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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/.

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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,

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