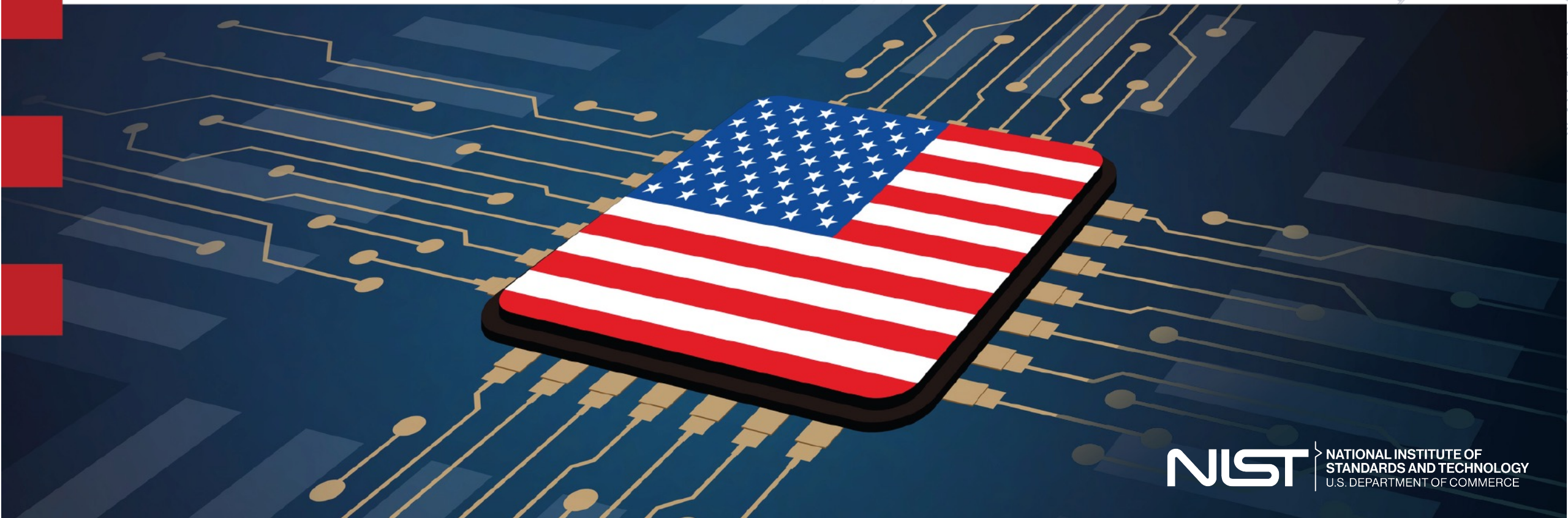
We're looking for you.

Visit **www.sbir.gov** to learn more about America's Seed Fund and find local assistance from our network of more than 500 partner organizations across the nation.

Elden W. Hawkes
Partnership and Innovation Specialist, SBIR/STTR
Elden.hawkesjr@sba.gov

CHIPS for AMERICA

Small Business Innovation Research (SBIR) Program



NIST NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
U.S. DEPARTMENT OF COMMERCE

SBIR PROGRAM FOR CHIPS FOR AMERICA – CHIPS METROLOGY

HIGHLIGHTS

- The program is seeking applications from eligible applicants to explore the technical merit or feasibility of an innovative idea or technology with the aim of developing a viable product or service that will be introduced to the commercial microelectronics marketplace.

- **Anticipated number of awards**: Approximately *14 Open Topic* awards addressing innovation that relates to the Metrology Grand Challenges. Approximately *10* awards addressing *Closed Topics*.

- **Anticipated amounts**: Phase 1 awards up to $283,500 and Phase 2 awards up to $1,910,000.

- **Application deadline**: June 14, 2024.

New Manufacturing USA Institutes

Artificial Intelligence for Resilient Manufacturing
Digital Twins for Semiconductor Manufacturing

NIST
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
U.S. DEPARTMENT OF COMMERCE

AI for Resilient Manufacturing Institute Competition

- Notice of Intent Issued March 12, 2024
- Release of Funding Opportunity Planned Spring 2024
- Applicant Concept Papers 45 days after
- $70M Anticipated Funding over 5-7 years, with potential for renewal
- Minimum of 1:1 Non-federal co-investment required by statute
- Open to all non-federal entities
- Applicants form consortia to submit proposals

https://www.nist.gov/oam/funding-opportunities

CHIPS Manufacturing USA Institute

- Establish one institute with the potential for significant impact on semiconductor manufacturing
- Topic: Digital twins
- Minimum expected NIST commitment ~$200 million over a five-year period
- Anticipate a greater than 1:1 cost share
- Analysis of RFI responses, industry feedback, listening sessions across 15+ engagements, and technology opportunities across the CHIPS R&D portfolio

Useful Links and Contact Information

SBIR-CHIPS METROLOGY

Links

- Notice of Funding Opportunity
- CHIPS Metrology Program
- Grand Challenges

Inquiries

Programmatic

- Sarah Hughes, sarah.hughes@chips.gov
- Tracey Smith, tracey.smith@chips.gov

Grants.gov

- support@grants.gov

Grant Rules and Regulations

- Dean Iwasaki, dean.iwasaki@nist.gov

DIGITAL TWINS INSTITUTE

Links

- Notice of Intent
- CHIPS Manufacturing USA Program

Inquiries

- research@chips.gov with the subject line: 'MFG USA CHIPS Institute Competition'

AI INSTITUTE

Links

- Notice of Intent
- OAM website

Inquiries

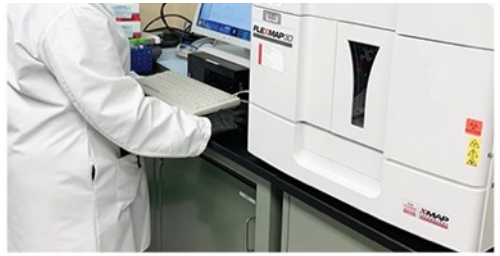
- Cheryl Leonard, ManufacturingUSA@nist.gov with the subject line: 'AI for Resilient Manufacturing'

Manufacturing USA®

10 Years of Advancing U.S. Manufacturing




Closing Remarks








Manufacturing USA®

10 Years of Advancing U.S. Manufacturing

Thank You, Erin and Team

Casey Blasioli	Zara Brunner	Adrienne Cheng	Brad Conrad
Lisa Fronczek	Susan Ipri-Brown	Christina Jones	Jorge Lamboy
Mary Lou Norris	Shelly Pollard	Erin Rushing	Amie Stephens
Don Ufford			

ManufacturingUSA