

The Evolving AI Landscape & NIST's AI Initiatives

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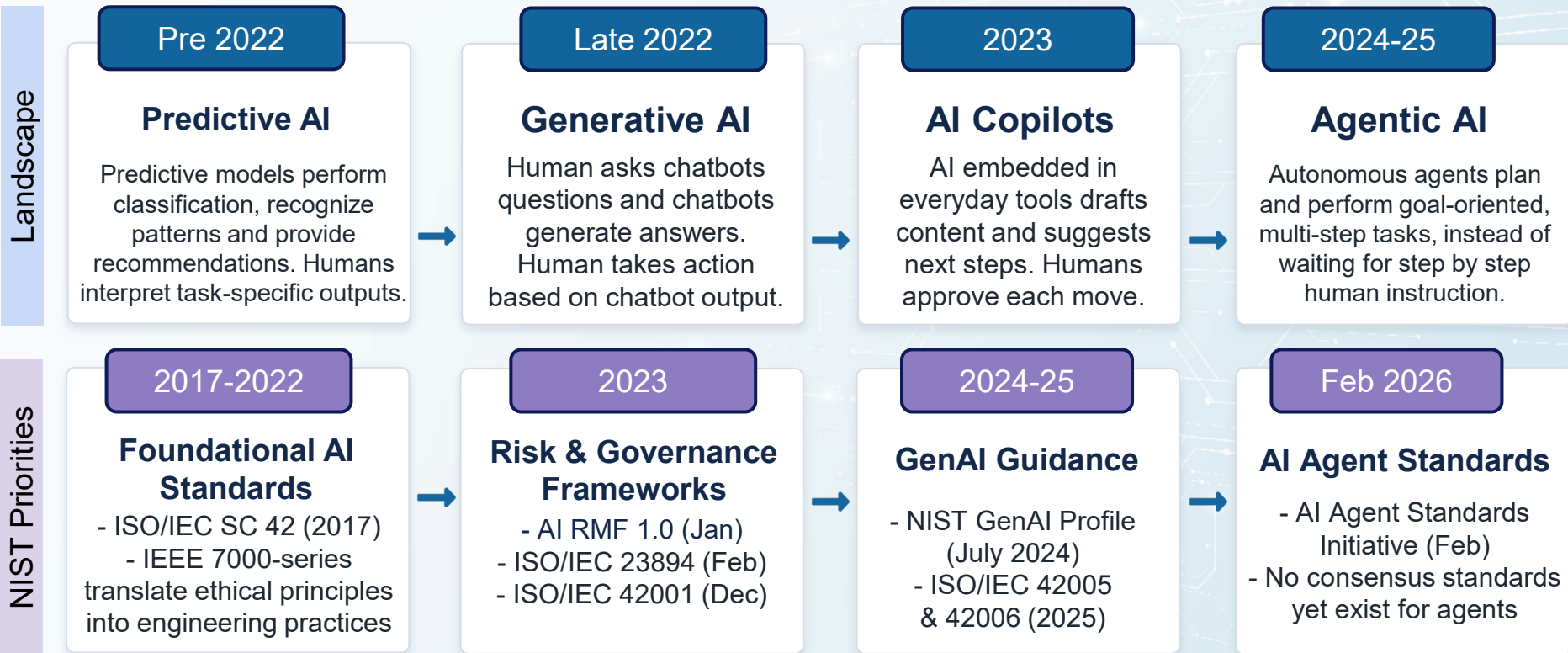
- Advises ITL Director and other NIST senior management on AI trends and how NIST can best position itself to enable U.S. industry to lead in AI innovation
- Former NIST Acting Deputy Associate Director of Laboratory Programs (ADLP), providing operational guidance for NIST's scientific and technical laboratory programs across six laboratories, led program and budget development, and coordinated interagency and outreach activities
- Served as the Director of the Office of Science and Technology Policy's (OSTP) Networking and Information Technology Research and Development (NITRD) National Coordination Office
- Served as Program Manager for NIST Measurement Science for Manufacturing Robotics Program, Project Leader of Agility Performance of Robotic Systems / Embodied AI & Data Generation for Manufacturing projects at
- Serves as Associate VP for Standardization in IEEE Robotics and Automation Society



The Evolving AI Landscape

The background of the slide features a light blue gradient. Overlaid on this are intricate, glowing white circuit-like patterns. These patterns consist of numerous small, bright circular nodes connected by thin, white lines that form a complex, interconnected network, reminiscent of a neural network or a digital circuit board. The lines and nodes are more densely packed on the right side of the image, creating a sense of depth and technological advancement.

Governance approaches designed for predictive AI are brittle in this new (agentic) landscape.

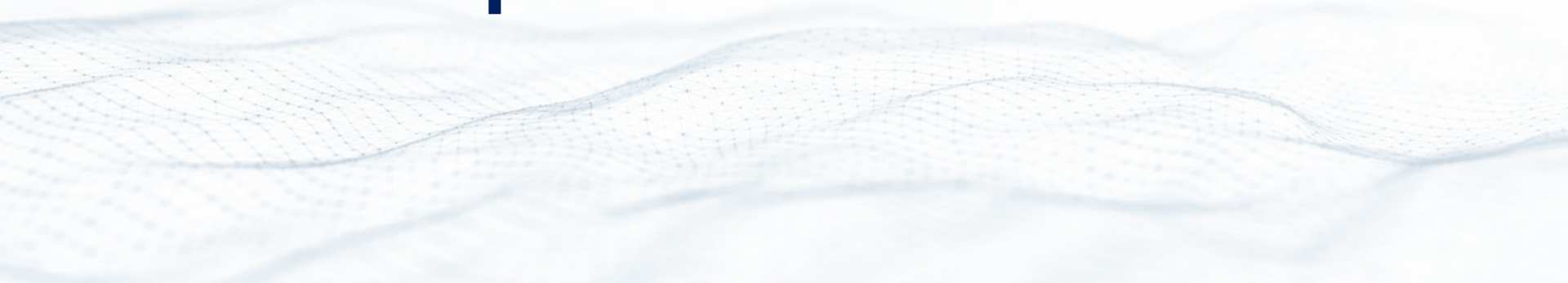


Standards as a Key Priority

The background of the slide features a light blue gradient. Overlaid on this are intricate, glowing white circuit-like patterns. These patterns consist of numerous small, bright circular nodes connected by thin, white lines that form a complex, interconnected network, reminiscent of a digital circuit board or a data network map. The lines and nodes are more densely packed on the right side of the image, fading slightly towards the left.

THE QUESTION EVERYONE IS ASKING

**What does the US need to
drive adoption and boost
leadership in AI?**

The background of the slide features a light blue, abstract graphic. It consists of several wavy, horizontal lines that create a sense of depth and movement. Overlaid on these waves is a fine, grid-like pattern of small dots, giving it a digital or network-like appearance. The overall color palette is a soft, pale blue.

US Leadership in AI Requires:

1

Testing, Evaluation, Verification, and Validation (TEVV) for Trustworthy AI

Measurements of AI systems' trustworthiness to ensure AI systems are deployed and used responsibly

2

Resources

Guidelines and resources to empower industry and government to make informed decisions

3

Applied AI Approaches

Innovative approaches to enable US to apply AI to high priority domains and sectors

4

Standards

Standards that reinforce US dominance in AI

NIST Background and AI Programs



NIST Mission

To promote U.S. innovation and industrial competitiveness by advancing **measurement science, standards, and technology** in ways that enhance economic security and improve our quality of life.

NIST has Led the Conversation on Trustworthy AI

- A key role as **neutral convener** of organizations and individuals with disparate views about AI matters.
- NIST's active participation in national and international discussions helps the U.S. to shape the development of **effective and reliable AI governance that's grounded in technical realities** while emphasizing the need to promote innovation.

Examples

- Co-chairs National Science and Technology Council's **Machine Learning and Artificial Intelligence Subcommittee**
- Co-chairs Networking and Information Technology Research and Development's **(NITRD) AI R&D Interagency Working Group**
- Found and co-chairs **AI Standards Coordination Working Group (AISCWG)** under the Interagency Committee on Standards Policy (ICSP)
- **Works closely with federal Chief AI Officers Council** and individual agency AI leads and plans to provide additional guidance to support agency use of NIST AI Risk Management Framework (AI RMF) to implement OMB guidance

What Organizations are Saying about NIST's AI Work

“Standards development driven by the private sector will help ensure robust participation and foster U.S. technological leadership for the next decade and beyond...This approach was successfully used for development of AI standards, as NIST examples illustrate, and this approach should be replicated going forward.”

CTIA, 2025 White House AI Action Plan RFI Response

“Consumer and business trust in AI remains elusive...Salesforce supports, through an organization like [NIST] the means for businesses to demonstrate their efforts to develop trusted AI. **Tools like guidelines, principles, and frameworks can create a path to closing the trust gap and increasing AI adoption.**”

Salesforce, 2025 White House AI Action Plan RFI Response

“...It is imperative that any “AI Diplomacy” strategy continue to leverage the NIST AI RMF as a means of influencing AI policy alignment between the United States and global allies.”

IBM, 2025 White House AI Action Plan RFI Response

“...the AI Action Plan should empower NIST to continue to be a focal point for public-private collaboration and the development of risk-based guidance..” **NIST’s leadership has proven to be extremely influential in improving the quality of U.S.-developed AI models and in shaping the direction of governance in international forums and in foreign nations**

Software and Information Industry Association, 2025 White House AI Action Plan RFI Response

“...Programs within NIST have tackled some of the most complex technical questions and enabled the United States to maintain a leadership position in multijurisdictional technical dialogues...**By reinforcing and investing in NIST, the United States can maintain its position in international scientific conversations and inform global AI governance approaches that underpin growth for American AI.**”

Microsoft, 2025 White House AI Action Plan RFI Response

“Allowing developers and deployers of AI to self-assess risk for their unique use cases and organize their risk management processes creates flexibility for organizations to appropriately manage risk for their unique use cases...**leveraging voluntary private sector-led consensus standards and voluntary tools like the [NIST] AI Risk Management Framework (AI RMF) can provide a uniform language for AI risk management throughout the lifecycle.**”

Schneider Electric, 2025 White House AI Action Plan RFI Response

“[NIST’s] rigorous, consensus-driven approach has not only strengthened domestic AI governance but has also positioned the U.S. as a global standard-bearer for responsible AI innovation. **Foundational work like the NIST AI Risk Management Framework served as a critical tool in promoting risk-based, flexible, and innovation-friendly AI policies,** influencing allies and partners to adopt governance models that align with U.S. principles.”

PepsiCo, 2025 White House AI Action Plan RFI Response

Multiple AI Functions Exist at NIST Today

Information Technology Laboratory (ITL)	NIST AI Consortium	Center for AI Standards and Innovation (CAISI)	AI Accelerators
• Leads developing measurements, testing, evaluations, and standards in AI • 40+ years of deep AI expertise & applied research • Stewards the AI Risk Management Framework	• 280+ industry, academic and non-profit orgs 200+ new applicants as of June 2026 • Expanded scope in May 2026 • Prioritize research in measurement science, innovation and adoption	• Work with NIST orgs to develop guidelines to measure and improve AI security • Re-established from AISI in June 2025 • Evaluations and assessments of US and adversary AI capabilities	• Remove barriers to U.S. AI innovation and accelerate the application of AI tech • Adoption of AI-driven autonomous agents for increased U.S. manufacturing productivity • Adoption of AI-based agents for ultra-highspeed cyberthreat detection and remediation

NIST AI Consortium saw 200 new applicants as of July 2026.

Overview

- Building upon its long track record of working with the private and public sectors, NIST has created an AI consortium to help support AI research at NIST
- The AI Consortium brings together over 280 industry, academia, and nonprofit organizations to develop scientific- and empirically based guidelines and standards for AI measurement.
- Goals include:
 - Create a lasting approach for continued joint research and development in AI
 - Mature measurement science for trustworthy and responsible AI
 - Produce resources that organizations can use to develop and use AI



Location of U.S.-based AI Consortium Members

NIST ITL AI Initiatives



ITL's AI Work is Organized Across 4 Impact Areas:

#1 Transforming how AI systems' trustworthiness is measured (TEVV)

- ❑ GenAI Program
- ❑ ARIA (Assessing Risks and Impacts of AI)
- ❑ Building Evaluation Probes into Agentic AI
- ❑ Dioptra

#2 Empowering industry and government to make informed decisions

- ❑ NIST AI Risk Management Framework
- ❑ NIST AI Resource Center (AIRC)

#3 Positioning the U.S. to dominate in the AI technical standards arena

- ❑ "Zero Drafts" Pilot Project
- ❑ A Plan for Global Engagement on AI Standards
- ❑ Technical Contributions to AI Governance

#4 Enabling the U.S. to be at the forefront in applying AI to high-priority domains and sectors

- ❑ Development of cybersecurity standards, guidelines and best practices
- ❑ Accelerate adoption of AI-driven agents for increased U.S. manufacturing productivity

Snapshot: NIST AI Risk Management Framework and Resources



NIST AI RMF: A voluntary resource for organizations designing, developing, deploying, or using AI systems to manage AI risks and promote effective and reliable AI that promotes public trust.



AI Agent Standards Initiative

CAISI, ITL, and other interagency partners are collaborating to advance trust, interoperability, and security for AI agents.

Pillar 1: Facilitate industry standards

- Host technical convenings and conduct gap analyses to produce voluntary guidelines to inform industry-led standardization for AI agent
- Maintain leadership on AI agents at international standards bodies

Pillar 2: Foster community-led protocols

- Engage with AI ecosystem to identify and reduce barriers to interoperable agent protocols
- Invest in development and security of open source ecosystems including AI agent protocol ecosystems

Pillar 3: Invest in research

- Conduct research on agent authentication and identity infrastructure to enable secure human-agent and multi-agent interactions
- Develop SOTA security evaluations to inform protocol development

AI Identity Project Summary

Identifying, authenticating, and authorizing AI agents is essential to securing systems and maximizing their value – doing so requires an evolution of standards and technology...

The Concept Paper

- Published in February 2026 to outline practical, implementation-oriented guidelines.
- Focuses on securing identity and authorization while maximizing agentic capabilities.
- **Ultimate Deliverable:** SP 1800 series practice guide with reference architectures.

Responses

- **Substantial Engagement:** Over 600 emails received from diverse industry stakeholders.
- **Cross-Sector Representation:** Input spanned critical infrastructure, financial services, healthcare, cloud services, and identity/security companies.
- **Varied Perspectives:** Feedback reflected diverse views on enterprise-internal, consumer-facing, and externally owned agents.

Key Feedback

- **Standards Evolution:** Build upon existing protocols rather than starting from scratch.
- **Cross Boundary Trust:** Demonstrate and provide practical insights on dealing with agentic workflows that cross trust boundaries.
- **Multi-Agent Flows:** Define projects that address challenges associated with multiple agents including managing authorization and delegation between agents.

→ Next Steps

Publish a **Summary Report** of the feedback received on the concept paper, then develop a **Project Description** to refine scope, approach, technology stack and standards for the project.

NIST GenAI Program

The GenAI pilot measures and understands system behavior for discriminating between synthetic and human-generated content in different modalities.

Specific goals of the program are to:

- Create state-of-the-art benchmark datasets
- Measure and improve content detection technologies for different modalities (text, audio, image, video, code)
- Support the development of technologies for authenticating the source of synthetic content

Upcoming Deliverables:

- Gen AI Code Challenge: testing AI-generated software code
- GenAI Text Challenge: testing text indistinguishability and believability
- GenAI Audio Challenge: testing deepfake voice tasks
- GenAI Watermarking Challenge testing embedding telltales in AI-generated images

NIST GenAI Text-to-Text

The pilot study aimed to measure:

- The effectiveness of AI-generated text in mimicking human writing
- The ability of AI-based discriminators to distinguish between human- and AI-generated content
- **Results:** While AI-generated summaries increasingly resemble human writing, detection models remain reasonably effective in distinguishing between them
- Future work will focus on refining evaluation methodologies, expanding assessments across text, image, and audio domains, and developing standardized benchmarking protocols



ITL's Role in AI Standards Development and Key Initiatives

ITL-Led AI Standards Efforts

In addition to other workstreams, NIST actively drives and contributes to the development of voluntary standards through the following channels.

Federal AI Standards
Coordination Working
Group (AISCWG)

Zero Draft:
Documentation of AI
Datasets and Models

Zero Draft: Concepts and
Foundational Guidance for
AI TEVV

Report: Towards an
Approach for Evaluating
the Impact of AI
Standards

USG AI Standards Coordinator



NIST works across government and with industry to identify critical standards development activities, strategies, and gaps.



NIST is coordinating in part through the Interagency Committee on Standards Policy (ICSP) AI Standards Coordination Working Group (AISCWG).



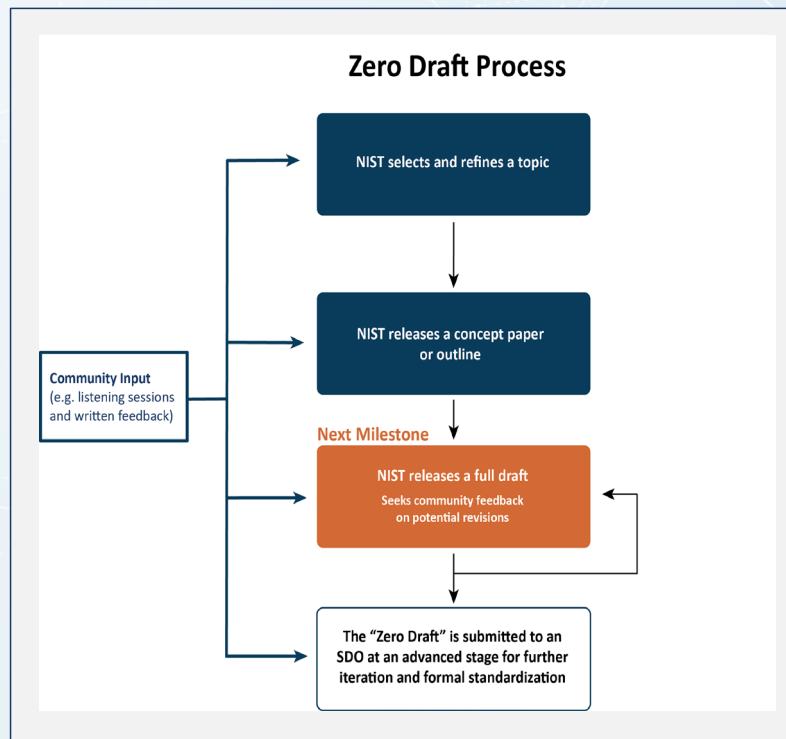
NIST seeks out AI standards development opportunities, periodically collecting information about agencies' AI standards-related priority activities and making recommendations through the interagency process to optimize engagement.

Helping Standards Meet the Community's Needs

NIST launched a new AI Standards **“Zero Drafts” Pilot Project** to accelerate the creation of AI standards and broaden stakeholder participation.

NIST released two initial “zero drafts” for public comment.

One focused on **testing, evaluation, verification, and validation for AI**; the other on **documentation for AI actors**.



Standards keep frontier AI trusted, interoperable and secure.

Thank you and please be in touch.



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nist.gov/artificial-intelligence