A Report to Congress: Steps to Implement Recommendations Regarding "U.S. Leadership in Artificial Intelligence (AI): A Plan for Federal Engagement in Developing Technical Standards and Related Tools"

This report is in response to two requirements in House Report 116-455 accompanying the Consolidated Appropriations Act, 2021 (P.L 116-260):

1) *"U.S. Leadership in AI. —The Committee commends NIST for the completion of the plan, ''U.S. Leadership in AI,'' and encourages NIST to implement its recommendations, as appropriate. Further, the Committee directs NIST, on behalf of the Department, and in consultation with the Office of Personnel Management, the Interagency Committee on Standards Policy, other interagency groups, and Federal agencies, as NIST considers appropriate, to develop a clear career development and promotion path that recognizes and encourages participation in and expertise in AI standards development within the Federal workforce. NIST is also directed, in coordination with appropriate Federal agencies, to understand AI standards strategies and initiatives of standards organizations, foreign governments and entities, to the extent practicable. No less than 180 days after the enactment of this Act, the Department shall submit a report to the Committee on the steps it has taken to implement the recommendations of the U.S. Leadership in AI plan."*

2) *"AI Talent. —The Committee believes the Department should develop a clear career development and promotion path that encourages participation and expertise in AI standards and standards development and directs the Department to report to the Committee on these efforts no later than 180 days after enactment of this Act."*

Background of the AI Standards Plan

On August 9, 2019, the National Institute of Standards and Technology (NIST) issued "U.S. Leadership in AI: A Plan for Federal Engagement in Developing Technical Standards and Related Tools"[1] (AI Standards Plan or Plan), which addresses:

- Federal priority needs for standardization of AI systems development and deployment;
- Identification of standards development entities in which federal agencies should seek membership with the goal of establishing or supporting United States technical leadership roles; and
- Opportunities for and challenges to United States leadership in standardization related to AI technologies.

This plan was required by Executive Order 13859, which recognizing the importance of artificial intelligence (AI) to the future of the U.S. economy and national security, directed federal

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[1] https://www.nist.gov/system/files/documents/2019/08/10/ai_standards_fedengagement_plan_9aug2019.pdf.

agencies to take a variety of steps designed to ensure the nation maintains its leadership position in AI research and development and deployment. Among its objectives, the EO aims to "Ensure that technical standards minimize vulnerability to attacks from malicious actors and reflect federal priorities for innovation, public trust, and public confidence in systems that use AI technologies; and develop international standards to promote and protect those priorities."

Recommendations in the AI Standards Plan
NIST engaged with stakeholders from the private and public sectors in developing the AI Standards Plan. Recommendations in the Plan called for actions by federal agencies to:

- Bolster AI standards-related knowledge, leadership, and coordination among federal agencies to maximize effectiveness and efficiency.
- Promote focused research to advance and accelerate broader exploration and understanding of how aspects of trustworthiness can be practically incorporated within standards and standards-related tools.
- Support and expand public-private partnerships to develop and use AI standards and related tools to advance reliable, robust, and trustworthy AI.
- Strategically engage internationally to advance AI standards for U.S. economic and national security needs.

While the Plan was developed by NIST – which has specific leadership and coordination responsibilities for AI standards – many federal agencies are instrumental in carrying out the Plan's recommendations and the goals of the EO.

This Report to Congress
This document summarizes progress made in carrying out the recommendations of the 2019 AI Standards Plan, fulfilling a provision in the House Report accompanying the Commerce, Justice, Science, and Related Agencies Appropriations Bill, 2021.[2] As the Federal Government's AI standards coordinator, NIST continues to work with other government agencies in the United States and around the world, the private sector, and other stakeholders to regularly review and carry out the AI Standards Plan.

1. **Steps Taken to Implement Recommendations in the Plan**

The Plan provided guidance regarding priorities and appropriate levels of engagement in AI-standards-related matters. It also stated that the "Federal Government should commit to deeper, consistent, long-term engagement in AI standards development activities to help the United States to speed the pace of reliable, robust, and trustworthy AI technology development." The most notable activities to advance the AI Standards Plan are summarized in this report to Congress.

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[2] H. Rept. 116-455 - Commerce, Justice, Science, and Related Agencies Appropriations Bill, 2021 https://www.congress.gov/congressional-report/116th-congress/house-report/455.

Recommendation 1:
Bolster AI standards-related knowledge, leadership, and coordination among federal agencies to maximize effectiveness and efficiency.

Actions Taken to Implement Recommendation 1:

- The National Science and Technology Council (NSTC) Machine Learning/Artificial Intelligence (ML/AI) Subcommittee established the role of U.S. Government AI Standards Coordinator with responsibility to gather and share AI standards-related needs, strategies, roadmaps, terminology, use cases, and best practices in support of reliable, robust, and trustworthy AI in government operations, including:
    - planned and ongoing standards approaches and engagement activities, including a robust feedback loop with Standards Developing Organizations (SDOs);
    - specific horizontal or vertical areas for prioritization;
    - requirements for input into proposed standards activities; and
    - analyses of whether ongoing standards activities meet Federal Government needs and whether additional guidance is appropriate.

  The Subcommittee selected Elham Tabassi, Chief of Staff of the NIST Information Technology Laboratory, to fulfill the role of U.S. Government AI Standards Coordinator.

- As part of the U.S. Government AI Standards Coordinator responsibilities, the AI Standards Coordination Working Group (AISCWG) was established in April 2021, to facilitate coordination of government agency activities related to development and use of AI standards. The group operates under the charter of the Interagency Committee on Standards Policy (ICSP)[3]. Participants include representatives across federal agencies[4] with expertise and/or an agency stake in the development and implementation of AI standards. AISCWG activities fall within the oversight and scope of the Federal Coordinator for AI standards. The AISCWG is responsible for assisting the ICSP in promoting effective and consistent federal policies leveraging AI standards cited in the AI Standards Plan.

  The AISCWG raises awareness of federal agencies' standards needs based on their use of AI; fosters agency interest and participation in AI standards activities; fosters coordination of US Government positions regarding draft standards, standards work items, and other standards activities based on consensus processes; and establishes effective means of coordinating AI international standards activities with those of the private sector.

- To better understand federal agencies' AI standards needs and their current participation in AI standards activities – and to help in developing federal strategies for participation in AI standards – the AI Standards Coordinator developed a questionnaire.

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[3] https://www.nist.gov/standardsgov/interagency-committee-standards-policy-icsp.
[4] https://www.nist.gov/standardsgov/interagency-committee-standards-policy-icsp-members-0.

Input was collected from, and results were reviewed with, agencies – including members of the Networking and Information Technology Research and Development (NITRD) Subcommittee and the ICSP.

Nearly all agencies cited the relevance of AI to their business operations and/or their missions; some noted AI platforms are only now emerging but will play a larger role for them in the future. Overall, direct federal agency participation in AI standards activities was indicated to be minimal; in some cases, greater involvement was deemed valuable but not possible due to limited resources. Multiple respondents pointed to the need for improving coordination across agencies and ongoing data standards efforts as the most likely areas of focus for potential future activities related to AI standards. Making coordination difficult, several agencies indicated that their AI standards needs, and activities will be driven by operational needs and requirements as their agencies have very diverse AI standards-related needs. However, agencies consistently cited senior leadership as necessary for robust AI participation.

Multiple respondents singled out areas of cross-agency needs and opportunities regarding standards and related tools, including but not limited to: standards policies; encouraging early engagement; best practices; formatting/archiving/availability of large data sets; conformity assessment; risk management; standing up new AI/ML technological capabilities (e.g., AI maturation); and common procurement and contracting language including standardized specifications or considerations around AI to apply to vendors and AI offerings.

The AISCWG intends to address many of the gaps identified by agencies responding to the questionnaire.

- The Office of Personnel Management (OPM), Office of Science and Technology Policy (OSTP), National Science Foundation (NSF), Department of Defense (DOD) including the National Security Agency (NSA), Department of Energy (DOE), and Department of Veterans Affairs (VA), are among the departments and agencies individually and jointly reviewing options to better position the Federal Government to gain access to new employees and to develop current employees to meet rapidly growing AI-capable workforce needs. This includes aiming to develop and provide a clear career development and promotion path valuing and encouraging participation in and expertise in AI standards and standards development. NIST is facilitating many of these reviews and interactions, in part based on elements of the National Initiative for Cybersecurity Education (NICE) Workforce Framework for Cybersecurity which could be a model for AI-related workforce approaches. NIST is working with OPM to develop an AI occupational series, consistent with House Report 116-455 accompanying the Consolidated Appropriations Act, P.L. 116-260, to develop a clear career development

and promotion path that recognizes and encourages participation in and expertise in AI standards development within the Federal workforce.

- In addition to federal agencies working on standards directly, there are opportunities to educate federally-funded AI researchers – including those supported by NSF, the Defense Advanced Research Projects Agency (DARPA), DOE, and others – on standards processes and engagement. There are many examples where government-supported academic researchers participated actively in standards-setting processes with positive results. Increasingly, agencies recognize that engaging the AI academic researchers in these opportunities would be a useful inter-agency coordinated effort.

- The National Artificial Intelligence Advisory Committee, established by the William "Mac" Thornberry National Defense Authorization Act for Fiscal Year 2021 (NDAA)[5], advises the President and the National AI Initiative Office on AI-related matters. Among qualifications for the Advisory Committee's members set forth in the NDAA is standards expertise. The committee is to consider whether ethical, legal, safety, security, and other appropriate societal issues are adequately addressed by the AI Initiative called for by section 5104 of the NDAA. It also is to advise on "opportunities for international cooperation with strategic allies on artificial intelligence research activities*, standards development*, and the compatibility of international regulations."

- The NDAA explicitly directed NIST[6] to carry out a wide range of AI standards-related functions. These include:
  (1) advance collaborative frameworks, standards, guidelines, and associated methods and techniques for artificial intelligence;
  (2) support the development of a risk-mitigation framework for deploying artificial intelligence systems;
  (3) support the development of technical standards and guidelines that promote trustworthy artificial intelligence systems; and
  (4) support the development of technical standards and guidelines by which to test for bias in artificial intelligence training data and applications.

  Furthermore, this statute directed NIST to develop, in collaboration with other public and private sector organizations – including NSF and DOE – a voluntary risk management framework for trustworthy AI systems. Among other things, the framework shall
  ''(1) identify and provide standards, guidelines, best practices, methodologies, procedures, and processes for
        (A) developing trustworthy artificial intelligence systems;
        (B) assessing the trustworthiness of artificial intelligence systems; and

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[5] Pub. L. No. 116-283, https://www.congress.gov/116/bills/hr6395/BILLS-116hr6395enr.pdf.
[6] See Sec. 5301 of the NDAA, which amends NIST's authorizing statute.
https://www.congress.gov/116/bills/hr6395/BILLS-116hr6395enr.pdf.

(C) mitigating risks from artificial intelligence systems."

The NDAA also specifies that the framework shall:

''(2) establish common definitions and characterizations for aspects of trustworthiness, including explainability, transparency, safety, privacy, security, robustness, fairness, bias, ethics, validation, verification, interpretability, and other properties related to artificial intelligence systems that are common across all sectors."

Recommendation 2:

Promote focused research to advance and accelerate broader exploration and understanding of how aspects of trustworthiness can be practically incorporated within standards and standards-related tools.

Actions Taken to Implement Recommendation 2:

Delivering the needed measurements, standards, and other tools is a primary focus for NIST's AI efforts, and much of its work focuses on aspects of trustworthiness. Over the past two years, NIST has expanded and made noteworthy progress[7] in carrying out research specifically addressing standards-oriented research recommendations in the AI Standards Plan. It has selected priority topics and activities based on its statutory mandates and the needs expressed by U.S. industry, other federal agencies, and the global AI research community. Among other things, NIST recently:

- Initiated research efforts in explainable and interpretable AI, bias in AI, secure AI, user trust in AI, and evaluation of AI.
- Developed a series of reports on aspects of AI trustworthiness, including: A Method for Evaluating User Trust in AI Systems; A Taxonomy and Terminology of Adversarial Machine Learning; Psychological Foundations of Explainability and Interpretability in AI; and A Proposal for Identifying and Managing Bias in AI.
- Organized a series of ongoing workshops to build communities and advance scientific discussions, beginning with a series kickoff and consisting of one-, two-day, and multi-week sessions involving working sessions aiming to forge agreement on key terms and aspects of trustworthiness that can be incorporated into the development of standards. (Also see actions taken to implement Recommendation 3.)
- Organized a joint workshop with the Food and Drug Administration (FDA) and DARPA on AI for Drug Development in August 2021.

The NDAA authorized NSF to establish collaborative AI Research Institutes – codifying the program NSF launched in October 2019.[8] The AI Institutes program supports foundational and use-inspired research involving university, government, and private-sector partners, and will include research contributing to improved AI standards, including aspects of trustworthiness. For example, a 2020 AI Institute award specifically emphasizes trustworthy AI systems in the

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[7] AI Fact Sheet | June 2021

[8] See Sec. 5201 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283, https://www.congress.gov/116/bills/hr6395/BILLS-116hr6395enr.pdf.

context of climate science. The 2021 solicitation for the AI Research Institutes specifically calls for NIST involvement in a collaborative institute focusing on trustworthy AI.

The NDAA states explicitly agencies may use funds for: "(A) managing and making available to researchers accessible, curated, standardized, secure, and privacy protected data sets from the public and private sectors for the purposes of training and testing artificial intelligence systems and for research using artificial intelligence systems" and "(B) developing and managing testbeds for artificial intelligence systems, including sector specific test beds, designed to enable users to evaluate artificial intelligence systems prior to deployment."[9]

Recommendation 3:
Support and expand public-private partnerships to develop and use AI standards and related tools to advance reliable, robust, and trustworthy AI.

Actions Taken to Implement Recommendation 3:

- The National AI Research Institutes program, led by NSF, includes a growing number of partnerships with federal agencies and private companies. The program made its first awards in August 2020 and a second round of awards in July 2021 and launched a third competition for new Institutes in October 2021 [10] with awards expected to be made in 2022. Partners to date include the US Department of Agriculture's National Institute of Food and Agriculture (NIFDA), Department of Homeland Security's Science and Technology Directorate, Department of Transportation, National Institute of Standards and Technology, Accenture, Amazon, Google, and Intel. The program establishes a set of multi-disciplinary and multi-organizational institutes on designated themes for foundational and use-inspired AI research. While all institutes are encouraged to develop and share tools for reliable, robust, and trustworthy AI, the theme of trustworthy AI is also the core focus of one proposed institute.

- NSF supports several grant programs related to AI trustworthiness. They include:

  Fairness, Ethics, Accountability, and Transparency— NSF invited researchers to submit proposals to a set of longstanding programs that contribute to discovery in research and practice related to fairness, ethics, accountability and transparency in computer and information science and engineering, including AI.

  AI and Society, supported jointly with the Partnership on AI — NSF's directorates for Computer and Information Science and Engineering and Social, Behavioral and Economic Sciences, together with the Partnership on AI, have jointly supported Early-concept Grants for Exploratory Research to understand the social challenges arising from AI technology and enable scientific contributions to

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[9].[9] See Sec. 5201 of the William M. (Mac) Thornberry National Defense Authorization Act for Fiscal Year 2021, Pub. L. No. 116-283, https://www.congress.gov/116/bills/hr6395/BILLS-116hr6395enr.pdf.

[10] See NSF-led AI Research Institutes program, https://www.nsf.gov/funding/pgm_summ.jsp?pims_id=505686

overcome them. With increases in the scale and diversity of deployments of AI systems comes the need to better understand AI in the open world, including unforeseen circumstances and social impacts, and to craft approaches to AI that consider these from the start.

<u>NSF Program on Fairness in Artificial Intelligence in Collaboration with Amazon</u> — NSF and Amazon are partnering to jointly support research focused on fairness in AI, with the goal of contributing to trustworthy AI systems that are readily accepted and deployed to tackle grand challenges facing society. Specific topics of interest include, but are not limited to, transparency, explainability, accountability, potential adverse biases and effects, mitigation strategies, validation of fairness, and consideration of inclusivity.

NSF has funded a study by the National Academies of Sciences, Engineering, and Medicine (NASEM) on "Responsible Computing Research: Ethics and Governance of Computing Research and its Applications." When completed, this study is expected to identify ethical principles and practices that research funders, research-performing institutions, and individual researchers can use to formulate, conduct, and responsibly evaluate research and associated activities.

- The National Institutes of Health (NIH) recognizes there is a tremendous opportunity for data-driven discovery across its mission, including from AI/ML technologies. This requires findable, accessible, interoperable, and reusable (FAIR) and AI/ML-ready data. Making data FAIR and AI/ML-ready depends upon interdisciplinary skills not typically held by biomedical and behavioral researchers.

  Particularly for biomedical data, AI/ML-readiness should be guided by a concern for human and clinical impact. This requires attention to ethical, legal, and social implications of AI/ML, such as: biases in datasets, algorithms, and applications; concerns related to privacy and confidentiality; impacts on disadvantaged or marginalized groups and health disparities; and unintended, adverse social consequences of research and development. To assist in ensuring that human and clinical impact is taken into account in employing AI/ML technologies, NIH grants will support research in social and technical solutions for embedding ethics across the lifecycle of AI applications – and for enhancing NIH data so that it is FAIR and AI-ready.

- The General Services Administration (GSA) Information Technology Modernization Centers of Excellence (CoE) have designed the CoE AI Capability Maturity Model (AI CMM) as a planning tool for organizations building an AI investment strategy and technology roadmap. The plans generated from AI CMM activities will enable decision-makers to identify investment areas that simultaneously meet near-term goals in the acceleration of AI adoption and broader enterprise business goals. In addition to leveraging the CMM AI system as an *industry standard* for understanding organizational

maturity, the CoE designed a complementary perspective on observing organizational maturity that is user-centric.

- NIST is working at its National Cybersecurity Center of Excellence (NCCoE) with industry partners to address a basic AI need: developing an acceptable and widely used taxonomy and terminology of adversarial machine learning (AML). This work can inform future standards and best practices for assessing and managing machine learning security by establishing a common language and understanding of the rapidly developing AML landscape.

- The NIST NCCoE is conducting research on the feasibility of pursuing projects related to the security of AI used in Semi-Autonomous Vehicles and AI Enabled Health Care. The results of this research are intended to identify the maturity of industry, standards, and technologies applicable to these two areas. Ultimately this will lead to collaborative efforts with industry, through research and development agreements. Academia and government partners are collaborating at the NCCoE to develop reference architectures and example solutions.

- Multiple NIST workshops on AI topics have attracted broad participation from public and private sector stakeholders, across the United States and internationally, and including AI designers, developers, providers, and users. These sessions have been designed to be highly interactive, even in the virtual environment. Views and information shared with NIST at these workshops have contributed significantly to the agency's publications and plans related to aspects of AI trustworthiness that are informing standards-related efforts. The workshops have helped to build a community of interest for NIST's multi-faceted work in this arena, which includes fundamental and applied research, benchmarks, and evaluation, standards, and policy engagement. Workshops have included:

    AI trustworthiness: An August 6, 2020, workshop kicked off a NIST initiative involving private and public sector organizations and individuals in discussions about building blocks for trustworthy AI systems – and the associated measurements, methods, standards, and tools to implement those building blocks when developing, using, and testing AI systems.

    Bias in AI: An August 18, 2020, workshop contributed to the development of a shared understanding of one characteristic of trustworthiness – bias in AI, what it is, and how to measure it. Bias in AI is a key but insufficiently defined building block of trustworthiness. Insights shared by speakers and other participants moved the AI community closer to agreement on defining bias in AI.

    Explainable AI: As part of NIST's efforts to provide foundational tools, guidance, and best practices for AI-related research, NIST released a draft white paper, Four Principles of Explainable Artificial Intelligence, for public comment. Inspired

by comments received, this January 26-28, 2021, workshop delved further into developing an understanding of explainable AI.

Assessing and Improving AI Trustworthiness: Current Contexts, Potential Paths: This March 3-4, 2021, workshop hosted by the National Academies of Science, Engineering and Medicine (NASEM) and sponsored by NIST was designed to help think through this interrelated set of challenges. The workshop produced ideas for activities and collaborations by academia, industry, and the public sector to improve the assessment of trustworthiness of AI systems, and recommendations for NIST and similar public bodies.

Co-hosted a workshop on Secure Data Sharing with the National Science Foundation (NSF) in an effort to bring federal data stewards (e.g., Chief Data Officers) together with technologists (e.g., NSF- and NIST-funded researchers pursuing security- and privacy-enhancing techniques), and users (e.g., AI researchers). The May 21, 2021, workshop specifically sought to identify novel approaches to unlock federal data sets in secure and privacy-preserving ways to advance AI research and innovation.

AI Measurement and Evaluation: The June 15-17, 2021, workshop brought together stakeholders and experts to identify the most pressing needs for AI measurement and evaluation and to advance the state of the art and practice. The gathering helped NIST to: 1) identify the needs for and intended uses of AI measurement and evaluation along with the gaps in knowledge/practice preventing current AI measurement and evaluation activities from effectively meeting these needs/uses, 2) solicit guidance on which specific areas that NIST should focus its efforts, 3) Identify specific users and applications in need of measurement and evaluation, and 4) collate best practices for AI measurement and evaluation.

Recommendation 4:
Strategically engage with international partners to advance AI standards for U.S. economic and national security needs.

Actions Taken to Implement Recommendation 4

The US Government increasingly has been undertaking international engagements bilaterally and multilaterally as well as in international organizations to advance AI research and standards for US economic and national security needs. Special attention has been given to like-minded countries with shared values with the goal of exchanging information and cooperating in the pre-standardization research and development that underpin trustworthy AI systems.

In March 2021, NIST supported the US Department of State in developing the Congressional report, "A Plan to Establish Exchanges and Partnerships between the United States and Its Allies

to Create Standards for Artificial Intelligence Technologies." Other recent international engagements include:

- The United States championed development of the first international principles for the responsible use of AI at the Organisation for Economic Co-operation and Development (OECD). The OECD is an organization of like-minded democracies committed to open markets, and as such has been a focal point for U.S. multilateral work on AI. The OECD Principles on AI take a holistic approach, with a strong emphasis on international, multi-stakeholder collaboration, and flexible, light-touch policy and regulatory environments to promote innovative and trustworthy applications of AI in line with human rights and democratic values. The United States currently chairs the OECD Network of Experts on AI, a multi-stakeholder group that is developing more detailed implementation guidance for governments and other stakeholders to move from principle to practice.[11]

- To help implement a high-level U.S-United Kingdom declaration of cooperation on AI R&D signed in September 2020, a new dialogue with the UK was initiated to coordinate efforts and promote joint AI research and development. More broadly, NIST utilizes international Science and Technology Cooperation Agreements negotiated by the State Department and participates in the associated bilateral dialogues to strengthen international cooperation on standards and measurement-related activities, including those for AI technologies.

- The United States became a founding member of the Global Partnership on AI (GPAI) along with Australia, Canada, France, Germany, India, Italy, Japan, Mexico, New Zealand, South Korea, Singapore, Slovenia, the United Kingdom, and the European Union. GPAI is a voluntary multi-stakeholder initiative that brings together leading experts from science, industry, civil society, international organizations, and government that share values of human rights, inclusion, diversity, innovation, and economic growth. It aims to bridge the gap between theory and practice on AI by supporting cutting-edge research and applied activities on AI-related priorities. There are 25 GPAI members, including all G7 and important emerging economies such as Brazil and India. Through GPAI, the United States seeks to complement the more policy-oriented work of the OECD by increasing coordination on research and development and scaling up practical projects for implementing trustworthy AI.
- To gain a greater understanding of the global landscape of AI standards-related activities, NIST will soon begin a year-long data collection and analysis project. While its scope will look at technologies beyond AI, the study will examine the role of the People's Republic of China (PRC) in international standards setting organizations over the previous 10 years, including leadership roles in standards drafting technical committees, and the quality or value of that participation. The study also will consider:

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[11] A Plan to Establish Exchanges and Partnerships between the United States and Its Allies to Create Standards for Artificial Intelligence Technologies, Required by Section 7019(e) of the Department of State, Foreign Operations, and Related Programs Appropriations Act, 2021 and House Report 116-444.

the effect of the PRC's ''Chinese Standard 2035'' strategy on international bodies engaged in developing and setting standards; whether international standards for select emerging technologies are being designed to promote PRC interests to the exclusion of other participants; how previous PRC practices used while participating in international standards setting organizations may foretell how China is likely to engage in international standardization activities of critical technologies like artificial intelligence and quantum information science, and potential consequences; and recommendations on how the United States can take steps to mitigate the PRC's influence and bolster US public and private sector participation in international standards-setting bodies.

- The NDAA's AI-related provisions include authorizing NIST to ''(…support and strategically engage in the development of voluntary consensus standards, including international standards, through open, transparent, and consensus-based processes." This reinforces a traditional and ongoing role of NIST.

2. Next Steps and the Way Forward

As noted earlier, as the Federal Government's AI standards coordinator, NIST continues to work with other government agencies in the United States and around the world, the private sector, and other stakeholders to regularly review and carry out the AI Standards Plan. Federal agencies and private sector organizations alike are expected to deepen their involvement in standards activities; it is clear to a growing number of those in the AI community that key decisions will be made in standards setting which will determine the pace and type of innovations we can expect in AI products and technologies, especially when it comes to aspects of trustworthiness. NIST will track, coordinate, and seek to catalyze those activities undertaken by federal departments and agencies.

The Biden Administration has made supporting the industry-led technology standardization ecosystem a priority, including international collaboration with key partners and allies. This includes committing to a Framework for collaboration on digital technical standards through the G7[12] and an emerging technology working group with Quad countries: the United States, Japan, Australia, and India.[13] While this work goes beyond AI standards, such collaborations are expected to provide a key venue to further the AI Standards Plan.

Appendices:
- Text from Commerce, Justice, Science, and Related Agencies Appropriations Bill, 2021
- "Recommended Federal Government Standards Actions to Advance U.S. AI Leadership" from the August 2019 report, pp. 22-24
- NDAA, Sec. 5201
- NDAA, Sec. 5301 and 5302

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[12] https://www.gov.uk/government/publications/g7-digital-and-technology-ministerial-declaration.
[13] https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/12/quad-leaders-joint-statement-the-spirit-of-the-quad/.