NIST Director's Highlights for June 2024 Visiting Committee on Advance Technology (VCAT) Meeting
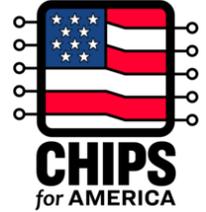
CHIPS for America

CHIPS Funding Updates

- Since the February 2024 Meeting, the Biden-Harris Administration announced non-binding preliminary memorandum of terms (PMT) agreements between the Department of Commerce and Absolics, Polar Semiconductor, Micron Technology, Samsung Electronics, TSMC Arizona Corporation, Intel Corporation, and Globalfoundries.

CHIPS R&D

- The CHIPS Metrology Program aligns its research and development portfolios based on the identified metrology needs of the seven grand challenges identified in a NIST published report. Projects currently launched, listed here, align with the following grand challenges:
  - Advanced Metrology for Future Microelectronics Manufacturing
  - Enabling Metrology for Integrating Components in Advanced Packaging
  - Modeling and Simulating Semiconductor Materials, Designs, and Components
- The U.S. Department of Commerce issued 3 Notice of Funding Opportunities (NOFOs):

CHIPS National Advanced Packaging Manufacturing Program (NAPMP) Materials and Substrates Research and Development	CHIPS Manufacturing USA Institute	CHIPS Metrology Small Business Innovation Research (SBIR)
Anticipates awarding approximately $300 million for R&D activities that would establish and accelerate domestic capacity for advance packaging substrates and substrate materials.	Anticipates up to approximately $285 million to establish and operate a first-of-its kind institute focused on the development, validation, and use of digital twins for semiconductor manufacturing, advanced packaging, assembly, and test processes.	Anticipates up to approximately $54 million on research projects for critically needed measurement services, tools, and instrumentation; innovative manufacturing metrologies; novel assurance and provenance technologies and advance metrology R&D testbeds.

CHIPS Workforce Development

- The U.S. Department of Commerce announced the CHIPS Women in Construction Framework, a set of five best practices, as well as the first voluntary commitments from Intel Corporation and Micron Technology.

Manufacturing USA

AI-Focused Manufacturing USA Institute

NIST plans to announce an open competition for a new Manufacturing USA institute focused on using AI to improve the resilience of U.S. manufacturing, anticipating $70 million in federal funds invested over 5 years, with an equal or greater contribution from private and other non-federal funding.

2024 NIIMBL eXperience Cohort Announced

The National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL) announced the selection of 63 students from 41 academic institutions for participation in the 2024 NIIMBL eXperience, the largest cohort since launching in 2019.

Manufacturing Extension Partnership

MOU with the Department of Transportation (DoT)

Manufacturing Extension Partnership (MEP) signed a memorandum of understanding (MOU) with the DoT which focuses on compliance with Buy America laws, developing a domestic supply base to support intermodal transportation, and commercializing and deploying transportation technologies.

NOFO for a MEP Center in Florida

NIST MEP announced a NOFO accepting applications from eligible organizations to operate a MEP Center in Florida that will provide services to small- and medium-sized manufacturers in Florida and become part of the MEP National Network.

Diversity, Equity, Inclusion, and Accessibility (DEIA)

The NIST DEIA strategy includes cultivating an organizational culture that is diverse equitable, inclusive, and accessible. Two opportunities for improvement include enhancing the NIST organizational culture to reflect the central tenets of DEIA and implementing enterprise-wide DEIA principles that describe the behaviors (individually and organizationally) required to successfully lead and sustain DEIA. Through agency-wide facilitated discussions led by the DEIO Director, the NIST workforce has gained strategies to understand the potential workplace clash points because of multigenerational diversity, the impact of unconscious bias and microaggressions in the workplace, and the neurological responses to the pain of exclusion.

NIST Research

Biotechnology

Safety tools for synthetic biology

NIST has entered a two-year cooperative research agreement with the nonprofit Engineering Biology Research Consortium (EBRC) to develop screening and safety tools to defend against the potential misuse of artificial intelligence (AI) related to nucleic acid synthesis.

Cybersecurity

Cybersecurity Framework (CSF) 2.0

NIST released the CSF 2.0. The new edition is designed for all audiences regardless of their degree of cybersecurity sophistication and supports the implementation of the National Cybersecurity Strategy.

PQC Standards

NIST anticipates release of the first set of final versions of the Federal Information Processing Standards for Post-Quantum Cryptography (PQC) in Summer 2024.

Artificial Intelligence (AI)

NIST continues to build the U.S. AI Safety Institute (USAISI) and related Consortium and recently:
- Released four draft publications
- Launched GenAI
- Launched Assessing Risks and Impacts of AI (ARIA) Program

Additional content will be highlighted in the AI Deep-Dive Session.

National Construction Safety Team Advisory Committee Meeting

Hurricane Maria

Expectation to wrap up all data collection efforts in Summer 2024 and have report of findings ready for public review in the first half of 2025.

Champlain Towers South

Reported strong evidence that the pool deck collapsed before the tower and expect to substantially complete technical work by Summer 2024, with the report of the findings ready for public review end of May 2025.

Other Highlights

- Cellphone compass to measure tiny concentrations of compounds important for human health
- New carbon capture testing system
- New NIST Database of 'Forever Chemicals'
- Method to accurately center quantum dots within photonic chips
- Common lab refrigerator to cool faster with less energy – *Nature Communications* article
- NIST hosts meeting of O-RAN Alliance security experts
- NIST leads technical development of ASTM International Standard Guide for Airborne PFAS in the Indoor Environment
- NICE Framework Components v1.0.0 released
- NIST finalized updated guidelines for protecting sensitive information
- NIST reports first results from age estimation software evaluation

Standards

IEC/ISO Joint Technical Committee on Quantum Technologies

The International Electrotechnical Commission (IEC) and the International Organization for Standardization (ISO) have recently approved the formation of a new Joint Technical Committee (JTC) on *Quantum Technologies*. The American National Standards Institute (ANSI) has selected the National Institute of Standards and Technology (NIST) as administrator of the U.S. National Committee (USNC) TAG to ISO-IEC/JTC3 *Quantum technologies*.

USG NSSCET Implementation Update

The U.S. Government National Standards Strategy for Critical and Emerging Technology (USG NSSCET) Implementation Roadmap has been reviewed by the NIST Standards Advisory Council (NSAC) and the Interagency Committee on Standards Policy (ICSP). When the implementation kicks off in tandem with the White House, the intent is to post an official draft of the NSC-cleared document on standards.gov for public review and feedback.

In-Depth Meeting Topics

The June 2024 VCAT Meeting includes deep dives into:
- Safety
- Measurement Services and the Core NIST Mission
- Climate and Energy Technologies
- NIST Facilities, including tours
- NIST Response to VCAT Annual Report Recommendations
- AI: NIST Labs Technical Portfolio and Launch of the U.S. AI Safety Institute
- Boulder Research Highlights
- NIST Budget, including a closed session

New Agreements

Small Businesses Innovation Research (SBIR) Program

NIST awarded more than $1.2 million to 12 small businesses in 8 states under the SBIR program to fund research and development of new products related to semiconductor manufacturing, quantum computing, cybersecurity, health care, and more.

Educational programs on circular economy to reduce plastic waste

NIST awarded nearly $3 million in total to six universities to create curricula and programs that will train students to discover and develop solutions to problems presented by current approaches to the production and consumption of plastics.

Quick Links

AI Executive Order Progress
CHIPS Agency Priority Goals
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