

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

NIST Research

Artificial Intelligence

Executive Order (E.O.) Deliverables

On the 270-day mark since the E.O. was signed, NIST [released](#) three final guidance documents, as well as [Dioptra](#), a new software package designed to measure how adversarial attacks can degrade the performance of an AI system. The release also included a draft guidance [document](#) from the U.S. AI Safety Institute ([USAISI](#)) to prevent misuse of dual-use foundation models.

AI Cooperative Research Center

NIST [awarded](#) \$6 million to Carnegie Mellon University (CMU) to establish a joint center to support cooperative research and experimentation for the test and evaluation of modern AI capabilities and tools.

USAISI Agreements

USAISI [announced](#) agreements that enable formal collaboration on AI safety research, testing, and evaluation with Anthropic and OpenAI.

Quantum

Atomic Clock

Scientists at JILA have [developed](#) an atomic clock more precise and accurate than any clock previously created. For the first time, the clock can detect the effects of gravity predicted by the theory of general relativity at the microscopic scale.

Nuclear Clock

An international research team, led by scientists at JILA, have [demonstrated](#) key elements of a nuclear clock, including precise frequency measurements of an energy jump in a thorium-229 nucleus.

Fire Safety

NIST [published](#) "A Legacy of Fire Safety: NIST Marks 50 Years of the Federal Fire Prevention and Control Act of 1974" to showcase technically diverse areas of NIST's fire research that have advanced fire science. NIST also released an interactive [website](#) detailing the history of, and NIST's crucial role in, fire safety advances.

Other Highlights

- NIST [released](#) three finalized post-quantum encryption standards
- NIST [developed](#) a plan for precise timekeeping on the moon
- NIST [delivered](#) a portable and highly accurate instrument for measuring mass to the U.S. Army
- NIST [released](#) the second public draft of [Digital Identity Guidelines](#) for final review
- Living cells can now be [seen](#) with infrared light
- Tiny new lasers fill a [gap](#) in the rainbow of visible-light colors
- A new [approach](#) for detecting cannabis in breath
- NIST researchers [identified](#) a cheaper, more convenient method to detect asbestos
- Smart new laser technology can [monitor](#) greenhouse gases faster
- NIST [awarded](#) \$3 million for community-based cybersecurity workforce development

New Agreements

Bill & Melinda Gates Foundation Partnership

NIST has [signed](#) a cooperative research and development agreement (CRADA) with the Bill & Melinda Gates Foundation to begin creating standards and testing protocols for a new generation of breathalyzers that can diagnose malaria and tuberculosis.

Standardization Center of Excellence (CoE)

NIST [awarded](#) \$15 million for a CoE to support U.S. engagement in international standardization for CETs essential to U.S. competitiveness and national security. The Center will be led by [ASTM International](#), with multiple partners from across the standards development ecosystem.

Climate Measurements Center of Excellence

NIST has [entered](#) into a cooperative agreement with the University of Vermont to establish a [Climate Measurements Center of Excellence](#). The Center will support the development of national standards and measurements for tracking risks associated with climate impacts.

Standards Leadership

Standards Strategy Implementation Update

NIST [participated](#) in a summit at the White House in July to discuss the U.S. Government National Standards Strategy for Critical and Emerging Technology (USG NSSCET). The Biden-Harris administration released the [USG NSSCET Implementation Roadmap](#), along with a [fact sheet](#). To develop the roadmap, NIST analyzed feedback from a Fall 2023 Request for Information on how to best implement the USG NSSCET.

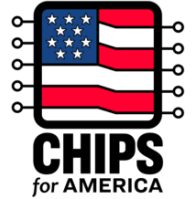
Workforce and Culture

Principles of Conduct

In response to the opportunities to enhance the NIST culture, the Diversity, Equity, and Inclusivity Office (DEIO), in partnership with the Program Coordination Office (PCO), developed and implemented the NIST Principles of Conduct. These Principles serve as behavioral indicators that describe the actions that help to realize NIST's core values of perseverance, integrity, inclusivity, and excellence in the workplace.

CHIPS for America

On August 9th, 2024, the White House released a Fact Sheet to commemorate the two-year anniversary of the CHIPS and Science Act signing. The CHIPS for America program, within NIST, also released multiple resources, including a [CHIPS Progress Report](#) and a [CHIPS Funding Map](#). These resources showcase progress made on American semiconductor manufacturing and innovation since the signing, including over \$300 billion in private investments and over \$30 billion in direct incentives through Department of Commerce (DOC) preliminary agreements.



CHIPS Research and Development (R&D) Programs

- A Notice of Intent (NOI) was [issued](#) to open a competition for new R&D activities that will establish and accelerate domestic capacity for semiconductor advanced packaging and anticipates up to \$1.6 billion in funding.
- A NOI was [issued](#) to announce an open competition demonstrating how AI can assist in developing new sustainable semiconductor materials and processes that meet industry needs and anticipates up to \$100 million in funding.
- The Department of Commerce and [Natcast](#), the operator of the National Semiconductor Technology Center ([NSTC](#)), [announced](#) the processes for selecting the first three R&D facilities.
- CHIPS for America [announced](#) a new \$5 million Entrepreneurial Fellowship Pilot Program to support up to 10 early-stage companies focused on innovation in semiconductor manufacturing technologies.
- The recipient of the [CHIPS Manufacturing USA Institute](#) focused on digital twins for the semiconductor industry, with an anticipated award of up to approximately \$285 million with at least a 100% co-investment of non-Federal cost share, is expected to be announced soon.
- Updates from the [CHIPS Metrology Program](#) will be provided during a session on the first day of the VCAT meeting.

CHIPS Funding Updates

- Since the June 2024 Meeting, the Biden-Harris Administration announced non-binding [preliminary memorandum of terms](#) (PMT) agreements between the Department of Commerce and Infinera, Edwards Vacuum, Wolfspeed Inc., HP Inc, Texas Instruments, SK hynix, Amkor Technology, GlobalWafers, Rogue Valley Microdevices, Entegris, and Rocket Lab.
- The Department of Commerce [announced](#) its first award under the CHIPS Incentives Program's Funding Opportunity for Commercial Fabrication Facilities of up to \$123 million in direct funding to Polar Semiconductor.
- The Biden-Harris Administration [awarded](#) nearly \$5 million to 17 small businesses across nine states under the Small Business Innovation Research (SBIR) Program, marking the first award for the CHIPS Research and Development Office (CRDO).

CHIPS Workforce Development

- The U.S. National Science Foundation (NSF) and the CRDO [signed](#) a memorandum of understanding (MOU) to jointly invest in a new initiative to train the future semiconductor workforce.
- The NSF and DOC [announced](#) a \$30 million funding opportunity to establish the Network Coordination Hub that will manage the National Network for Microelectronics Education (NNME) and lead its national strategy to train skilled workers for good-paying jobs needed in the U.S. semiconductor and microelectronics industry over the next decade.
- The Biden-Harris Administration [announced](#) the launch of the NSTC Workforce Center of Excellence (WCoE). The [WCoE](#) will bring together stakeholders to develop innovative solutions to industry's workforce challenges, accelerate best practices, promote good jobs, and strengthen recruitment and training.

Manufacturing USA

AI-Focused Manufacturing USA Institute

NIST has [announced](#) an open competition for a new Manufacturing USA Institute focused on the use of AI to increase the resilience of U.S. manufacturers and anticipates funding up to \$70 million over a five-year period for the recipient to establish and operate the new institute. The institute will be required to obtain cost-share funds from non-federal sources.

VCAT In-Depth Meeting Topics

- Safety at NIST
- Intersections of AI
- Global Standardization
- Cybersecurity and Post-Quantum Cryptography
- Advanced Communications
- CHIPS Metrology
- CET Convergence
- Disaster Resilience

Manufacturing Extension Partnership

Award Announced for MEP Center in Florida

NIST has made a cooperative agreement [award](#) to FloridaMakes, Inc. to operate a MEP Center in Florida. MEP Center awards must be recompeted every 10 years for an award of up to 10 years, based on availability of the appropriation of federal funds and the good standing of the applicant. FloridaMakes has been operating the existing MEP Center for nearly 10 consecutive years.

Quick Links

- [AI E.O. Progress](#)
- [CHIPS Updates](#)
- [CHIPS Agency Priority Goal](#)
- [Manufacturing Updates](#)
- [NIST News](#)
- [Standards Updates](#)
- [USAISI](#)
- [VCAT Agenda](#)