Image Credit: Shutterstock/NSF

DIRECTOR'S REMARKS

NATIONAL SCIENCE BOARD MEETING

Sethuraman Panchanathan, National Science Foundation

August 15, 2023

Image Credit: Shutterstock

UPDATES FROM THE HILL

Image Credit: Senate Democratic Media Center

CHIPS & SCIENCE ACT OF 2022

1 YEAR ANNIVERSARY

Image Credit: U.S. National Science Foundation

Scaling the
TIP Directorate Programs

Strengthening
Research Security

Unleashing Talent and
Energizing the Workforce

FY2024 Budget Status

House Proposal
$9.63 Billion

Senate Proposal
$9.5 Billion

Image Credit: Shutterstock

Image Credit: U.S. National Science Foundation

AI LEGISLATIVE LANDSCAPE

Image Credit: U.S. National Science Foundation

NSF's STRATEGIC PRIORITIES

STRENGTHENING ESTABLISHED NSF

With **investments that expand the frontiers of knowledge and discovery**.

INSPIRING MISSING MILLIONS

Using **capacity building and interventions** that enhance and broaden participation.

ACCELERATING TECHNOLOGY AND INNOVATION

Through innovative, **cross-cutting partnerships** and programs.

Image Credit: Shutterstock/NSF

STRENGTHENING ESTABLISHED NSF

NSF NANOGrav Physics Center Detects Gravitational Waves

- **NSF observatories provide first evidence ever** of low-frequency gravitational waves permeating the universe
- Discovery made by **over 190 researchers from more than 50 institutions in the U.S and abroad**
- **Provides new insights** into how galaxies evolve and how supermassive black holes grow and merge

Materials Research Science and Engineering Centers (MRSECs) Awards

- **$162 million** total investment
- **9 centers across the country** will each receive $18 million over 6 years
- Transform scientific breakthroughs into tangible benefits and **drive innovations that can be produced on tomorrow's factory floors**

I-MRSEC

Illinois Materials Research Science and Engineering Center

SEC
LS RESEARCH SCIENCE
INEERING CENTER

Northwestern University Materials Research Science and Engineering Center

University of Wisconsin MRSEC

Wisconsin Materials Research Science and Engineering Center

CDCM

Center for Dynamics and Control of Materials

LRSM

Laboratory for Research on the Structure of Matter

THE UNIVERSITY OF TENNESSEE KNOXVILLE

Center for Advanced Materials & Manufacturing

UW MEM·C

University of Washington Molecular Engineering Materials Center

UC Santa Barbara MRL Materials Research Laboratory
NSF Materials Research Science and Engineering Center [DMR-2308708]

Materials Research Laboratory at UCSB

MATERIALS RESEARCH INSTITUTE
UNIVERSITY OF MICHIGAN

Center for Materials Innovations at Michigan

THE UNIVERSITY OF TENNESSEE KNOXVILLE

Institute for Advanced Materials and Manufacturing

- Using AI to **advance our understanding and control of quantum materials and systems**
- **Developing materials that can withstand extreme temperatures and pressure** for use in nuclear fusion and hypersonic defense systems

Image Credit: Steven Bridges/The University of Tennessee, Knoxville

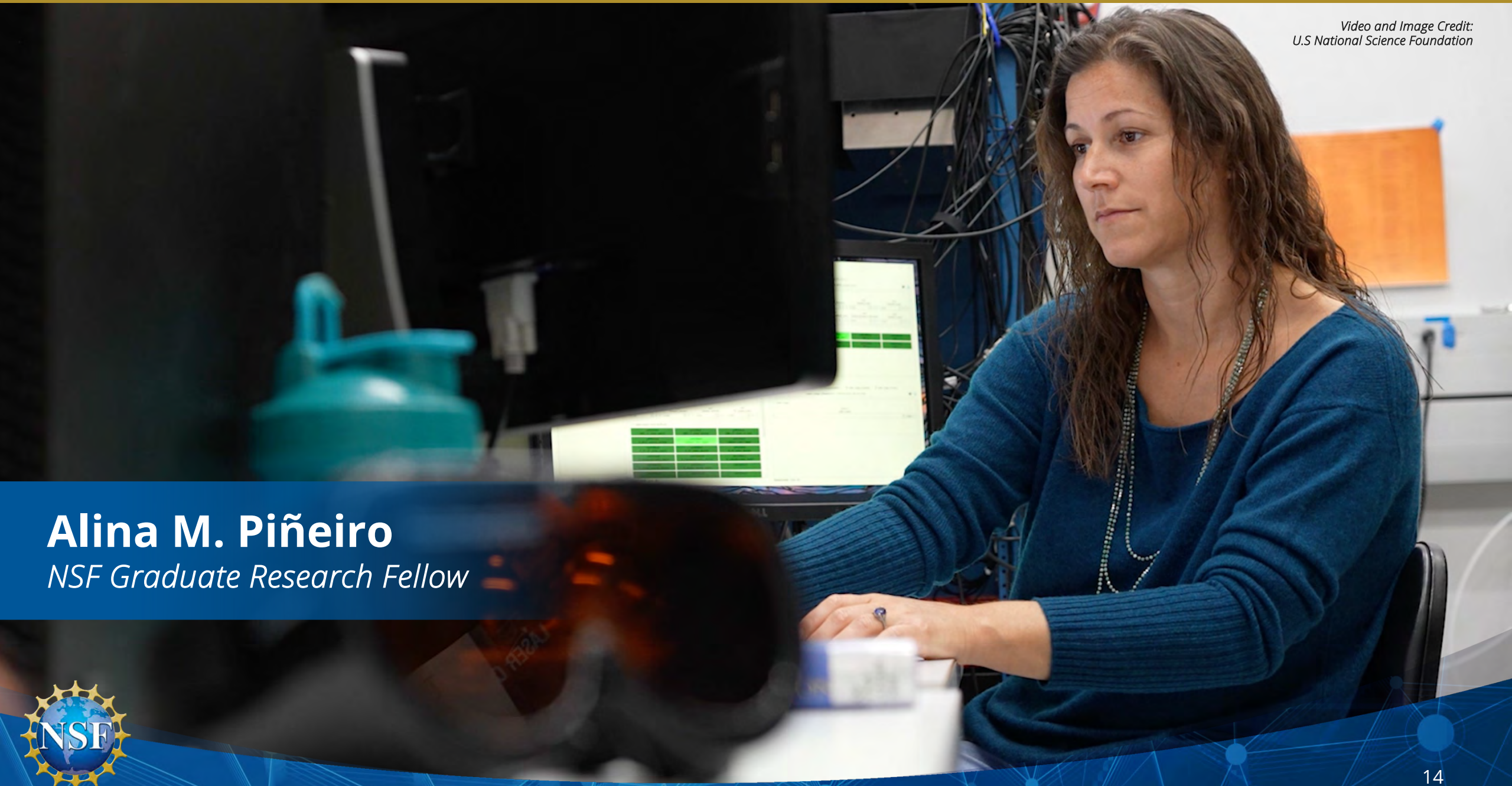
Mid-Scale-2 award to the University Corporation for Atmospheric Research (UCAR)

- **$91.8 million investment** to design and build Airborne Phased Array Radar (APAR)
- State-of-the-art radar mounted on a plane's **exterior allows researchers to see deeper into the clouds**
- **Revolutionizes our understanding** of the formation of rain, hail, snow, and storms
- **Improve models used for weather prediction and climate projections**

Image Credit: ©2023 UCAR

Image Credit: Shutterstock

INSPIRING MISSING MILLIONS



Video and Image Credit:
U.S National Science Foundation

Alina M. Piñeiro

NSF Graduate Research Fellow

NSF Announces new ExpandQISE Awards

- **$38 million, 22 total awards**
  - **17 Track 1 Awards**: Individuals initiating planning for a research program in QISE, $800,000 total for up to 3 years
  - **5 Track 2 Awards**: Team awards for 2-5 collaborators, $5 million total for up to 5 years
- All lead Institutions are non-R1, including **6 HBCUS, 3 HSIs and 5 institutions from EPSCoR states**

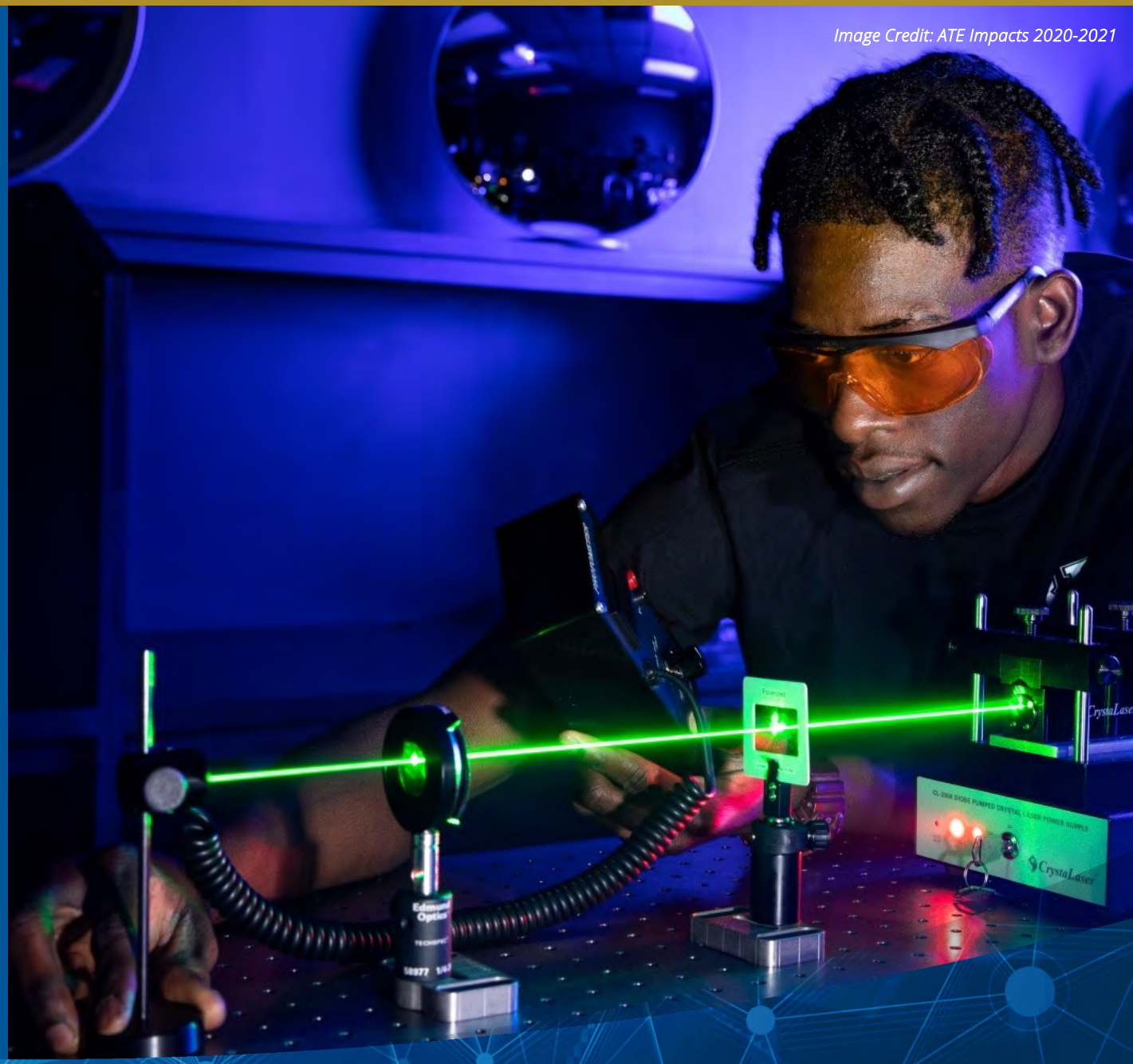


Image Credit: ATE Impacts 2020-2021

2023 Community College Innovation Challenge Winners

- Students **develop innovative solutions to real-world problems**
- **First-place: Houston Community College, Texas**
  - For a hands-free device to assist firefighters in low visibility conditions
- **Second-place** Woodland Community College, California
- **Third-place** Feather River College, California

Image Credit: University of Idaho Visual Productions

Image Credit: Chris Hillesheim

Image Credit: Genevieve Casey

Image Credit: Jeff Fitlow/Rice University

Image Credit: University of Idaho Visual Productions

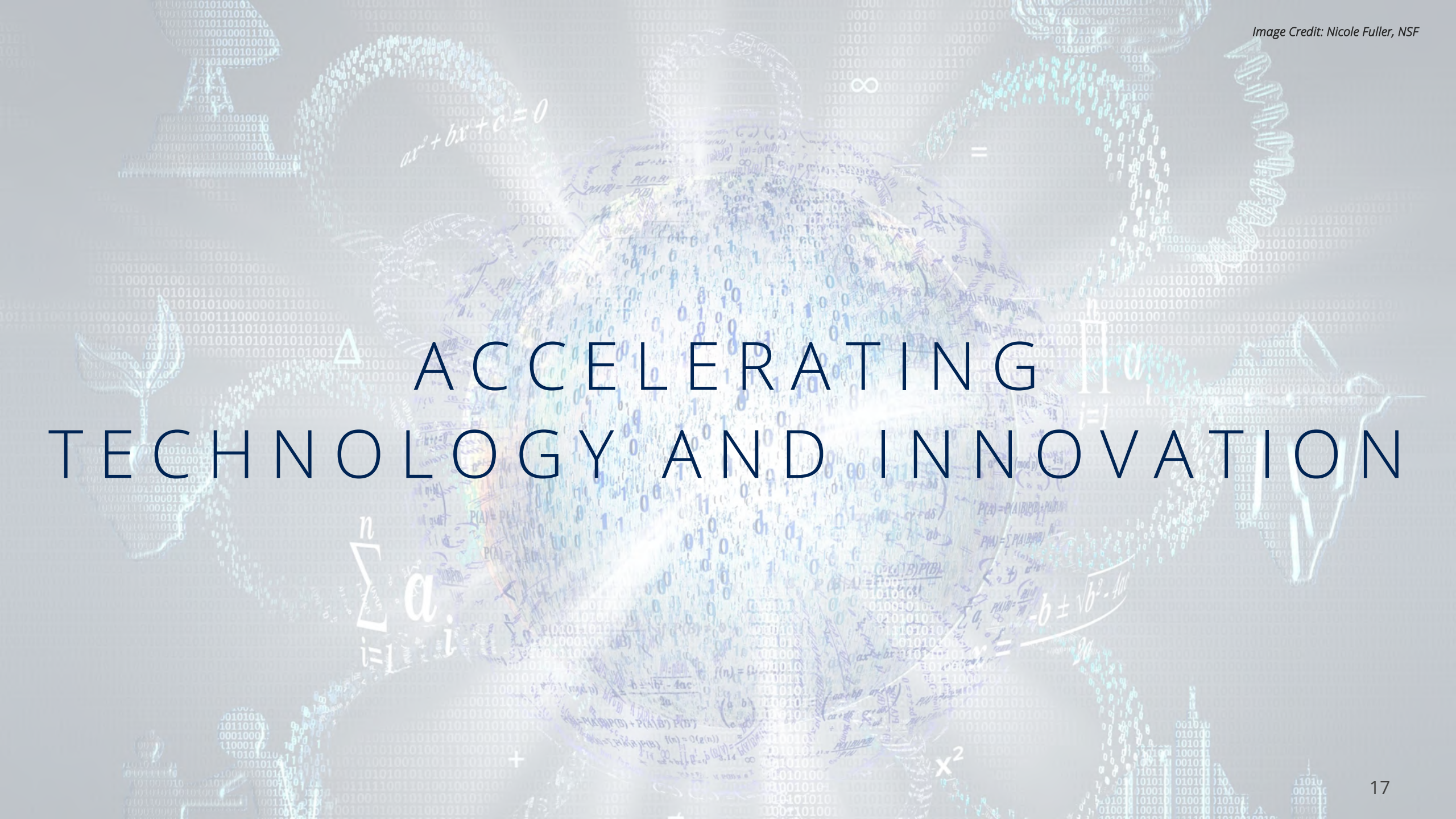


Image Credit: Nicole Fuller, NSF

ACCELERATING TECHNOLOGY AND INNOVATION

Image Credit: U.S National Science Foundation

INVESTMENTS TO IMPACTS

High Performance Computing, Hardware, and Software

Image credit: AMPLab

Catalyzed by NSF/CISE Expeditions in Computing Award

Invented industry-leading open-source software such as Apache Mesos, Apache Spark, and Alluxio

36 corporate partners provided co-funding and real-world applications

Spawned several start-ups including Determined.ai, D2iQ, and DataBricks

7 founders with investments from over 20 NSF awards:

- **Patrick Wendell:** Worked on NSF-funded projects **as undergrad at Princeton**, received 2011 **Graduate Research Fellowship**
- **Matei Zaharia:** Received 2017 **NSF CAREER** and **PECASE** Awards
- **Ion Stoica:** PI for **12 NSF awards**, received 2002 **PECASE** Award

Creates an **open and unified platform for data and AI,** Surpassed **$1B in annual revenue**, valued at over $38B

Image credit: Databricks

databricks

Patrick Wendell

Matei Zaharia

Ion Stoica

Databricks acquires MosaicML

- MosaicML is **a leading generative AI platform**
- **Founding Advisor Michael Carbin received 6 NSF awards**, including NSF CAREER and Expeditions in Computing awards
- **Together they will make generative AI accessible for all organizations**, enabling them to build, own and secure generative AI models with their own data

Headshot Image Credit: MosaicML

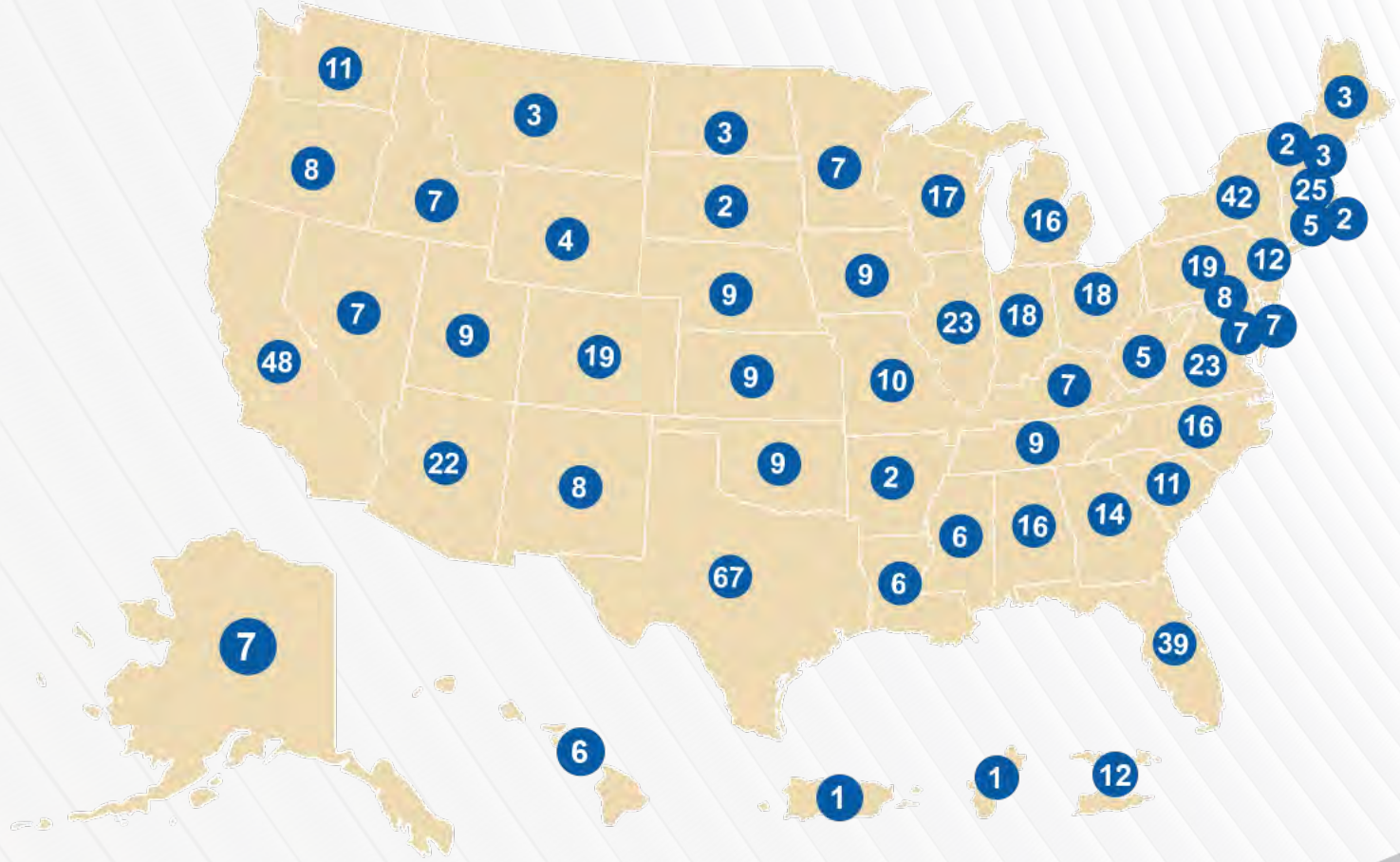
Michael Carbin

Founding Advisor, NSF CAREER Awardee

mosaicML

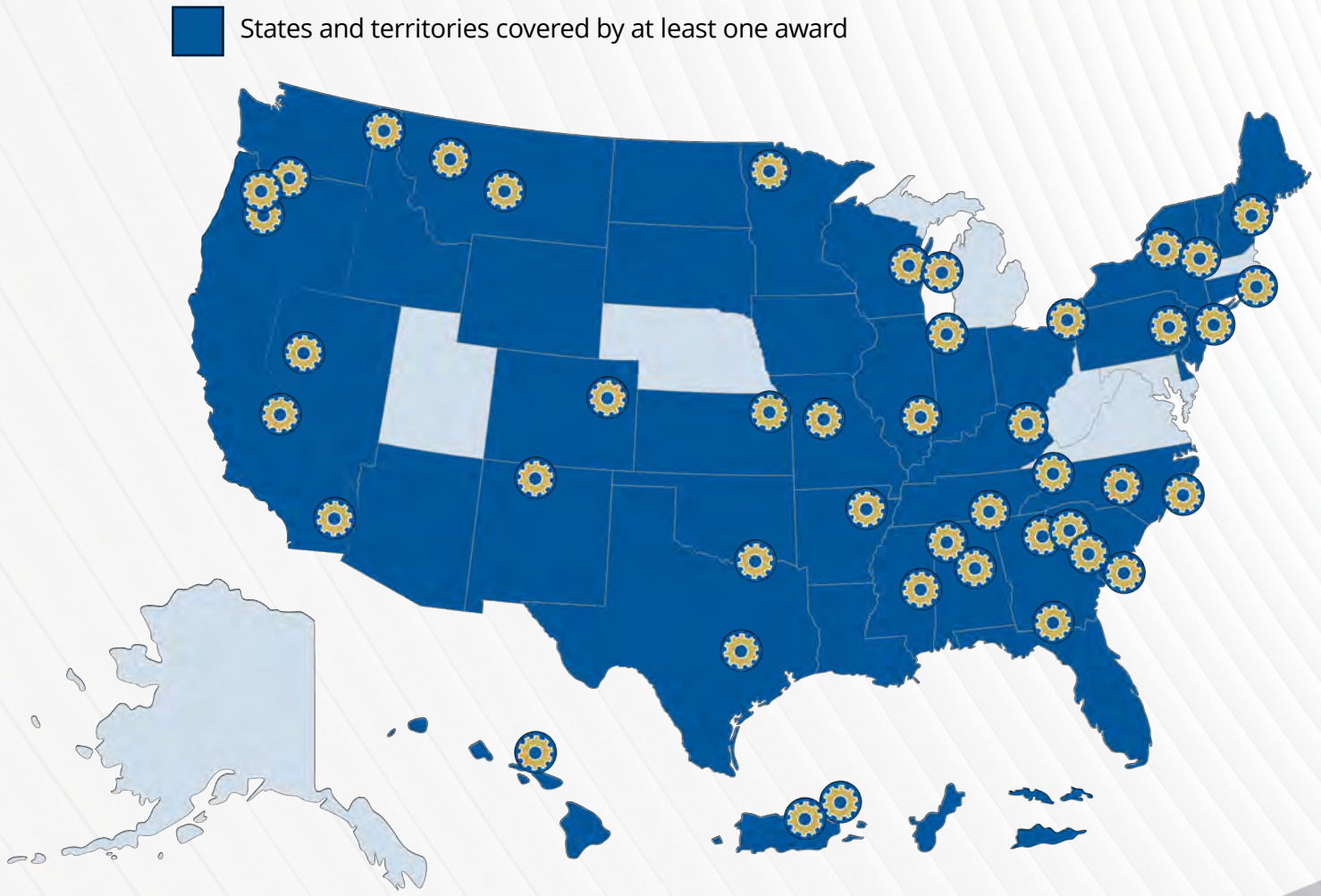
NSF Regional Innovation Engines

- Bringing together academia, industry, government, and communities to create **crucibles of innovation**
- **Over 700 concept outlines** spanning all 50 states and four U.S. territories



Type-1 RIE Awards

- **$43 million** investment
- **44 Awards** across 45 U.S. states and territories
- **Establishes the connections** for building robust regional economic systems



SmartTech Mississippi

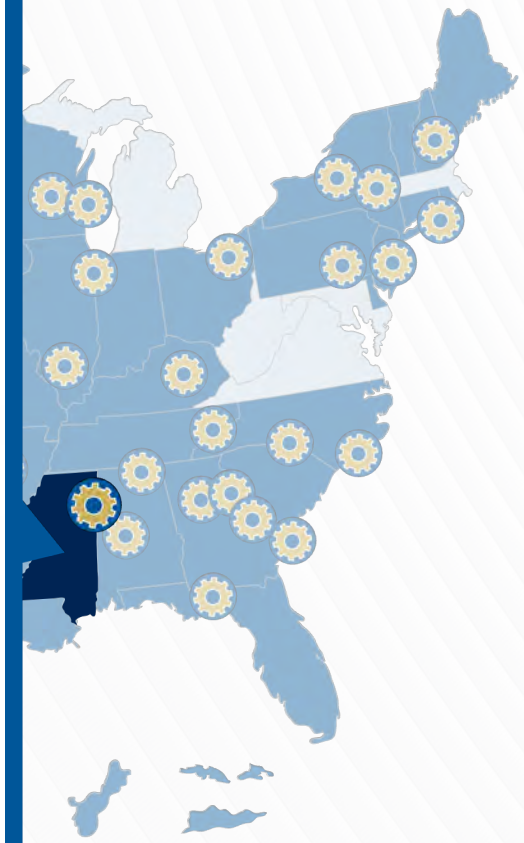
- **Led by Mississippi State University,** along with 17 partners and organizations
- Developing and deploying **smart and autonomous technologies in local manufacturing**
- Designed to develop **user-inspired research based on regional manufacturing needs**

2305517-NSF Engines Development Award: Advancing autonomous technologies for advanced manufacturing (MS)

Lead Institution (PI): MS - MISSISSIPPI STATE UNIVERSITY ASSURE RESEARCH & DEVELOPMENT CORPO (Jordan)
Award Period: 5/15/2023 - 4/30/2025
Award Amount: $999,997
Topic: Advanced Manufacturing
Key Technology Areas: Advanced Manufacturing, Advanced Materials, BigData and Cybersecurity

Organization Type	Lead Organization	Subawardee Organization	Collaborator contributing resources	Other Collaborator Organization
Institution of Higher Edu.		1		
Non-Profit Organization	1			4
Other For-Profit Company		1		1
State or Local Gov. Organization			2	

Regional Coverage:



Type-2 RIE Award Finalists

- **16 finalists announced** to encourage teaming, diversity, and regional growth
- **Will establish robust regional innovation ecosystems**
- **Type-2 Awards**
  - $15 million for first 2 years
  - Engine is eligible for up to $160 million over 10 years

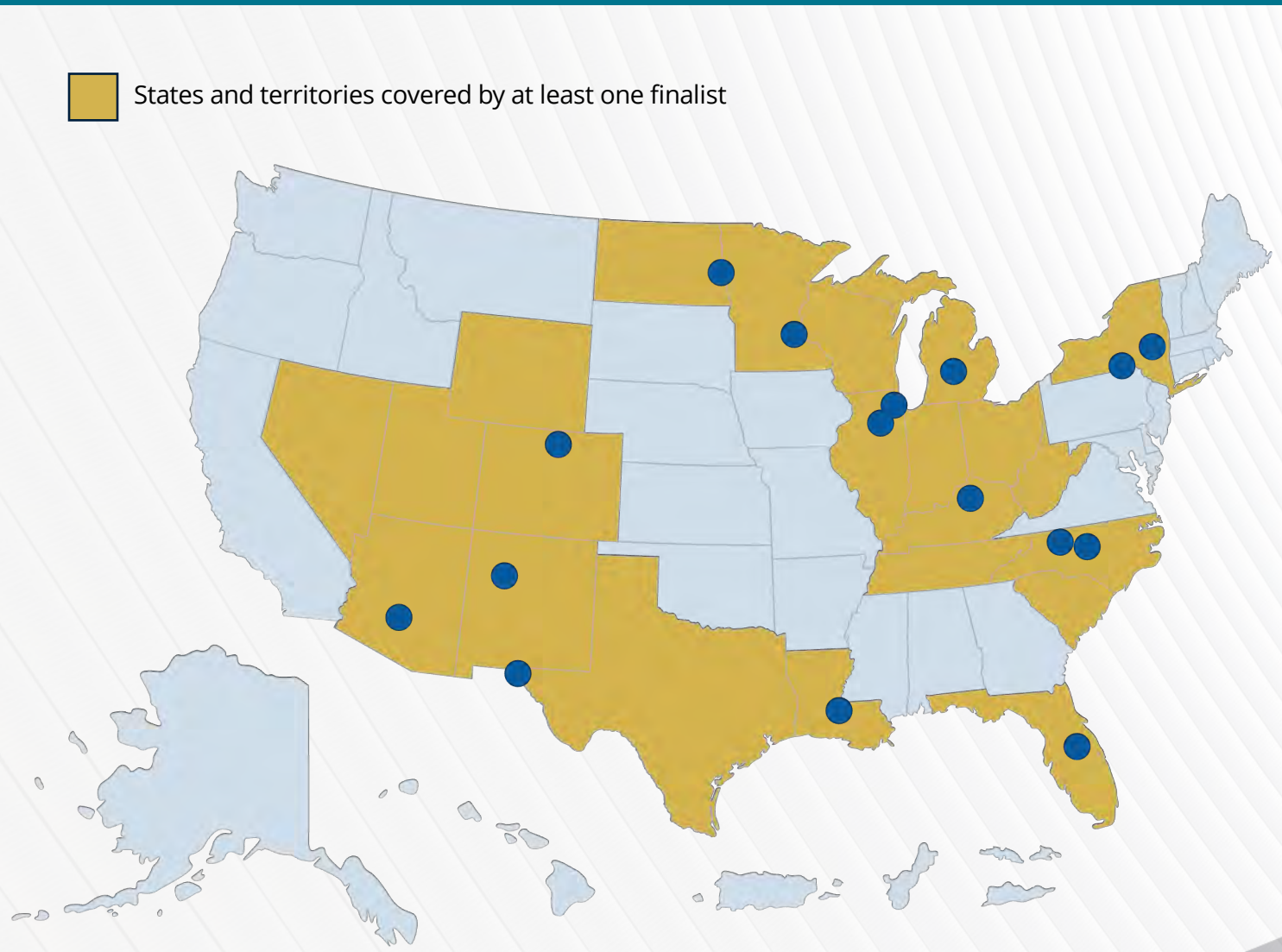
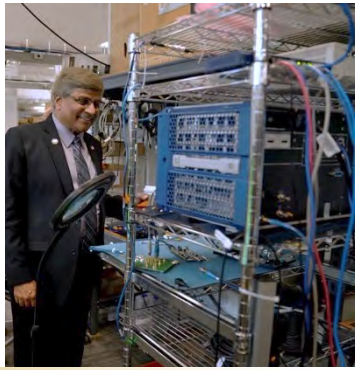


Image Credit: Shutterstock

CONGRESSIONAL ENGAGEMENTS

Images from: Jeremy Gasowski, University of New Hampshire



University of New Hampshire
May 2023

Images from: Top: Amanda Greenwell, NSF
Bottom: Steven Bridges, The University of Tennessee, Knoxville

University of Tennessee, Knoxville
June 2023

Images from: Robert Moller, NSF

Hazleton, Pennsylvania
July 2023

External Engagements

Image Credit: Karen Lips, NSF

Image Credit: Charlotte Geary, NSF

Image Credit: Charlotte Geary, NSF

Image Credit: Charlotte Geary, NSF

Image Credit: Charlotte Geary, NSF

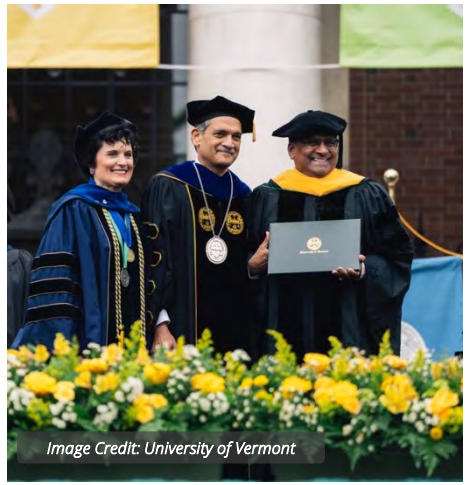


Image Credit: University of Vermont

Image Credit: Lily Le, NSF

Image Credit: Lily Le, NSF

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Image Credit: Mark Skalny Photography

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Image Credit: Charlotte Geary, NSF

The Director of U.S National Science Foundation, Dr. Sethuraman Panchanathan visited an RIE at the University of Nevada, Reno, with the OSTP director, Dr. Arati Prabhakar.

NSF Activity Highlights

First Lady Dr. Jill Biden and Indian Prime Minister visit NSF
June 21, 2023

Indian Prime Minister Narendra Modi official state visit
June 22, 2023

Image Credit: Charlotte Geary, NSF

Image Credit: NSF

Image Credit: Official White House Photo by Erin Scott

Image Credit: NSF

Image Credit: Official White House Photo by Erin Scott

Image Credit: NSF

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NSF