February 2, 2024

Information Technology Laboratory
ATTN: AI E.O. RFI Comments
National Institute of Standards and Technology
100 Bureau Drive
Gaithersburg, Maryland 20899

RE: Comments of ACT | The App Association to the National Institute of Standards and Technology, *Request for Information (RFI) Related to NIST's Assignments Under Sections 4.1, 4.5 and 11 of the Executive Order Concerning Artificial Intelligence (Sections 4.1, 4.5, and 11)* [88 FR 88368]

ACT | The App Association (App Association) appreciates the opportunity to submit views to the National Institute of Standards and Technology (NIST) regarding its responsibilities under the Executive order on Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (AI), including undertaking an initiative for evaluating and auditing capabilities relating to AI technologies; and to develop a variety of guidelines, including for conducting AI red-teaming tests to enable deployment of safe, secure, and trustworthy systems.[1]

I. General Views of the App Association on Advancing Governance, Innovation, and Risk Management for Agency Use of Artificial Intelligence

The App Association represents thousands of small business software application development companies and technology firms that create the technologies that drive internet of things (IoT) use cases across consumer and enterprise contexts. Today, the value of the ecosystem the App Association represents—which we call the app economy—is $1.8 trillion and is responsible for 6.1 million American jobs, while serving as a key driver of the $8 trillion IoT revolution.[2] Alongside the world's rapid embrace of mobile technology, our members create the innovative solutions that power IoT across modalities and segments of the economy. App Association members have a crucial role in responsibly building and deploying AI across consumer and enterprise use cases.[3]

[1] 88 FR 88368.

[2] ACT | The App Association, *State of the App Economy* (2022), https://actonline.org/wpcontent/uploads/APP-Economy-Report-FINAL.pdf.

[3] ACT | The App Association, *Small Businesses and Entrepreneurs: An Indispensable Force in the AI App Economy* (Dec. 2023), https://actonline.org/wp-content/uploads/Small-Businesses-and-Entrepreneurs-An-Indispensable-Force-in-the-AI-App-Economy_FINAL.pdf.

NIST's AI-related efforts, including those pursuant to the Executive order, as well as the efforts of numerous agencies with respect to AI policy and regulation, directly impact the app economy. We support NIST's efforts to accomplish its goals of (1) establishing guidelines and best practices in order to promote consensus industry standards in the development and deployment of safe, secure, and trustworthy AI systems; (2) he potential development of further science-backed standards and techniques for reducing the risk of synthetic content from AI technologies; and (3) establishing a plan for global engagement on promoting and developing AI consensus standards, cooperation, and coordination, ensuring that such efforts are guided by principles set out in the NIST AI Risk Management Framework (AIRMF) and the U.S. Government National Standards Strategy for Critical and Emerging Technology (NSSCET).

AI is an evolving constellation of technologies that enable computers to simulate elements of human thinking – learning and reasoning among them. An encompassing term, AI entails a range of approaches and technologies, such as Machine Learning (ML) and deep learning, where an algorithm based on the way neurons and synapses in the brain change due to exposure to new inputs, allowing independent or assisted decision making. AI-driven algorithmic decision tools and predictive analytics are having, and will continue to have, substantial direct and indirect effects on Americans. Some forms of AI are already in use to improve American consumers' lives today; for example, AI is used to detect financial and identity theft and to protect the communications networks upon which Americans rely against cybersecurity threats.

Moving forward, across use cases and sectors, AI has incredible potential to improve American consumers' lives through faster and better-informed decision making enabled by cutting-edge distributed cloud computing. As an example, healthcare treatments and patient outcomes stand poised to improve disease prevention and conditions, as well as efficiently and effectively treat diseases through automated analysis of X-rays and other medical imaging. AI will also play an essential role in self-driving vehicles and could drastically reduce roadway deaths and injuries. From a governance perspective, AI solutions will derive greater insights from infrastructure and support efficient budgeting decisions. Americans already encounter AI in their lives incrementally through the improvements they have seen in computer-based services they use, typically in the form of streamlined processes, image analysis, and voice recognition (we urge consideration of these forms of AI as "narrow" AI); meanwhile, generative AI tools are revolutionizing, and will continue to revolutionize, each consumer and enterprise sector/use case.

The App Association is forthright in acknowledging that AI also has the potential to raise a variety of unique considerations for policymakers. We appreciate U.S. policymakers' efforts to develop a policy approach to AI that will bring its benefits to all, balanced with necessary safeguards to protect consumers, and strongly encourage NIST's Executive order-related deliverables and efforts to align with the App Association's comprehensive AI policy principles:

1. Harmonizing and Coordinating Approaches to AI

A wide range of federal, local, and state laws prohibit harmful conduct regardless of whether the use of AI is involved. For example, the Federal Trade Commission (FTC) Act prohibits a wide range of unfair or deceptive acts or practices, and states also have versions of these prohibitions in their statute books. The use of AI does not shield companies from these prohibitions. However, federal and state agencies alike must approach the applicability of these laws in AI contexts thoughtfully and with great sensitivity to the novel or evolving risks AI systems present. Congress and other policymakers must first understand how existing frameworks apply to activities involving AI to avoid creating sweeping new authorities or agencies that awkwardly or inconsistently overlap with current policy frameworks. The Executive order on AI is a critical and timely prompt for a coordinated whole-of-government approach to AI policy.

2. Quality Assurance and Oversight

Policy frameworks should utilize risk-based approaches to ensure that the use of AI aligns with any relevant recognized standards of safety, efficacy, and equity. Small software and device companies benefit from understanding the distribution of risk and liability in building, testing, and using AI tools. Policy frameworks addressing liability should ensure the appropriate distribution and mitigation of risk and liability. Specifically, those in the value chain with the ability to minimize risks based on their knowledge and ability to mitigate should have appropriate incentives to do so. Some recommended areas of focus include:

- Ensuring AI is safe, efficacious, and equitable.
- Encouraging AI developers to consistently utilize rigorous procedures and enabling them to document their methods and results.
- Encouraging those developing, offering, or testing AI systems intended for consumer use to provide truthful and easy-to-understand representations regarding intended use and risks that would be reasonably understood by those intended, as well as expected, to use the AI solution.

3. Thoughtful Design

Policy frameworks should encourage design of AI systems that are informed by real-world workflows, human-centered design and usability principles, and end-user needs. AI systems should facilitate a transition to changes in the delivery of goods and services that benefit consumers and businesses. The design,

development, and success of AI should leverage collaboration and dialogue among users, AI technology developers, and other stakeholders to have all perspectives reflected in AI solutions.

4. Access and Affordability

Policy frameworks should enable products and services that involve AI systems to be accessible and affordable. Significant resources may be required to scale systems. Policymakers should also ensure that developers can build accessibility features into their AI-driven offerings and avoid policies that limit their accessibility options.

5. Bias

The bias inherent in all data, as well as errors, will remain one of the more pressing issues with AI systems that utilize machine learning techniques. Regulatory agencies should examine data provenance and bias issues present in the development and uses of AI solutions to ensure that bias in datasets does not result in harm to users or consumers of products or services involving AI, including through unlawful discrimination.

6. Research and Transparency

Policy frameworks should support and facilitate research and development of AI by prioritizing and providing sufficient funding while also maximizing innovators' and researchers' ability to collect and process data from a wide range of sources. Research on the costs and benefits of transparency in AI should also be a priority and involve collaboration among all affected stakeholders to develop a better understanding of how and under which circumstances transparency mandates would help address risks arising from the use of AI systems.

7. Modernized Privacy and Security Frameworks

The many new AI-driven uses for data, including sensitive personal information, raise privacy questions. They also offer the potential for more powerful and granular privacy controls for consumers. Accordingly, any policy framework should address the topics of privacy, consent, and modern technological capabilities as a part of the policy development process. Policy frameworks must be scalable and assure that an individual's data is properly protected, while also allowing the flow of information and responsible evolution of AI. A balanced framework should avoid undue barriers to data processing and collection while imposing reasonable data minimization, consent, and consumer rights frameworks.

8. Ethics

The success of AI depends on ethical use. A policy framework must promote many of the existing and emerging ethical norms for broader adherence by AI technologists, innovators, computer scientists, and those who use such systems. Relevant ethical considerations include:

- Applying ethics to each phase of an AI system's life, from design to development to use.
- Maintaining consistency with international conventions on human rights.
- Prioritizing inclusivity such that AI solutions benefit consumers and are developed using data from across socioeconomic, age, gender, geographic origin, and other groupings.
- Reflect that AI tools may reveal extremely sensitive and private information about a user and ensure that laws require the protection of such information.

9. Education

Policy frameworks should support education for the advancement of AI, promote examples that demonstrate the success of AI, and encourage stakeholder engagements to keep frameworks responsive to emerging opportunities and challenges.

- Consumers should be educated as to the use of AI in the service(s) they are using.
- Academic education should include curriculum that will advance the understanding of and ability to use AI solutions.

10. Intellectual Property

The protection of intellectual property (IP) rights is critical to the evolution of AI. In developing approaches and frameworks for AI governance, policymakers should ensure that compliance measures and requirements do not undercut IP or trade secrets.

II. App Association Responses to Specific Questions Posed in the Request for Public Comment

Noting our general support for NIST's efforts as discussed above, we offer the following responses to specific questions posed in NIST's request for information.

Developing Guidelines, Standards, and Best Practices for AI Safety and Security

We commend NIST's steps taking in this request for information to understand generative AI risk management, AI evaluation, and red-teaming, and support NIST's effort to NIST to establish guidelines and best practices to promote consensus industry standards in the development and deployment of safe, secure, and trustworthy AI systems. NIST is well-positioned to ensure that the roles and needs of the private sector, including small businesses, are appropriately considered.

We appreciate that NIST has been tasked with creating a risk management framework for generative AI, as a companion to the existing AIRMF, and urge the "companion" generative AI deliverable to build on NIST frameworks that are already widely-relied upon, including but not limited to the NIST Cybersecurity Framework, the NIST Secure Software Development Framework, and the NIST AIRMF.

The App Association encourages NIST's generative AI-specific guidelines and best practices to align with the App Association's policy principles for AI discussed above, the NIST AI RMF, and leading standards such as ISO/IEC 23894:2023.[4] The App Association supports the development of a companion resource to the NIST RAIFW addressing the distinct risks and harms of generative AI. A companion resource elaborating on standards/norms, practical tips on improving AI risk management, and commentary/recommendations on workforce/skill issues in generative AI risk management, done in collaboration with the private sector, will be valuable resources to the App Association's small business community. This new companion should also include discussion on the benefits of generative AI to ensure that it is not perceived as a discouragement for small business engagement across generative AI opportunities.

The App Association also supports such a resource addressing "roles that can or should be played by different AI actors for managing risks and harms of generative AI (*e.g.*, the role of AI developers vs. deployers vs. end users)." The App Association notes that such roles and interdependencies may vary widely across sectors and use cases. A prime example is the healthcare sector, where unique players and roles exist across the value chain. It will be important that NIST's discussion of roles in generative AI risk management accounts for these differences.

In its efforts to create "guidance and benchmarks for evaluating and auditing AI capabilities," the App Association urges NIST to first undertake a comprehensive

[4] https://www.iso.org/standard/77304.html.

landscape assessment to ensure that it fully understands the status of related efforts, both inside and outside of government, before moving forward. In some sectors, testing networks are only just being created, and no consensus criteria yet exists. What is certain today, however, is that, consistent with the need for risk mitigation that correlates to the known harms presented, evaluation and auditing practices should be scaled based on the unique use cases and risks presented by a given generative AI use case. Further, such criteria should not be dictated by government alone; instead, key actors in government, led by NIST, should collaborate with private sector innovators to develop criteria for evaluating and auditing AI capabilities based on where consensus can be achieved. The App Association also urges NIST to consider our comments to the National Telecommunications and Information Administration on AI accountability,[5] which speak to NIST's interests in the generative AI evaluation space.

The App Association notes its support for a public-private partnership approach to procedures and processes, to enable developers of AI, especially of dual-use foundation models, to conduct AI red-teaming tests to enable deployment of safe, secure, and trustworthy systems. Our small business community is committed to working with NIST and other policymakers to advance thoughtful AI design, as well as auditing/monitoring, best practices that will ensure deployment of safe, secure, and trustworthy systems.

With respect to NIST efforts pursuant to Section 4.1(a)(ii), we agree that red-teaming efforts are important in ensuring the safe, secure, and trustworthy systems. We urge NIST to ensure that it appropriately differentiates between AI *model* red-teaming (attempting to break the AI model to find ways to improve it) and AI *system* red-teaming (attacking the model along with its data infrastructure, user interface, etc.), as both have unique roles. Consistent with the priority discussed above for risk management practices that scale to known potential harms, the need for the type and intensity of red-teaming will need to scale. The App Association also urges for careful consideration of the overlap of legal liabilities with red-teaming (for example, red-teaming efforts to address harmful CSAM may give rise to liabilities for creating the same). The App Association also agrees that a trusted information sharing construct, similar to that used for the timely sharing of cybersecurity threat information through Information Sharing and Analysis Centers (ISACs), could be key means for the sharing best practices for generative AI, including for how to share with external parties for the purpose of AI red-teaming while protecting intellectual property, privacy, and security of an AI system. Finally, we urge NIST to be mindful of the requirement on dual-use foundation model developers to provide the results of their AI red-teaming to the Commerce Department.

Reducing the Risk of Synthetic Content

The App Association supports NIST's efforts to, consistent with Section 4.5(a) of the Executive Order, identify existing standards, tools, methods, and practices; and to

[5] https://www.regulations.gov/comment/NTIA-2023-0005-1397.

contribute to the development of a description of the potential development of further science-backed standards and techniques for reducing the risk of synthetic content from AI technologies. We strongly encourage collaboration with our community, and others from the private sector, in reaching a consensus on the stated problem's meaning ("the risk of synthetic content from AI technologies") as well as the state of standards, tools, methods, and practices for addressing it. Collaboration on "synthetic content from AI technologies" must consider a range of angles and interests, including with respect to intellectual property questions currently being grappled with by U.S. courts. We discourage formulating recommendations on AI-created "synthetic content" under this Executive order that would short-circuit established policymaking channels (e.g., the federal courts adjudicating claims of copyright infringement in the development of AI) that will determine whether today's legal frameworks can adequately address such an issue.

Advance Responsible Global Technical Standards for AI Development

The App Association fully supports U.S. government's global engagement to promote and develop AI consensus standards, cooperation, and coordination; and to ensure that such are guided by principles set out in the NIST AIRFM and NSSCET. Separately, the App Association has offered detailed views to NIST on ways to globally promote, and implement, both the AIRMF[6] as well as the NSSCET[7]; as well on federal government engagement in advancing AI standards for U.S. economic and national security needs[8] and we request that NIST consider those recommendations as it works to meet its goals per Section 11(b). Again, we urge for alignment with and promotion of international standards for AI development and safety, namely ISO/IEC 22989:2022. The App Association urges NIST to align its international advocacy with the App Association's AI policy principles discussed above.

[6] https://www.nist.gov/system/files/documents/2021/08/19/ai-rmf-rfi-0016.pdf.

[7] https://actonline.org/2023/11/27/developing-a-national-standards-initiative-that-supports-u-s-participation-and-leadership-in-technical-standards/.

[8] App Association comments are included here as **Appendix A**.

III. Conclusion

The App Association appreciates NIST's consideration of the above views. We urge NIST to contact the undersigned with any questions or ways that we can assist moving forward.

Sincerely,

Brian Scarpelli
Senior Global Policy Counsel

ACT | The App Association
1401 K St NW (Ste 501)
Washington, DC 20005
202-331-2130

July 19, 2019

Elham Tabassi
Acting Chief of Staff
Information Technology Laboratory
National Institute of Standards and Technology
100 Bureau Drive
Gaithersburg, Maryland 20899

RE: Comments of ACT | The App Association to the National Institute of Standards and Technology on its Draft *U.S. Leadership in AI: Plan for Federal Engagement in Developing Technical Standards and Related Tools*

I. Introduction and Statement of Interest

ACT | The App Association (App Association) appreciates the opportunity to submit views to the National Institute of Standards and Technology (NIST) on its July 2, 2019-released draft *U.S. Leadership in AI: Plan for Federal Engagement in Developing Technical Standards and Related Tools*.[1]

The App Association represents thousands of small business software application development companies and technology firms that create the technologies that drive internet of things (IoT) use cases across consumer and enterprise contexts. Today, the ecosystem the App Association represents—which we call the app economy—is valued at approximately $1.3 trillion and is responsible for 5.7 million jobs. Alongside the world's rapid embrace of mobile technology, our members create innovative solutions that power IoT across modalities and segments of the economy. We are directly affected by NIST's efforts to, pursuant to the February 11, 2019, *Executive Order on Maintaining American Leadership in Artificial Intelligence*,[2] create a plan for federal engagement in the development of technical standards and related tools in support of reliable, robust, and trustworthy systems that use AI technologies.

[1] https://www.nist.gov/news-events/news/2019/07/nist-releases-draft-plan-federal-engagement-ai-standards-development.

[2] Executive Order 13859, Maintaining American Leadership in Artificial Intelligence, 84 Fed Reg 3967 (Feb 11, 2019), *available at* https://www.whitehouse.gov/presidential-actions/executive-order-maintaining-american-leadership-artificial-intelligence/.

The App Association proactively works to advance the use of AI in key use cases. As one example, the App Association's Connected Health Initiative[3] (CHI) assembled a Health AI Task Force in the Summer of 2018 consisting of a range of digital health innovators and health policy thought leaders. Their work culminated in a release of the CHI AI Task Force's deliverables in early February 2019, during a public-private multistakeholder dialogue in Washington, DC. These deliverables included a position piece supporting AI's role in healthcare, policy principles addressing how policy frameworks should approach the role of AI in healthcare, and a terminology document targeted at policymakers.[4] Since the release of its deliverables, CHI has actively advocated for the development of frameworks that will responsibly support the development, availability, and use of AI innovations.

The App Association appreciates NIST's efforts to develop this strategy to "[e]nsure that technical standards...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."[5] We believe that the Department of Commerce, and NIST in particular, remains as an established leader and coordinator within the U.S. government with respect to emerging technology policy questions.

We appreciate NIST's discussion in the draft AI standards strategy of general AI and standardization issues. In our original comments to NIST on the potential of an AI standards strategy, we recommended a range of principles that this strategy should incorporate to ensure standards reflect to advance the responsible development and deployment of AI (these June 10, 2019-filed comments are appended). We find the draft AI standards strategy to incorporate many of our proposals.

The App Association also notes its support for NIST's proposed U.S. government AI standards priorities, which are consistent with NIST's long-established commitments to open and consensus-based standardization that has resulted in general U.S. standards leadership.

Further, the App Association generally supports NIST's proposed recommended action to advance U.S. AI leadership. We fully support NIST recommendations that the federal government:

- 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; and
- Strategically engage with international parties to advance AI standards for U.S. economic and national security needs.

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[3] *See* www.connectedhi.com.

[4] The CHI Health AI Task Force's deliverables are accessible at https://actonline.org/2019/02/06/why-does-healthcare-need-ai-connected-health-initiative-aims-to-answer-why/.

[5] 84 Fed Reg 3968.

With respect to NIST's proposed recommended action that the federal government support and expand public-private partnerships to develop and use AI standards and related tools to advance trustworthy AI, we believe that NIST should specifically include a sub-recommendation that public-private collaboration on AI through standardization be encouraged in key U.S.-based standard setting organizations. For example, the U.S. government should ensure that AI standards are accessible to innovators by promoting a balanced approach to standard-essential patent (SEP) licensing. The App Association provided further detailed recommendations in its June 10, 2019-filed comments with NIST which are appended. We strongly urge NIST to revise this recommendation to include a commitment for the federal government to ensure a pro-innovation and balanced approach to SEPs. We also note that OMB Circular A-119 defines a "voluntary consensus standard" to include those that "requir[e] that owners of relevant intellectual property have agreed to make that intellectual property available on a non-discriminatory, royalty-free or reasonable royalty basis to all interested parties."[6]

The App Association appreciates NIST's consideration of our responses above. We urge NIST to contact the undersigned with any questions or ways that we can assist moving forward.

Sincerely,

Brian Scarpelli
Senior Global Policy Counsel

Alexandra McLeod
Policy Counsel

Kate Hirzel
Policy Associate

ACT | The App Association
1401 K St NW (Ste 501)
Washington, DC 20005
202-331-2130

[6] Revision of OMB Circular No. A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities", 81 FR 4673 (Jan. 27, 2016).

June 10, 2019

Elham Tabassi
Acting Chief of Staff
Information Technology Laboratory
National Institute of Standards and Technology
100 Bureau Drive
Gaithersburg, MD 20899

RE: Comments of ACT | The App Association to the National Institute of Standards and Technology on Artificial Intelligence Standards

I. Introduction and Statement of Interest

ACT | The App Association (App Association) appreciates the opportunity to submit views to the National Institute of Standards and Technology (NIST) on its May 1, 2019-published request for input on artificial intelligence (AI) standards.[1]

The App Association represents thousands of small business software application development companies and technology firms that create the technologies that drive internet of things (IoT) use cases across consumer and enterprise contexts. Today, the ecosystem the App Association represents – which we call the app economy – is valued at approximately $1.3 trillion and is responsible for 5.7 million American jobs. Alongside the world's rapid embrace of mobile technology, our members have been creating innovative solutions that power the IoT across modalities and segments of the economy. We are directly impacted by NIST's efforts to, pursuant to the February 11, 2019, *Executive Order on Maintaining American Leadership in Artificial Intelligence*,[2] create a plan for Federal engagement in the development of technical standards and related tools in support of reliable, robust, and trustworthy systems that use AI technologies.

[1] https://www.Federalregister.gov/documents/2019/05/01/2019-08818/artificial-intelligence-standards.

[2] https://www.whitehouse.gov/presidential-actions/executive-order-maintaining-american-leadership-artificial-intelligence/.

1401 K Street NW Suite 501
Washington, DC 20005

202.331.2130 @ACTonline
ACTonline.org /actonline.org

The App Association also continues to proactively work to advance the use of AI in key use cases. As one example, the App Association's Connected Health Initiative[3] (CHI) assembled a Health AI Task Force in the Summer of 2018 consisting of a range of innovators and thought leaders. Due to their work throughout the second half of 2018, in early February 2019, the CHI unveiled its AI Task Force's deliverables during a public-private multistakeholder dialogue in Washington, DC. These deliverables included a position piece supporting AI's role in healthcare, policy principles addressing how policy frameworks should approach the role of AI in healthcare, and a terminology document targeted at policymakers.[4] Since the release of its deliverables, CHI has actively advocated for the development of frameworks that will responsibly support the development, availability, and use of AI innovations.

II. General Comments of the App Association on Artificial Intelligence and Standards

AI is an evolving constellation of technologies that enable computers to simulate elements of human thinking – learning and reasoning among them. An encompassing term, AI entails a range of approaches and technologies, such as Machine Learning (ML), and deep learning, where an algorithm based on the way neurons and synapses in the brain change as they are exposed to new inputs, allowing independent or assisted decision making.

AI-driven algorithmic decision tools and predictive analytics are having, and will continue to have, substantial direct and indirect effects on Americans. Some forms of AI are already being used to improve American consumers' lives today – for example, AI is used to detect financial and identity theft and to protect the communications networks upon which Americans rely against cybersecurity threats.

Moving forward, across use cases and sectors, AI has incredible potential to improve American consumers' lives through faster and better-informed decision making, enabled by cutting-edge distributed cloud computing. As an example, healthcare treatments and patient outcomes stand poised to improve disease prevention and conditions, as well as efficiently and effectively treat diseases through automated analysis of x-rays and other medical imaging. AI will also play an essential role in self-driving vehicles and could drastically reduce roadway deaths and injuries. From a governance perspective, AI solutions will derive greater insights from infrastructure and support efficient budgeting decisions. AI technological breakthroughs are estimated to represent a $126 billion market by 2025.[5]

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[3] *See* www.connectedhi.com.

[4] The CHI Health AI Task Force's deliverables are accessible at https://actonline.org/2019/02/06/why-does-healthcare-need-ai-connected-health-initiative-aims-to-answer-why/.

[5] McKinsey Global Institute, *Artificial Intelligence: The Next Digital Frontier?* (June 2017), *available at* https://www.mckinsey.com/~/media/McKinsey/Industries/Advanced%20Electronics/Our%20Insights/How

Today, Americans encounter AI in their lives incrementally through the improvements they have seen in computer-based services they use, typically in the form of streamlined processes, image analysis, and voice recognition (we urge that these forms of AI be considered "narrow" AI). The App Association notes that this "narrow" AI has already provided great societal benefit. For example, AI-driven software products and services have revolutionized the ability of countless Americans with disabilities to achieve experiences in their lives far closer to the experiences of those without disabilities.

Standards developed in open and consensus-based processes, particularly those that are developed outside of U.S. government processes (but in which the U.S. government should participate) will be essential to the responsible and successful rollout of AI across consumer and enterprise use cases. The development of such standards is already underway in key U.S.-based standard setting organizations (SSOs), including the Institute of Electrical and Electronics Engineers (IEEE).[6] The App Association supports the current Federal approach to government engagement in standards development, which emphasizes private sector leadership. We believe this time-tested approach will facilitate useful and timely AI technical standards.

App Association members participate regularly in standardization processes, utilizing standards to innovate, and relying on standards (and access to standards) to continuously find new ways to leverage AI to provide vital services to companies on the back-end and to consumers on the front-end. The App Association believes that standards should advance the responsible development and deployment of AI, consistent with the following principles:

- Public and private stakeholders should strive to develop a standardized nomenclature and terminology for AI;
- AI must be safe, efficacious, and equitable, and risk should be managed in AI alignment with the risk posed;
- Developers should tie AI developments and deployments to verifiable and reliable research, real-world workflow, human-centered design and usability principles, and end-user needs;
- Algorithms, datasets, and decisions should be auditable, validated, and explainable to the degree of the risk they pose;
- AI developers should consistently utilize rigorous procedures, documenting their methods and results;
- Those developing, offering, or testing AI systems should provide truthful and easy to understand representations regarding intended use and risks that would

%20artificial%20intelligence%20can%20deliver%20real%20value%20to%20companies/MGI-Artificial-Intelligence-Discussion-paper.ashx.

[6] *E.g.*, https://standards.ieee.org/news/2017/ieee_p7004.html.

be reasonably understood by those intended, as well as expected, to use the AI solution; and

- Adverse events should be timely reported to relevant oversight bodies for appropriate investigation and action.

The App Association urges NIST to build on its stellar record of public-private collaboration by partnering with the private sector in furthering an environment that will enable growth and innovation in AI. AI offers immense potential for widespread societal benefit, which is why investment and innovation should be fostered by NIST and other Federal entities in any way practicable. Venture capital and private equity firms alone invested up to $5 billion in 2016.[7] Our members both use and develop solutions that include AI which are used by countless Americans. As society moves to adopt these technologies on a greater scale, it is important that the small business developers who power a $1.3 trillion app economy can contribute to this important trend.

[7] See *Id*.

III. App Association Answers to Specific Questions Posed by NIST

Building on the general viewpoints above, the App Association provides the following specific responses to questions posed by NIST in its request for information:

1. **AI technical standards and tools that have been developed, and the developing organization, including the aspects of AI these standards and tools address, and whether they address sector-specific needs or are cross-sector in nature.**

   A wide range of AI technical standardization efforts are already underway that are both cross-sectoral and sector-specific, and the App Association expects such standardization efforts to grow in number moving forward. We do not see a deficiency as far as cross-sectoral versus sector-specific AI standardization efforts. Pursuant to the EO, we encourage NIST to find consensus amongst the Federal government as to areas of need and opportunities and to bring this input to key SSOs such as IEEE.

3. **The needs for AI technical standards and related tools. How those needs should be determined, and challenges in identifying and developing those standards and tools.**

   AI standardization efforts, whether vertical/sector-agnostic or -specific, appear to be addressing the range of challenges and opportunities that AI gives rise to.

   Key cross-sectoral efforts include ISO JTC1 SC42, which is working on cross-sector standards related to: WG1–Foundational standards (terminology, framework), WG2–Big Data (vocabulary, reference architecture), WG3–Trustworthiness (including risk, robustness, bias), WG4–Use cases and applications, JWG1–Governance implications of AI, and SG1–Computational approaches. The App Association and its members participate in numerous cross-sectoral SSO efforts.

   There are also many sector-specific standardization processes in existence today. In the healthcare sector alone, IEEE's work on (1) P2801 Recommended Practice for the Quality Management of Datasets for Medical Artificial Intelligence Recommendation; and (2) P2802 Standard for the Performance and Safety Evaluation of Artificial Intelligence Based Medical Device: Terminology are underway. Further efforts, such as the Consumer Technology Association's AI standards committee (R13) & Health Care working group (R13 WG1), are notable. The App Association and its members participate in numerous sector-specific SSO efforts.

4. **AI technical standards and related tools that are being developed, and the developing organization, including the aspects of AI these standards and tools address, and whether they address sector-specific needs or are cross sector in nature.**

   A wide range of AI technical standardization efforts are already underway that are both cross-sectoral and sector-specific, and the App Association expects such standardization efforts to grow in number moving forward. We do not see a deficiency as far as cross-sectoral versus sector-specific AI standardization efforts. Pursuant to the EO, we encourage NIST to find consensus amongst the Federal government as to areas of need and opportunities and to bring this input to key SSOs such as IEEE.

6. **Whether the need for AI technical standards and related tools is being met in a timely way by organizations.**

   Generally, the App Association believes that AI multistakeholder standardization processes meet organizations' needs in a timely manner. We support NIST encouraging these standardization processes to continue, grow, and urge against Federalizing AI standardization processes. U.S. strength and leadership in AI will be driven by private sector investment and innovation.

7. **Whether sector-specific AI technical standards needs are being addressed by sector-specific organizations, or whether those who need AI standards will rely on cross-sector standards which are intended to be useful across multiple sectors.**

   The App Association believes that sector-specific standardization efforts today, and moving forward, utilize cross-sectoral standardization efforts as needed. The degree to which this occurs will depend on the specific standardization effort. We believe this dynamic and its "as needed" dynamic is appropriate and does not require U.S. government intervention.

8. **Technical standards and guidance that are needed to establish and advance trustworthy aspects (e.g., accuracy, transparency, security, privacy, and robustness) of AI technologies.**

   The App Association is aware of both cross-sectoral (e.g., ISO JTC1 SC4) and sector-specific (e.g., IEEE efforts noted above focused on healthcare AI) standardization efforts to address AI trustworthiness. Almost universally, AI standardization is addressing trustworthiness in some respect.

9. **The urgency of the U.S. need for AI technical standards and related tools, and what U.S. effectiveness and leadership in AI technical standards development should look like.**

   The App Association believes that U.S. leadership in AI technical standardization is strong, but it faces threats which makes the need for U.S. action urgent. NIST's efforts pursuant to the EO are appropriate, and the App Association supports the goals of the EO generally.

   We also incorporate our response to other Questions (in particular, Question 12) as input on what U.S. effectiveness and leadership in AI technical standards development should look like.

10. **Where the U.S. currently is effective and/or leads in AI technical standards development, and where it is lagging.**

    The App Association believes that U.S. leadership in AI technical standardization is strong, but it faces threats which make the need for U.S. action urgent. NIST's efforts pursuant to the EO are appropriate, and the App Association supports the goals of the EO generally.

    We also incorporate our response to other Questions (in particular, Question 12) as input on what U.S. effectiveness and leadership in AI technical standards development should look like.

11. **Specific opportunities for, and challenges to, U.S. effectiveness and leadership in standardization related to AI technologies.**

    The App Association believes that the identification of needs addressed through AI standards should occur through the multistakeholder SSO process and should not be mandated by the U.S. government (however, we strongly support U.S. government engagement in SSO processes).

    The App Association also urges NIST to encourage the development of common AI nomenclature, definitions, and terminology through standardization efforts. In particular, NIST should ensure that well-vetted definitions are developed for and used across the U.S. government to avoid confusion within and outside of the government.

    We also incorporate our response to Question 12 below as input on what U.S. effectiveness and leadership in AI technical standards development should look like.

12. How the U.S. can achieve and maintain effectiveness and leadership in AI technical standards development.

The App Association strongly encourages NIST and the U.S. Federal government to support public-private collaboration on AI through standardization by encouraging key U.S.-based SSO such as IEEE to grow and thrive. The U.S. government can support such organizations through pro-innovation policies that encourage private sector research and development of AI innovations and the development of related standards.

Namely, the United States should ensure that such standards are accessible to innovators by promoting a balanced approach to standards-essential patent (SEP) licensing. AI technical standards, which are built on contributions through an open and consensus-based process, bring immense value to consumers by promoting interoperability while enabling healthy competition between innovators; and often include patented technology. When an innovator gives its patented technology to a standard, this can represent a clear path to being rewarded in the form of royalties from a market that likely would not have existed without the standard being widely adopted. To balance this potential with the need for access to the patents that underlie the standard, many SSOs require holders of patents on standardized technologies to license their patents on fair, reasonable and non-discriminatory (FRAND) terms. FRAND commitments prevent the owners of patents that must be used in order to implement the standard from exploiting the unearned market power that they otherwise would gain as a consequence of the broad adoption of a standard. Once patented technologies are incorporated into standards, manufacturers are compelled to use them to maintain product compatibility. In exchange for making a voluntary FRAND commitment with an SSO, SEP holders gain the ability to obtain reasonable royalties from a large number of standard implementers that might not have existed absent the standard. Without the constraint of a FRAND commitment, SEP holders would have the same power as a monopolist that faces no competition.

Unfortunately, a number of owners of FRAND-committed SEPs are flagrantly abusing their unique position by reneging on those promises with unfair, unreasonable, or discriminatory licensing practices. These practices, which have been closely examined by antitrust and other regulators in many jurisdictions, not only threaten healthy competition and unbalance the standards system but also impact the viability of new markets such as AI. The negative impacts on small businesses are only amplified because they can neither afford years of litigation to fight for reasonable royalties nor risk facing an injunction if they refuse a license that is not FRAND compliant.

Patent policies developed by SSOs today will directly impact the way we work, live, and play for decades to come. The importance of these issues to app developers and entire industries is why ACT | The App Association has launched the All Things FRAND (http://www.allthingsfrand.com/) project. The App Association urges NIST to utilize All Things FRAND as a resource to better understand how regulators and courts around the world are defining FRAND.

SSOs vary widely in terms of their memberships, the industries and products they cover, and the procedures for establishing standards. In part due to the convergence associated with the rise of IoT, each SSO will need the ability to tailor its intellectual property policy for its particular requirements and membership. The App Association believes that some variation in patent policies among SSOs is necessary and that the U.S. government should not prescribe detailed requirements that all SSOs must implement. At the same time, however, as evidenced by the judicial cases and regulatory guidance, basic principles underlie the FRAND commitment and serve to ensure that standard-setting is pro-competitive, and the terms of SEP licenses are in fact reasonable. Ideally, an SSO's intellectual property rights policy that requires SEP owners to make a FRAND commitment would include all of the following principles that prevent patent "hold up" and anti-competitive conduct:

- ***Fair and Reasonable to All*** *– A holder of a SEP subject to a FRAND license such SEP on fair, reasonable, and nondiscriminatory terms to all companies, organizations, and individuals who implement or wish to implement the standard.*
- ***Injunctions Available Only in Limited Circumstances*** *– Injunctions and other exclusionary remedies should not be sought by SEP holders or allowed except in limited circumstances. The implementer or licensee is always entitled to assert claims and defenses.*
- ***FRAND Promise Extends if Transferred*** *– If a FRAND-encumbered SEP is transferred, the FRAND commitments follow the SEP in that and all subsequent transfers.*
- ***No Forced Licensing*** *– While some licensees may wish to get broader patent holder should not require implementers to take or grant licenses to a FRAND-encumbered SEP that is invalid, unenforceable, or not infringed, or a patent that is not essential to the standard.*
- ***FRAND Royalties*** *– A reasonable rate for a valid, infringed, and enforceable FRAND-encumbered SEP should be based on several factors, including the value of the actual patented invention apart from its inclusion in the standard, and cannot be assessed in a vacuum that ignores the portion in which the SEP is substantially practiced or royalty rates from other SEPs required to implement the standard.*

We also note that a number of SSO Intellectual Property Rights (IPR) policies require SSO participants to disclose patents or patent applications that are or may be essential to a standard under development. Reasonable disclosure policies can help SSO participants evaluate whether technologies being considered for standardization are covered by patents. Disclosure policies should not, however, require participants to search their patent portfolios as such requirements can be overly burdensome and expensive, effectively deterring participation in an SSO. In addition, FRAND policies that do not necessarily require disclosure, but specify requirements for licensing commitments for contributed technology, can accomplish many, if not all, of the purposes of disclosure requirements.

The U.S. Department of Justice (DOJ) has already encouraged SSOs to define FRAND more clearly. For example, DOJ's former assistant attorney general Christine Varney explained that "clearer rules will allow for more informed participation and will enable participants to make more knowledgeable decisions regarding implementation of the standard. Clarity alone does not eliminate the possibility of hold-up…but it is a step in the right direction."[8] As another example, Renata Hesse, a previous head of the DOJ's Antitrust Division, provided important suggestions for SSOs to guard against SEP abuses that included at least three of the aforementioned principles.[9]

[8] Christine A. Varney, Assistant Att'y Gen., Antitrust Div., U.S. Dep't of Justice, Promoting Innovation Through Patent and Antitrust Law and Policy, Remarks as Prepared for the Joint Workshop of the U.S. Patent and Trademark Office, the Federal Trade Comm'n, and the Dep't of Justice on the Intersection of Patent Policy and Competition Policy: Implications for Promoting Innovation 8 (May 26, 2010), *available at* http://www.atrnet.gov/subdocs/2010/260101.htm.

[9] Renata Hess, Deputy Assistant Attorney General, *Six 'Small' Proposals for SSOs Before Lunch*, Prepared for the ITU-T Patent Roundtable (October 10, 2012), *available at* https://www.justice.gov/atr/speech/six-smallproposals-ssos-lunch.

In response to DOJ's calls for more clarity, the IEEE Standards Association (IEEE-SA) revised its patent policy to clarify the required FRAND commitments. IEEE-SA's revised patent policy incorporates many of the principles we listed above and that DOJ suggested SSOs adopt. Per IEEE's request, the DOJ reviewed IEEE-SA's revised policy and found it to be consistent with U.S. law.[10] *The DOJ explained in detail why the revised policy "has the potential to facilitate and improve the IEEE-SA standard-setting process" by "bringing greater clarity to the IEEE RAND Commitment."*[11] *For example, the DOJ found that the provision of Reasonable Rate in the IEEE-SA's revised policy "could help speed licensing negotiations, limit patent infringement litigation, enable parties to reach mutually beneficial bargains that appropriately value the patented technology, and lead to increased competition among technologies for inclusion in the IEEE standards."*[12]

Unfortunately, despite DOJ's detailed review and blessing, IEEE-SA's revised intellectual property rights policy has been under attack by a few entities that receive significant royalties and would prefer to leave FRAND undefined. To date, only a small number of SSOs of which the App Association is aware have taken steps similar to IEEE. This is largely due to the fact that most SSOs struggle to follow IEEE's example because their membership includes SEP holders that make significant sums of money through licensing their patents and do not want FRAND commitments to restrain their ability to charge high royalties. For this reason, we believe there is a need for U.S. government (specifically, NIST's) guidance to encourage SSOs to clarify their patent policies in response to their members' needs.

[10] *See generally* Letter from Renata B. Hess, U.S. Department of Justice, to Michael A. Lindsay, Dorsey & Whitney LLP (February 2, 2015).

[11] *Id.* at 8.

[12] *Id.* at 22.

The App Association supports the goals of the National Technology Transfer and Advancement Act[13] recently-revised OMB Circular A-119, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities.[14] Notably, OMB Circular A-119 creates a clear preference for the use of "voluntary consensus standards" as a basis for regulatory and procurement activities in lieu of government-unique standards, except when this would be inconsistent with applicable law or otherwise impractical. Moreover, consistent with our prior comments on policies that promote effective standards for the development and deployment of IoT, OMB Circular A-119 defines a "voluntary consensus standard" to include those that "requir[e] that owners of relevant intellectual property have agreed to make that intellectual property available on a non-discriminatory, royalty-free or reasonable royalty basis to all interested parties."[15]

14. The type and degree of Federal agencies' current and needed involvement in AI technical standards to address the needs of the Federal government.

The App Association appreciates U.S. government involvement in AI technical standardization efforts to date and encourages as robust of participation as possible. We suggest that greater participation is needed to ensure that Federal needs are reflected in consensus AI technical standards.

15. How the Federal government should prioritize its engagement in the development of AI technical standards and tools that have broad, cross-sectoral application versus sector- or application-specific standards and tools.

The App Association believes that Federal participation in both cross-sectoral and sector-specific AI technical standardization efforts are appropriate and that one should not be systematically prioritized over the other. For example, while NIST may most appropriately plug into a cross-sectoral effort, sector-specific agencies like the Department of Health and Human Services may find much more value in sector-specific efforts.

[13] National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113 (1996).

[14] Revision of OMB Circular No. A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities", 81 FR 4673 (Jan. 27, 2016).

[15] *Id.* at 16.

16. **The adequacy of the Federal government's current approach for government engagement in standards development, which emphasizes private sector leadership, and, more specifically, the appropriate role and activities for the Federal government to ensure the desired and timely development of AI standards for Federal and non-governmental uses.**

    The App Association supports the current Federal approach to government engagement in standards development, which emphasizes private sector leadership. We believe this time-tested approach will facilitate useful and timely AI technical standards.

17. **What actions, if any, the Federal government should take to help ensure that desired AI technical standards are useful and incorporated into practice.**

    In addition to the recommendations above, we encourage NIST to ensure uniformity in AI-related terminology and in the use of AI technical standards to the extent practicable.

IV. Conclusion

The App Association appreciates NIST's consideration of our responses above. We urge NIST to contact the undersigned with any questions or ways that we can assist moving forward.

Sincerely,

Brian Scarpelli
Senior Global Policy Counsel

Kate Hirzel
Policy Associate

ACT | The App Association
1401 K St NW (Ste 501)
Washington, DC 20005
202-331-2130