The International AI Standards Landscape:

ITL's Role, Priorities, and Progress

NIST INFORMATION TECHNOLOGY LABORATORY

NIST Strategy for American Technology Leadership in the 21st Century

Aligning with president's science and technology agenda, NIST will focus on:

1. Accelerating the buildout and scale-up of the U.S. quantum industrial base
2. **Solidifying American dominance in AI innovation**
3. Harnessing the power of biotechnology
4. Growing U.S. leadership in semiconductors

NIST champions the U.S. industry-led, market-driven, and voluntary approach to international standards development.

nist.gov/director/strategic-priorities

AI Innovation for the 21st Century

NIST will catalyze American AI innovation by partnering with industry to accelerate development and adoption of AI systems and applications, including:

- AI-driven autonomous agents to **increase U.S. manufacturing productivity.**
- AI-based agents to **protect/secure U.S. critical infrastructure from cyberthreats**
- Consistency in **measurement of AI system performance, reliability, and security**.
- U.S. capacity to **rapidly evaluate** AI system capabilities.

NIST and the AI Action Plan

- White House released America's AI Action Plan on July 23, 2025, unveiling over 90 Federal policy actions
- DOC involved in over 60 actions; **NIST tasked to lead 31 actions and support 15** others
- Tasks assigned to multiple NIST groups
- **Information Technology Laboratory (ITL) has a major role**

AI@NIST: ITL and CAISI work together to advance AI innovation.

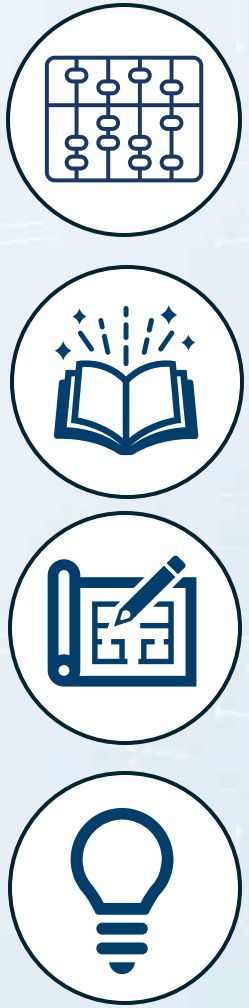
ITL's AI Program

Transforming the way that AI systems' trustworthiness is measured to ensure that AI is responsibly, reliably, and efficiently deployed and used.

Empowering industry and government to make informed decisions about how to manage AI benefits and risks by **delivering essential resources that provide assurances about AI use**.

Enabling the U.S. to be at the forefront in **applying AI to high-priority domains and sectors** by developing innovative approaches to address scientific, technical, and measurement challenges.

Positioning the U.S. as a pre-eminent force in the AI technical standards arena, ensuring that the nation can drive global AI innovation.



CAISI

Leading evaluations and assessments of U.S. and adversary AI systems, including adoption of foreign AI models and potential security vulnerabilities or malign foreign influence.

Developing best practices for improving AI security and contributing to evaluation metrology, sharing lessons learned with the community.

Establishing Voluntary Agreements with frontier AI Developers for pre-release access to perform national security related evaluations.

Coordinating with Federal Agencies to develop and conduct targeted national security testing on cyber and chem bio risks.

ITL's AI North Star

To strengthen trust in AI, accelerate its adoption, and expand U.S. AI dominance by providing the vital measurement science, testing and evaluation, guidance, and standards.

NIST INFORMATION TECHNOLOGY LABORATORY

ITL is uniquely positioned to make critical impacts in four major areas:

#1 ADVANCING TESTING, EVALUATION, VERIFICATION, AND VALIDATION (TEVV) FOR TRUSTWORTHY AI
Transforming the measurement of AI – especially system trustworthiness – via TEVV to ensure that AI is deployed and used responsibly, reliably, and efficiently

#2 EMPOWERING INFORMED DECISION-MAKING
Providing resources for managing AI benefits and risks, empowering industry, government to make informed decisions about AI trustworthiness and use

#3 GLOBAL STANDARDS LEADERSHIP
Positioning U.S. as preeminent in AI technical and governance standards – ensuring U.S. leads global AI innovation, combats adversaries' growing influence

#4 DOMAIN-SPECIFIC ADVANCES
Enabling U.S. to lead in applying AI to high-priority area – including manufacturing and cybersecurity for critical infrastructure – via innovative approaches to address measurement challenges

NIST INFORMATION TECHNOLOGY LABORATORY

Accelerating U.S. Dominance in AI & Quantum

NIST has **created two Emerging Technology Accelerators** that will build upon and optimize NIST's existing, trusted foundation in AI and Quantum Technologies to accelerate U.S. development and adoption of AI and quantum sensor technologies

- Acceleration "hubs": **Leverage and enhance NIST's core research and standards mission capabilities**
- Acceleration Centers or "spokes": **Leverage and enhance industry capabilities using adaptive and flexible public-private partnerships** to co-develop, pilot, and implement new technology advances

AI Accelerator

Creating unprecedented AI "gold standards" to empower U.S. AI developers and users to trust and adopt AI, innovate, and lead the world in AI technology development

Achieving true reliable, secure, and trustworthy AI in areas that are high priorities for U.S. economic and national security to unlock what AI does and predict how it will operate, so that U.S. companies will reap the benefits of AI

Quantum Technology Accelerator

Reducing size, weight, power, and cost (SWaP-C) of quantum sensors and components

Achieving high performance and scalability necessary for economic impact by overcoming major engineering barriers.

Realizing quantum sensor field deployment through rugged design and advanced manufacturing

AI Economic Security Acceleration Centers

Accelerate development and adoption of AI-driven autonomous agents for increased **U.S. Manufacturing Productivity**.

- Advance AI-based “human-in-the-loop” robotics and autonomous systems.
- Unleash innovation to adaptably produce cost-competitive, high-value, and customizable American products (e.g., high-mix manufacturing).

Accelerate development and adoption of **AI-based agents to Secure U.S. Critical Infrastructure from Cyberthreats**.

- Advance AI-based agents for ultra-highspeed cyberthreat detection and remediation to protect and secure critical infrastructure grids (power, telecom, water, finance, health).

Contact Us:

Scan the code to subscribe for AI-related updates from NIST's Information Technology Laboratory (ITL)

Or email us: itl-ai-program@nist.gov

Next webinar: "Building Traceability into Agentic AI Ecosystems Through Measurement Probes" (April)

The International AI Standards Landscape:

ITL's Role, Priorities, and Progress

NIST INFORMATION TECHNOLOGY LABORATORY

Agenda

The AI Standards Landscape

NIST's Role in AI Standards

ITL's Pre-Standardization Work on AI

The AI Standards Zero Drafts Project

Agenda

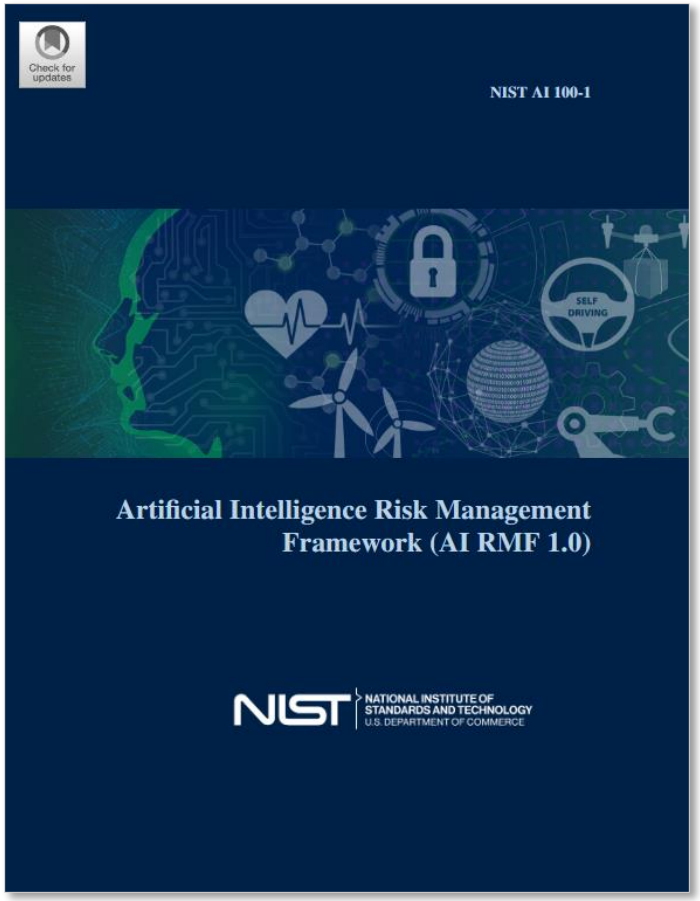
The AI Standards Landscape

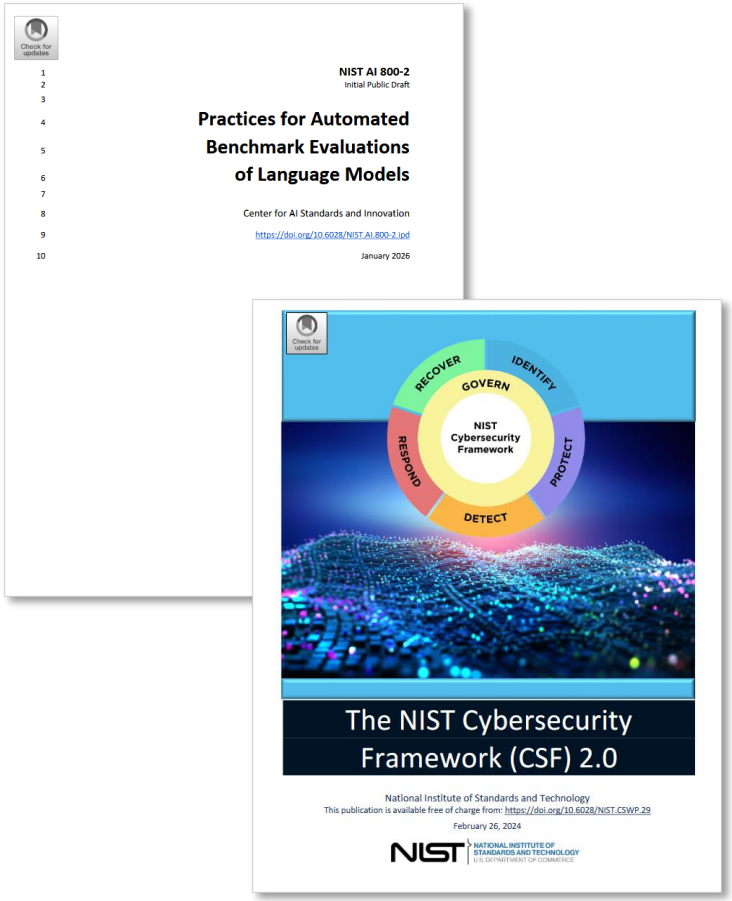
NIST's Role in AI Standards

ITL's Pre-Standardization Work on AI

The AI Standards Zero Drafts Project

NIST and other agencies regularly produce voluntary **guidelines** for private actors.





“**Standards**”* means something different.

* Sometimes called **documentary standards**.

“A document, established by **consensus** and approved by a **recognized body**, that provides – for common and repeated use – **rules, guidelines or characteristics** for **activities** or for their **results**…”

—ISO (emphasis added)

ISO

IEEE SA

AAMI

ASTM INTERNATIONAL

IEC

CTA™
Consumer Technology Association, producer of CES®

SAE INTERNATIONAL®

…

People have many different systems in mind when they speak of “AI.”

Many definitions have been offered, but there is no perfectly crisp, clean distinction.

NIST AI RMF 1.0

An **engineered or machine-based** system that can, for a given set of **objectives, generate outputs** such as predictions, recommendations, or decisions **influencing real or virtual environments**. AI systems are designed to operate with varying levels of autonomy.

ISO/IEC 22989:2022

Engineered system that **generates outputs** such as content, forecasts, recommendations or decisions for a given set of **human-defined objectives**.

OECD Recommendation on AI (2024 version)

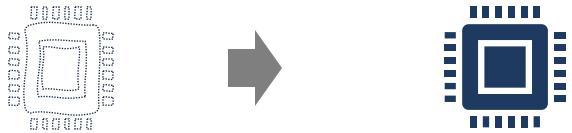
A **machine-based** system that, for explicit or implicit objectives, **infers**, from the **input it receives**, **how to generate outputs** such as predictions, content, recommendations, or decisions that can **influence physical or virtual environments**. Different AI systems vary in their levels of autonomy and adaptiveness after deployment.

National AI Initiative Act of 2020

A **machine-based** system that can, for a given set of **human-defined objectives**, make predictions, recommendations or decisions **influencing real or virtual environments**. [AI] systems use **machine and human-based inputs** to: (A) **perceive** real and virtual environments; (B) **abstract** such perceptions into **models** through analysis in an automated manner; and (C) use **model inference** to **formulate options** for information or action.

AI standards differ from many other standards in several notable ways.

Trailing the technology



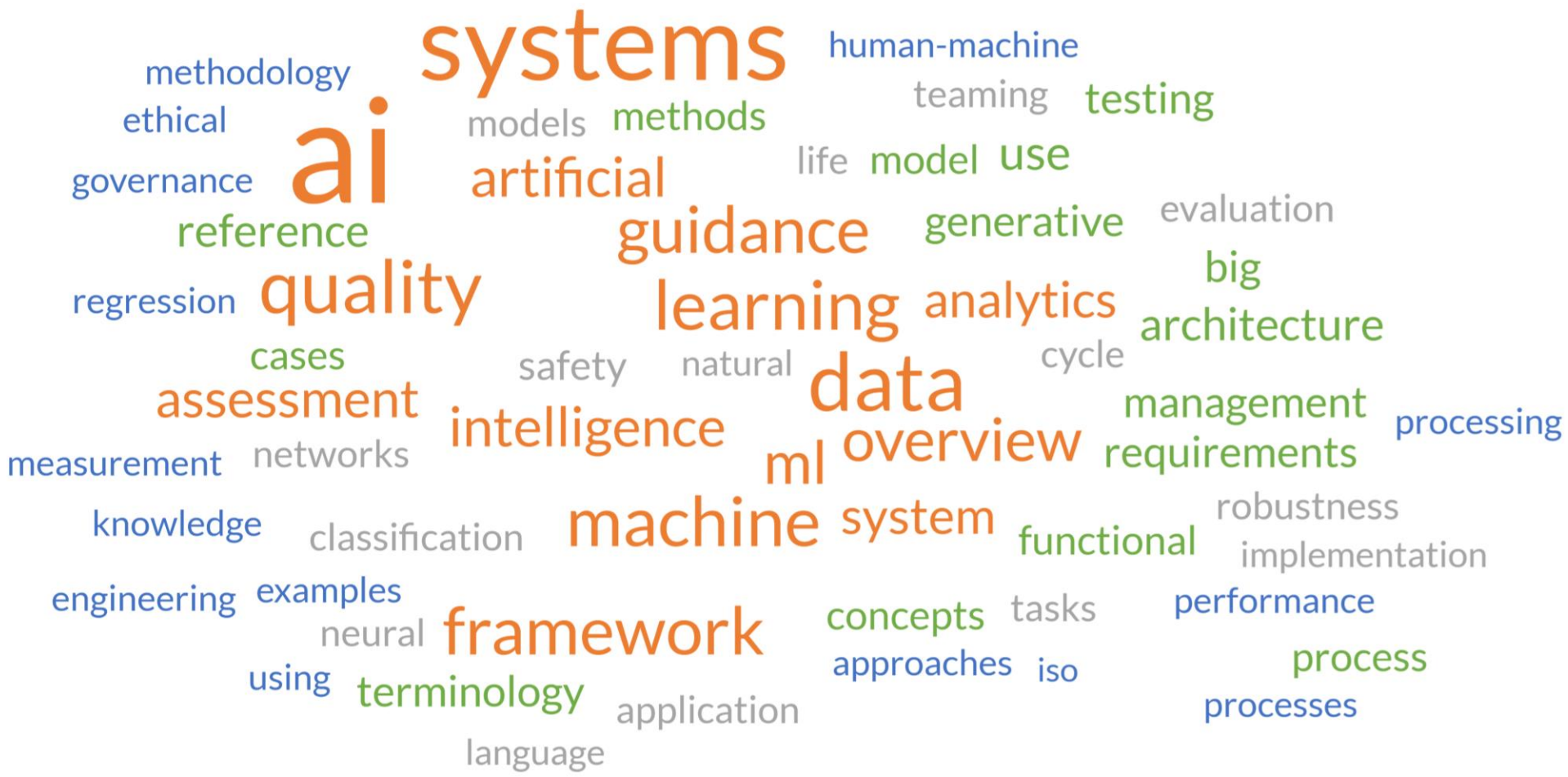
Enable functional tech

- Converge on concepts/terms
- Set governance norms
- Measure and evaluate

Sociotechnical

Help implement high-level frameworks

Much of the action is in ISO/IEC JTC 1/SC 42, whose suite of AI standards covers a wide range of topics.



42001 and the accompanying standards are sometimes viewed as SC 42's flagship products, but there are dozens more.


INTERNATIONAL STANDARD

ISO/IEC 42001

First edition
2023-12

Information technology — Artificial intelligence — Management system

Technologies de l'information — Intelligence artificielle — Système de management


DRAFT INTERNATIONAL STANDARD
ISO/IEC DIS 42005

Information technology — Artificial intelligence — AI system impact assessment

DRAFT INTERNATIONAL STANDARD
ISO/IEC DIS 42006

Information technology — Artificial intelligence — Requirements for bodies providing audit and certification of artificial intelligence management systems

Other SDOs also have produced or are working on sector-independent AI standards.

IEEE SA

ITU

...

CEN CENELEC

CTA™
Consumer Technology Association, producer of CES®

Note: List is not comprehensive

SDOs are also developing sector-specific AI-related standards.

IEEE SA

ISO

AAMI

ASTM INTERNATIONAL

SAE INTERNATIONAL®

IEC

CTA™
Consumer Technology Association, producer of CES®

...

Note: List is not comprehensive

Agenda

The AI Standards Landscape

NIST's Role in AI Standards

ITL's Pre-Standardization Work on AI

The AI Standards Zero Drafts Project

NIST's **Strategy for American Technology Leadership in the 21st Century** features a strong AI standards nexus.

AI Innovation for the 21st Century

NIST will catalyze American AI innovation by partnering with industry to **accelerate development and adoption of AI systems and applications**. NIST will accelerate:

- Development and adoption of AI-driven autonomous agents for increased U.S. manufacturing productivity.
- Development and adoption of AI-based agents to protect and secure U.S. critical infrastructure from cyberthreats.
- Adoption of American AI products by **driving consistency in the measurement of AI system performance, reliability, and security.**
- U.S. capacity to rapidly evaluate AI system capabilities to promote American AI innovation

Bolster American Leadership in Standards

NIST will continue to **champion the United States' industry-led, market-driven, and voluntary approach** to international standards development…

NIST will accelerate:

- **U.S. engagement and leadership in international standards for CETs.**
- **Development and adoption of science-based standards for CETs** to promote U.S. trade.
- **Strategic engagement, participation, and leadership** in international standards bodies.
- **Standards policy coordination** across the U.S. government.

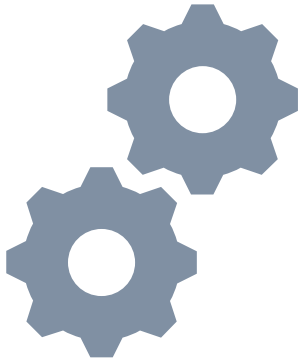
AI standards are also called out in the administration's **AI Action Plan.**

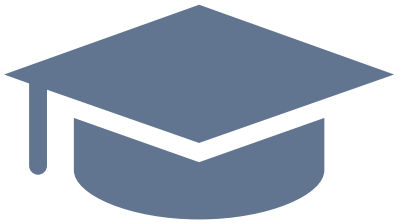
A large number of international bodies…have proposed AI governance frameworks and AI development strategies. The United States supports like-minded nations working together to encourage the development of AI in line with our shared values…

Recommended Policy Actions

- Led by DOS and DOC, **leverage the U.S. position in international diplomatic and standard-setting bodies** to vigorously advocate for international AI governance approaches that promote innovation, reflect American values, and counter authoritarian influence.

In the U.S. system, government agencies are one set of stakeholders among many in standards development.





NIST and peer institutions play a special role.

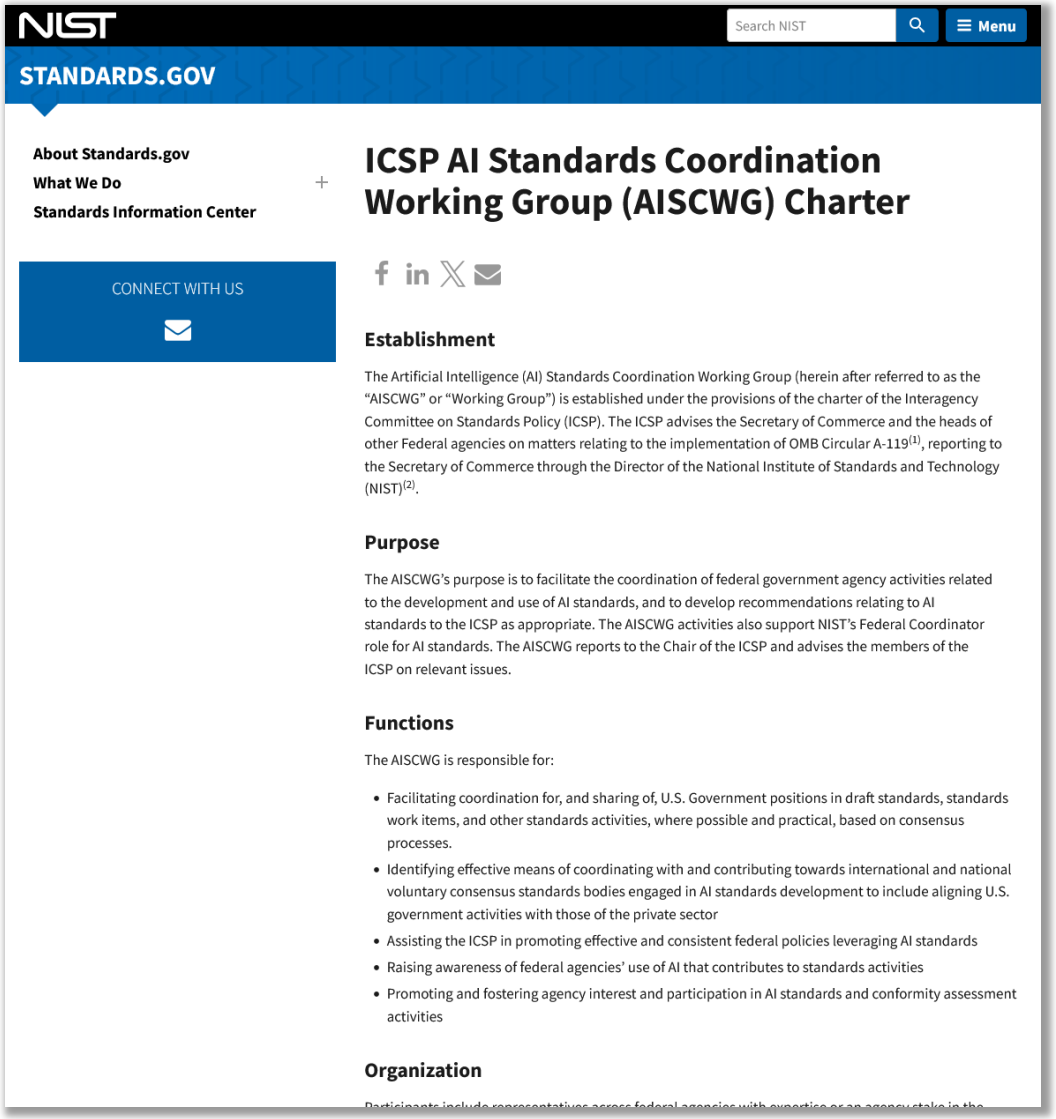
NIST Mission: "…advancing measurement science, **standards**, and technology…"

NIST and peer institutions play a special role.

NIST Mission: "…advancing measurement science, **standards**, and technology…"

And helping other U.S. stakeholders do all three!

NIST/ITL coordinates U.S. Government involvement in AI standardization.



NIST Search NIST Menu

STANDARDS.GOV

About Standards.gov
What We Do +
Standards Information Center

CONNECT WITH US

ICSP AI Standards Coordination Working Group (AISCWG) Charter

Establishment

The Artificial Intelligence (AI) Standards Coordination Working Group (herein after referred to as the "AISCWG" or "Working Group") is established under the provisions of the charter of the Interagency Committee on Standards Policy (ICSP). The ICSP advises the Secretary of Commerce and the heads of other Federal agencies on matters relating to the implementation of OMB Circular A-119[1], reporting to the Secretary of Commerce through the Director of the National Institute of Standards and Technology (NIST)[2].

Purpose

The AISCWG's purpose is to facilitate the coordination of federal government agency activities related to the development and use of AI standards, and to develop recommendations relating to AI standards to the ICSP as appropriate. The AISCWG activities also support NIST's Federal Coordinator role for AI standards. The AISCWG reports to the Chair of the ICSP and advises the members of the ICSP on relevant issues.

Functions

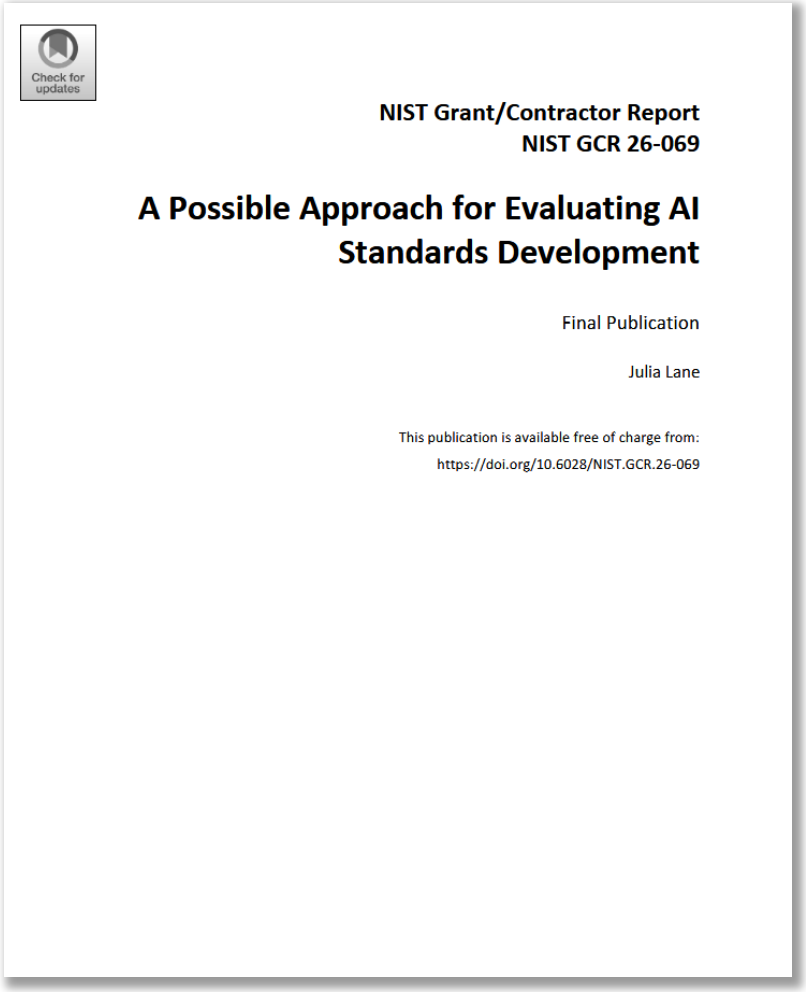
The AISCWG is responsible for:

- Facilitating coordination for, and sharing of, U.S. Government positions in draft standards, standards work items, and other standards activities, where possible and practical, based on consensus processes.
- Identifying effective means of coordinating with and contributing towards international and national voluntary consensus standards bodies engaged in AI standards development to include aligning U.S. government activities with those of the private sector
- Assisting the ICSP in promoting effective and consistent federal policies leveraging AI standards
- Raising awareness of federal agencies' use of AI that contributes to standards activities
- Promoting and fostering agency interest and participation in AI standards and conformity assessment activities

Organization

https://www.nist.gov/standardsgov/icsp-ai-standards-coordination-working-group-aiscwg-charter

NIST/ITL also helps the standards community steer toward more effective AI standards.



Check for updates

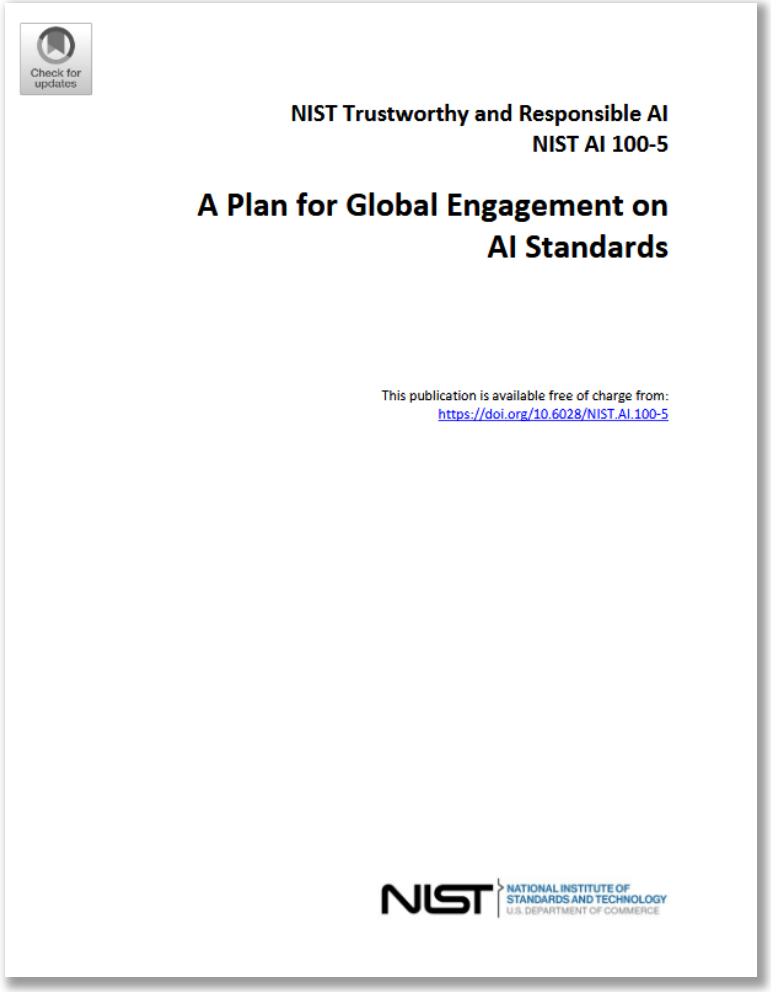
NIST Grant/Contractor Report
NIST GCR 26-069

A Possible Approach for Evaluating AI Standards Development

Final Publication

Julia Lane

This publication is available free of charge from:
https://doi.org/10.6028/NIST.GCR.26-069



Check for updates

NIST Trustworthy and Responsible AI
NIST AI 100-5

A Plan for Global Engagement on AI Standards

This publication is available free of charge from:
https://doi.org/10.6028/NIST.AI.100-5

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

NIST/ITL, in collaboration with stakeholders, identified priority topics for standardization.

Urgently needed; ready for standardization
(Terminology, taxonomy, TEVV methods/metrics, security/privacy, transparency between AI actors…)

Needed, but requiring more scientific work or maturity before standardization
(Energy usage, conformity assessment, testing/evaluation datasets)

Needed, but requiring significant foundational work
(Interpretability, explainability, human-AI interaction design for decision-making)

NIST/ITL engages in standardization activities by gathering stakeholder input, then formulating NIST views and sharing them within SDOs.

NIST's contributions span many standards topics and projects (mainly in ISO/IEC SC 42).

WG 1 (Foundational standards)

- 22989 – Concepts and terminology – GenAI amendment
- 42102 – Characterizing AI system methods and capabilities
- 42003 – Guidance on applying 42001
- 25870 – Data schema for AI incident reporting *(editor)*

WG 2 (Data)

- 42103 – Overview of synthetic data concepts/methods

WG 3 (Trustworthiness)

- 25058 – SQuaRE (software quality) for AI
- 25570 – Reliability assessment of AI systems
- 25568 – Addressing risks in GenAI systems

WG 4 (Use cases and applications)

- 25589 – Framework for human/machine teaming

WG 5 (Computational approaches/characteristics)

- 4213 – Performance metrics for classification, regression, clustering, and recommendation

JWG 2 (Collaboration with software testing SC)

- 42119 series – Testing of AI (inc. two parts on red-teaming)

JWG 5 (Natural language processing)

- 23281 – Overview of NLP tasks
- 23282 – Metrics for NLP tasks

JWG 6 (Conformity assessment)

- 42007 – Conformity assessment schemes for AI

SC 27 WG 5

- 27090 – Security of AI systems

Agenda

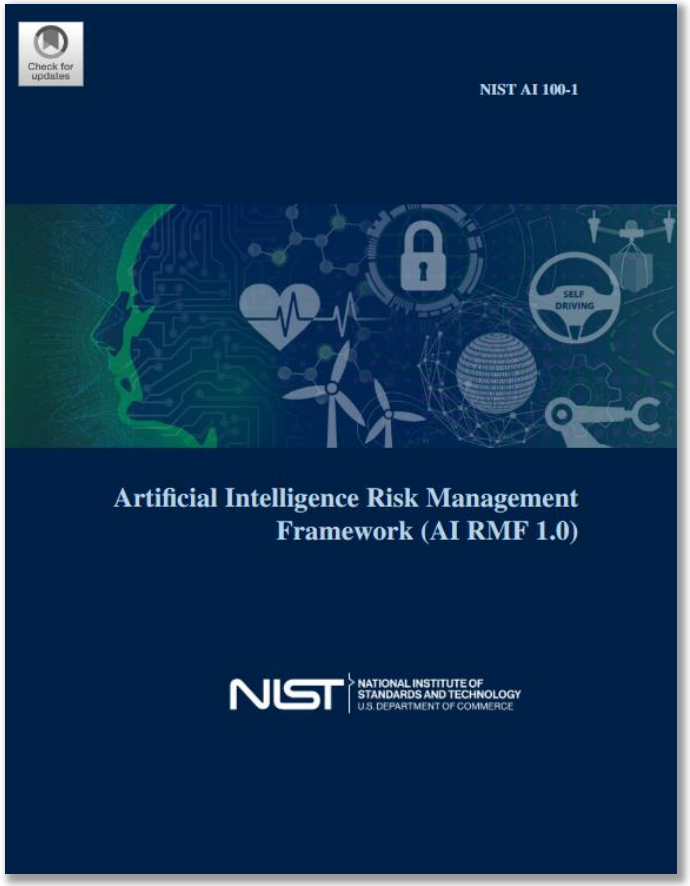
The AI Standards Landscape

NIST's Role in AI Standards

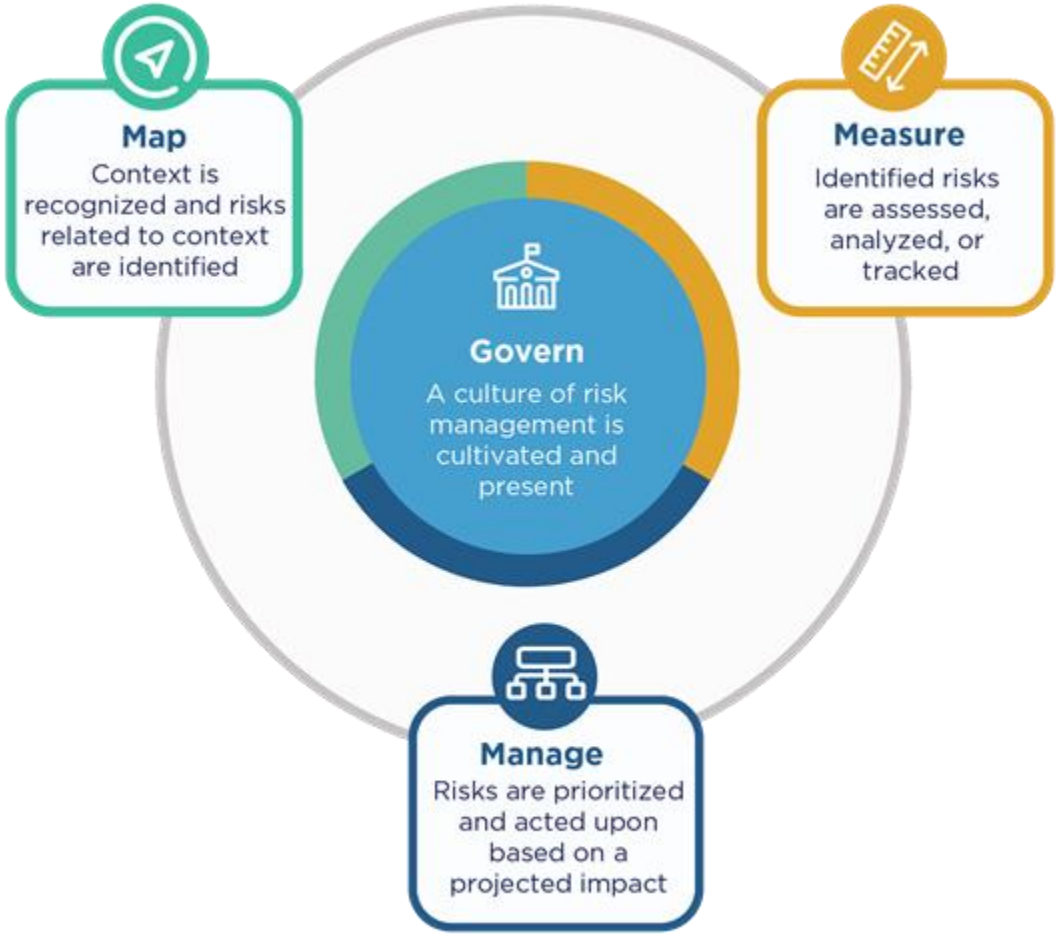
ITL's Pre-Standardization Work on AI

The AI Standards Zero Drafts Project

NIST has put out publications of its own that guide or inform AI standards development.



The AI RMF offers detailed voluntary guidance to operationalize AI governance principles. It has been explicitly referenced in standards.



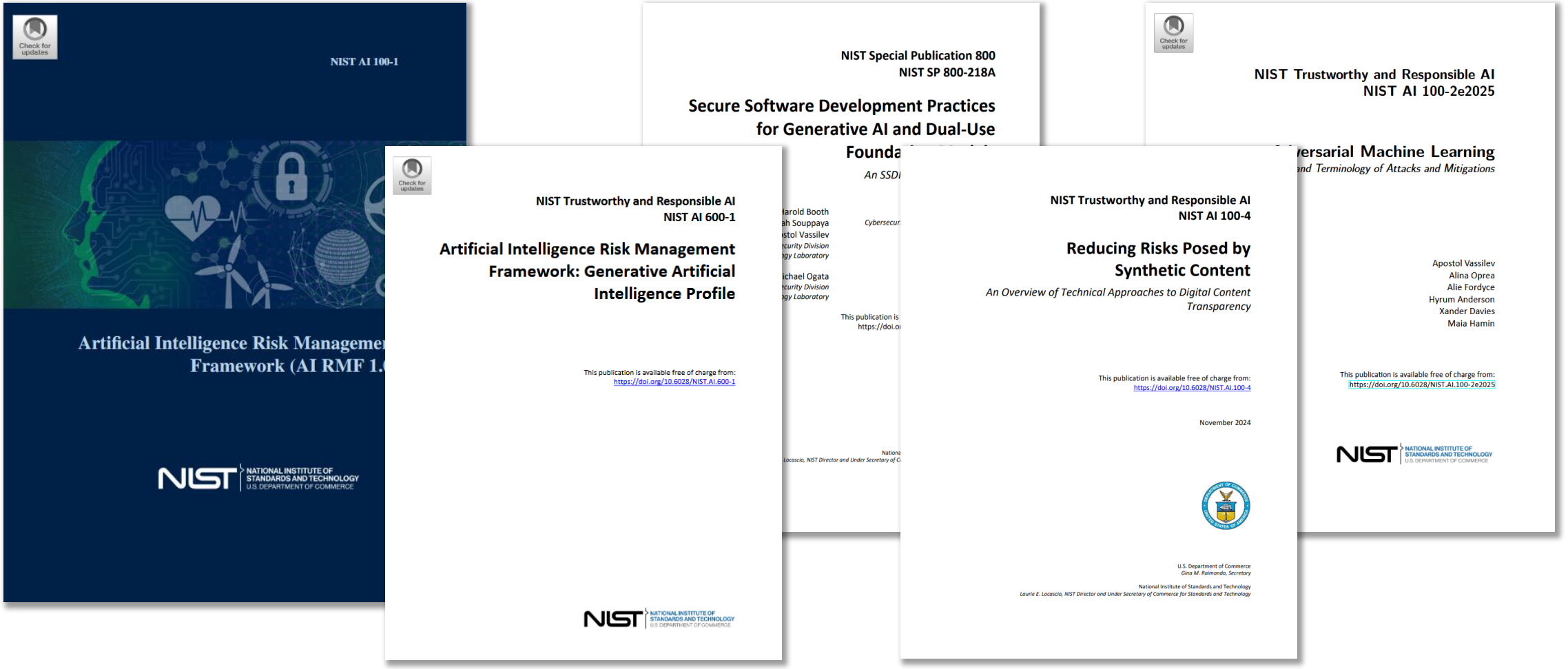
The AI RMF has also been “crosswalked” with multiple frameworks and standards.

Crosswalk Document List

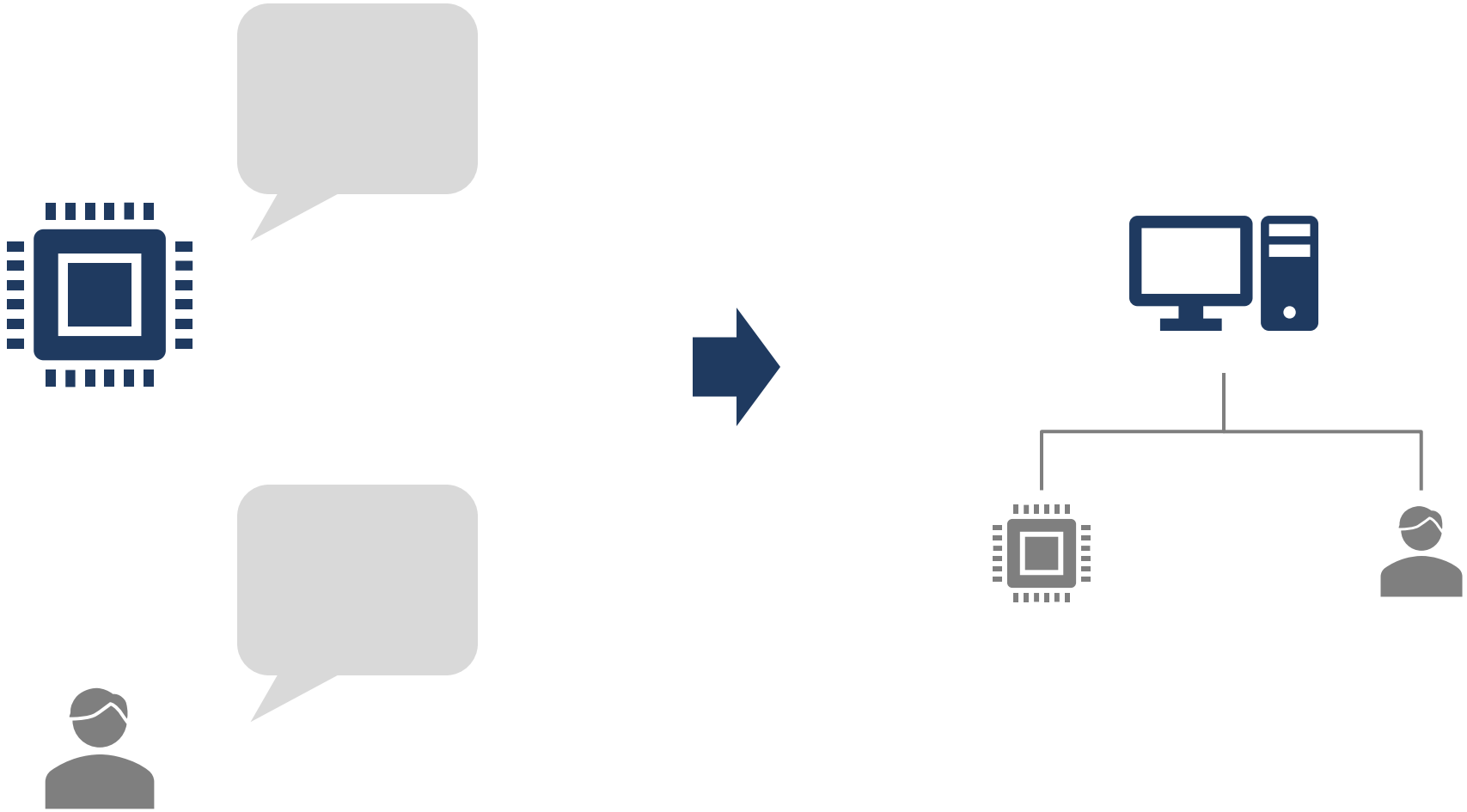
Document title	Description	Provider
Crosswalk ISO/IEC 23894 and NIST AI RMF (Revised)	Revised crosswalk between ISO/IEC 23894 and the NIST AI Risk Management Framework *(Aug 14, 2025)*	INCITS/AI
Crosswalk ISO/IEC 42005 and NIST AI RMF	Crosswalk between ISO/IEC 42005 and the NIST AI Risk Management Framework *(Aug 14, 2025)*	INCITS/AI
Crosswalk NIST AI 600-1 + Singapore/ IMDA AI Verify	Crosswalk between NIST’s AI Risk Management Framework Generative AI Profile (AI 600-1) and Singapore / IMDA AI Verify Testing Framework *(May 28, 2025)*	Singapore / IMDA
Crosswalk NIST AI RMF + TTA Guidebook	Crosswalk between NIST’s AI Risk Management Framework and Korea’s Guidebook for Development of Trustworthy AI *(December 23, 2024)*	Korea TTA
Japan AI Guidelines for Business	J-AISI/NIST Crosswalk-1 Terminology *(April 29, 2024)* J-AISI/NIST Crosswalk-2 Concepts *(September 17, 2024)*	Japan AISI
[illegible]	INCITS-AI Crosswalk between the NIST AI RMF and	[illegible]

https://airc.nist.gov/airmf-resources/crosswalks/

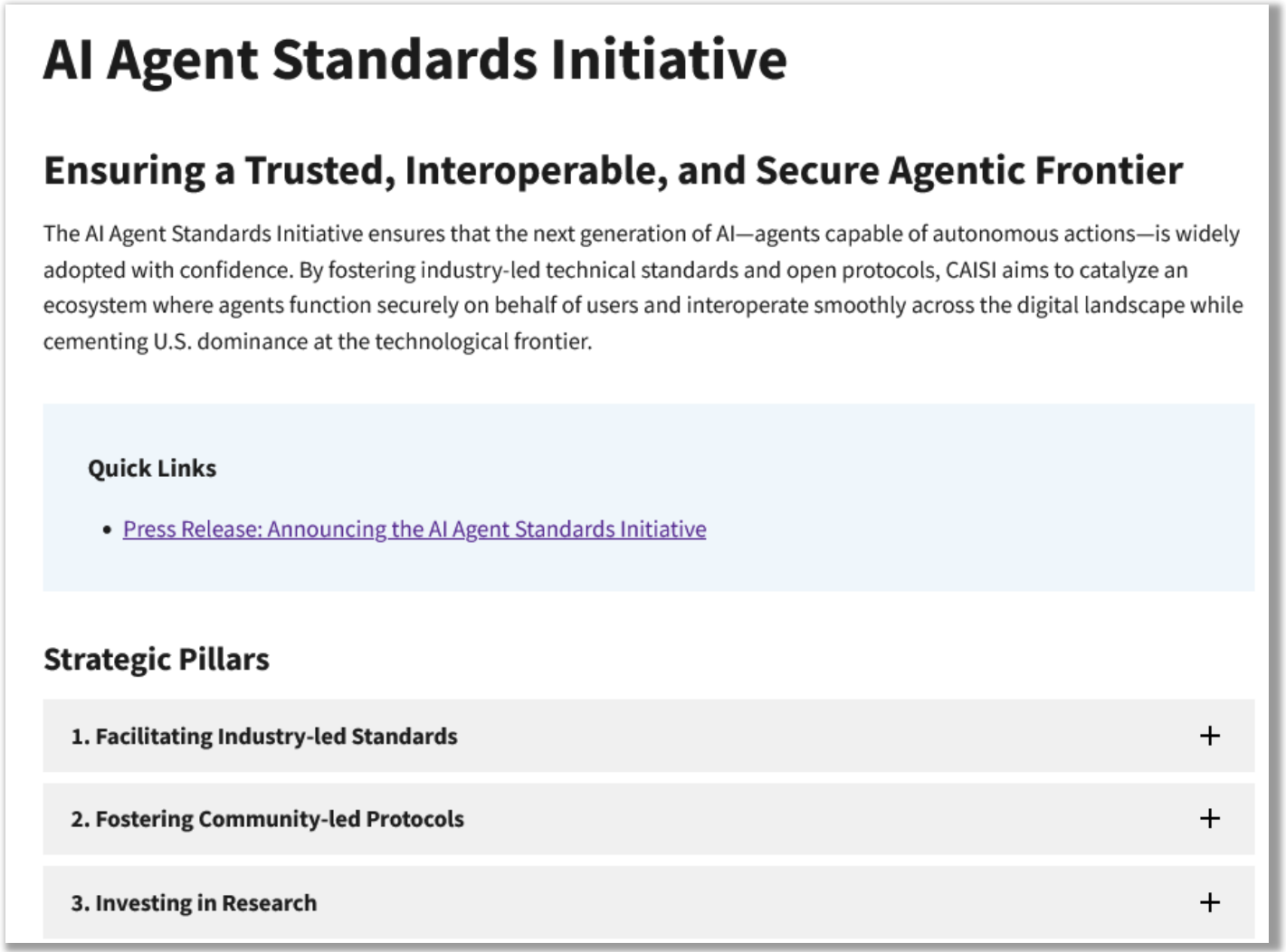
NIST has put out publications of its own that guide or inform AI standards development.



The GenAI Challenge is pitting AI generators against AI “discriminators” (detectors).



ITL also works on AI-related technical protocols (e.g., for agents) that are sometimes created outside formal SDOs.



AI Agent Standards Initiative

Ensuring a Trusted, Interoperable, and Secure Agentic Frontier

The AI Agent Standards Initiative ensures that the next generation of AI—agents capable of autonomous actions—is widely adopted with confidence. By fostering industry-led technical standards and open protocols, CAISI aims to catalyze an ecosystem where agents function securely on behalf of users and interoperate smoothly across the digital landscape while cementing U.S. dominance at the technological frontier.

Quick Links

- Press Release: Announcing the AI Agent Standards Initiative

Strategic Pillars

1. Facilitating Industry-led Standards +
2. Fostering Community-led Protocols +
3. Investing in Research +

Agenda

The AI Standards Landscape

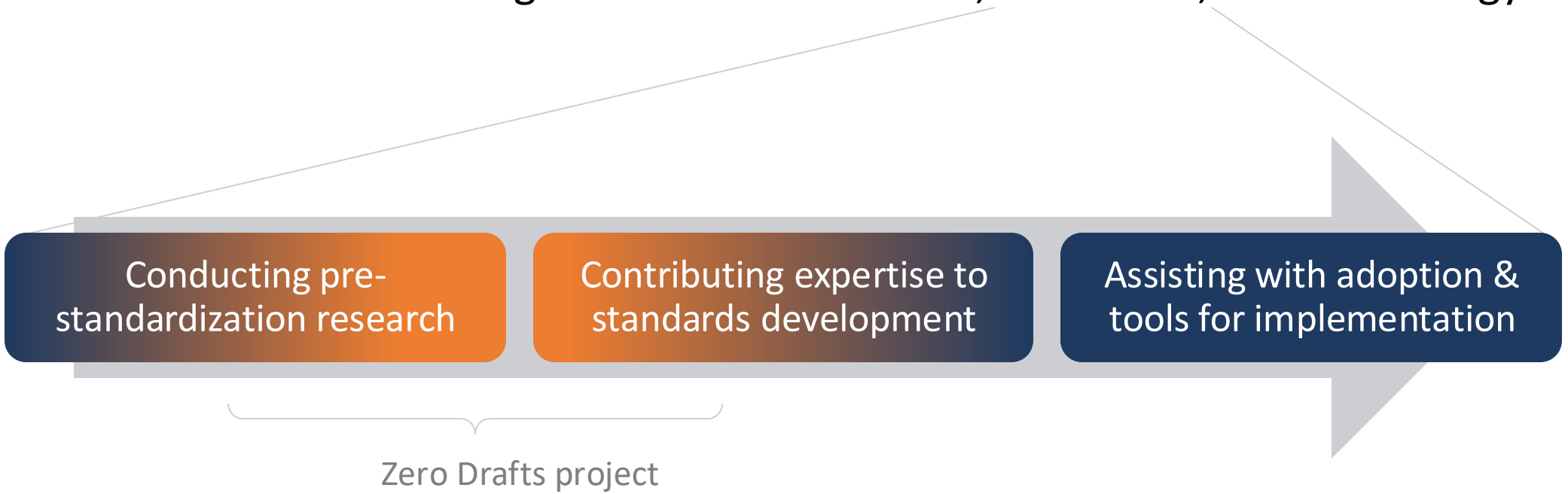
NIST's Role in AI Standards

ITL's Pre-Standardization Work on AI

The AI Standards Zero Drafts Project

The Zero Drafts project is a pre-standardization effort explicitly meant to feed into formal standards development.

NIST Mission: "…advancing measurement science, **standards**, and technology…"

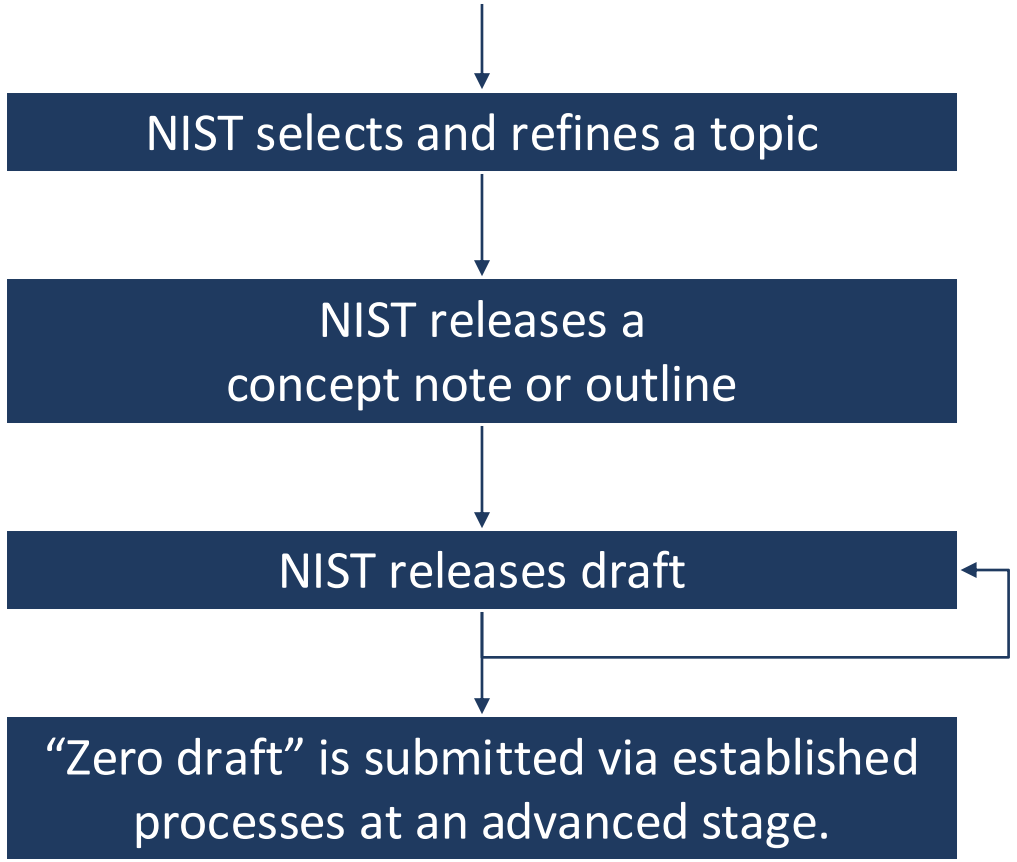


AI standards stakeholders have repeatedly emphasized two challenging needs to NIST.

We need standards on some of these topics **ASAP**.

We need expertise from a **very wide range of stakeholders**, including varied types/locations, in AI standards development.

In response, NIST is piloting a new process to accelerate and broaden AI standards development.



The pilot is producing documents on two of the four topics initially offered by NIST.

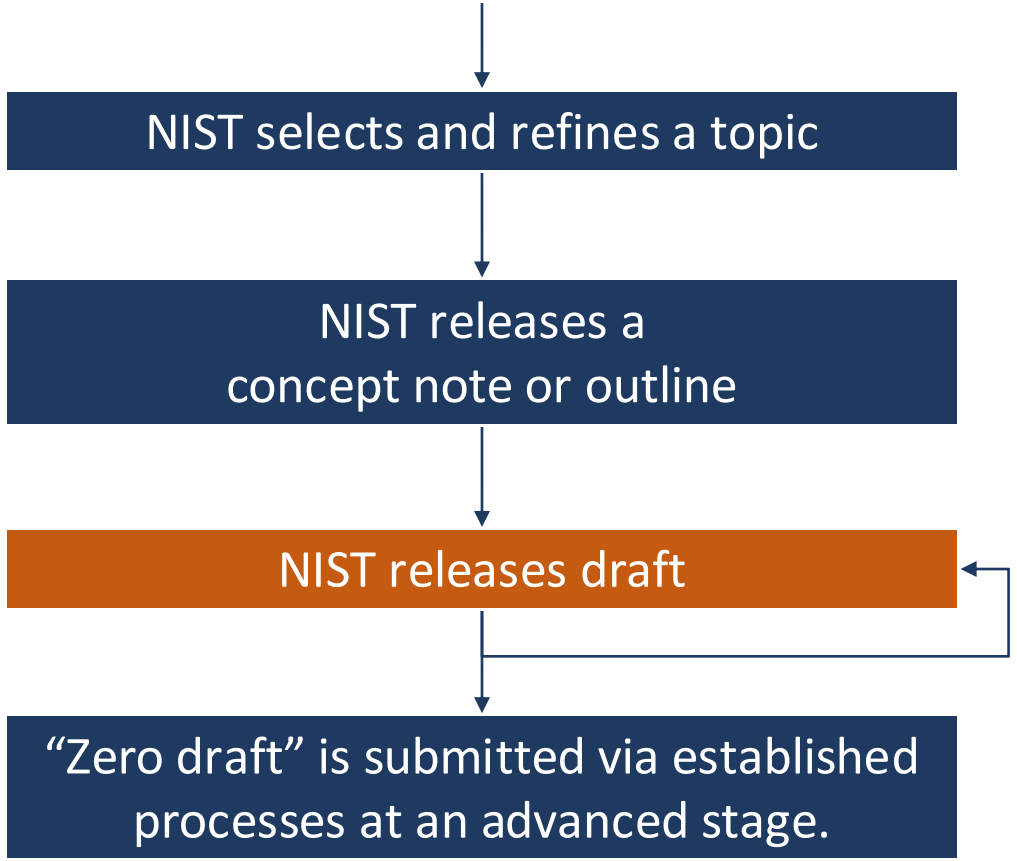
Public documentation of AI datasets & models

Technical measures for synthetic content risks

Testing, evaluation, verification, & validation (TEVV)

Concepts and terms for AI system structures and actors

We are working to draft concrete text based on our outlines and the feedback received.



We are leveraging many sources of input.

Email
ai-standards@nist.gov

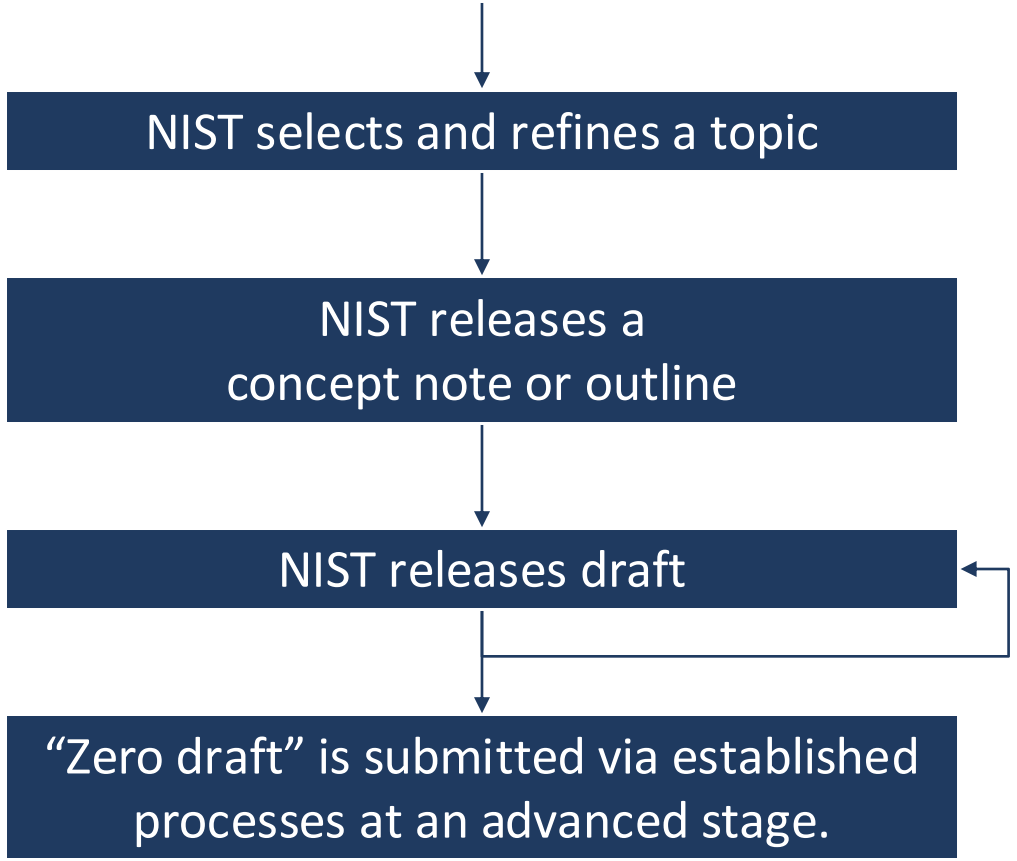
AI Standards Coordination Working Group

Listening sessions organized by external entities

NIST AI consortium

Consortium icon by BAMBANG G for The Noun Project

We're excited to see whether this process can speed up and broaden standards development!



There are many ways to get involved in AI standardization.

Participate in SDOs

Help form coalitions to push back on ill-founded work

Share views with NIST

Share input on NIST's Zero Drafts

Reach our AI standards team at ai-standards@nist.gov!

Contact Us:

Scan the code to subscribe for AI-related updates from NIST's Information Technology Laboratory (ITL)

Or email us: itl-ai-program@nist.gov

Next webinar: "Building Traceability into Agentic AI Ecosystems Through Measurement Probes" (April)