July 19, 2019

Response to Draft "Plan for Federal Engagement in Developing Technical Standards and Related Tools"

Introduction

The Information Technology Industry Council (ITI) welcomes the opportunity to provide comments to NIST's draft "Plan for Federal Engagement in Developing Technical Standards and Related Tools." With respect to standardization in Artificial Intelligence (AI), it is important that U.S. industry and the U.S. government see each other as essential partners. While technology and innovation leadership comes from industry, we agree that governments have an important role to play in supporting an open, voluntary, consensus-based standards development process. ITI appreciates NIST's emphasis on industry-led, voluntary, consensus-based international standards and encourages continued reliance on OMB Circular A-119, *Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities.*

About ITI

ITI represents over 65 of the world's leading information and communications technology (ICT) companies. We promote innovation worldwide, serving as the ICT industry's premier advocate and thought leader in the United States and around the globe. ITI's membership comprises top innovation companies from all corners the technology sector, including hardware, software, digital services, semiconductor, network equipment, and internet, as well as "technology-enabled" companies that rely on ICT to evolve their businesses.

General Comments

Standardization is an opportunity to reach consensus on those aspects of a technology where competitive advantage can be achieved through product differentiation. Neither international nor national standardization should be seen as a venue for achieving national advantage. Rather, it should be viewed as an opportunity to cooperate to the maximum extent practical for mutual benefit. Standards reflect enablers, not maximizers of technology. A key aspect of successful standardization is engagement by a broad spectrum of the public and private sectors to both lead and contribute. It should be noted that leadership in standardization is reflected not in the number of participants, quantity of submissions, or the leadership positions held. Instead, leadership is reflected in the ability to garner consensus, ensure quality and drive adoption of the resultant standards.

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A Caveat Regarding Standards References

Governments may reference standards as the basis for technical regulations. This is appropriate under certain, limited circumstances. However, requiring adherence to specific standards through policies and regulations and citing specific standards in agency procurements carries risk that mandating specific standards can preclude government from selecting the best fit for specific requirements, limit competition to only those supporting one specific standard, and create unnecessary increased cost to the private sector to support standards that may not necessarily be the best fit for the specific application. Too often standards are cited by procurement officers with little understanding of the true purpose and use of the standard. The federal government should recognize the value of standardization and cite the need for alignment to a range of standards –with a preference for international standards, when appropriate, to avoid creating trade barriers– rather than specifying single standards that address a solution.

Open Source Software Initiatives

The proposed approach pays little attention to AI Open Source Software (OSS). The federal government should recognize that community-based OSS initiatives play an important role for development of AI technologies, applications, standards, and tools, and consider engagement in this arena as part of this strategy. OSS initiatives support interoperability in that they develop not only reference implementations which can be used to create IT solutions and often publish methodology documents or technical specifications to facilitate interoperable implementations. This provides a pathway for a competive marketplace for development of solutions.

A few additional AI-related OSS initiatives that we recommend adding to Appendix II are:

- CaffeOnSpark
- Cortana
- OpenAI
- H2O.ai
- ONNX

Thank you for your consideration. ITI and its member companies look forward to working together with NIST and the U.S. government on the development and implementation of this plan going forward.

Specific Comments

SECTION	LINE(S)	COMMENT/RATIONALE	PROPOSED CHANGE(S)
1D	173	Although Data Standards (including data exchange) and Networking Standards are listed, these don't clearly articulate the need for standards focused on Interoperability.	Interoperability as a functional area for AI Standards should be called out in Table 1 on Technical Standards Related to AI Based on Stakeholder Input.
1E	184	The discussion should be expanded to include standardization of data contextualization. Capturing the full context of the data in a standardized manner will significantly enhance the capability of AI algorithms. For example – knowing that performance data is occurring in a battle scenario under specific conditions will enable an AI system to make better choices for that specific scenario in the future as opposed to performance data in exercise/training or even a testing environment.	Amend bolded text of the bullet to read: "Data standards, sets, and contextualization in standardized formats, …"
2C	400	It is important the government recognize that in many cases existing standards should be modified to reflect additional requirements rather than develop competing standards.	"If appropriate standards do not exist, engage in their development" should be changed to "If appropriate standards exist that don't fully meet agency requirements, or do not exist, engaged in their modification or development as appropriate."
3	434-450	Missing in this section is any mention of engaging in standardization activities around ethical uses of AI.	Between lines 447-449, we suggest the edit: "… 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

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			trustworthy AI technologies, and should also commit to work on AI ethics to ensure safety and that development of the technology is not hampered by inappropriate or inconsistent positions on AI ethics."
3.1	450-452	In addition to the designation of a Standards Coordinator, stronger language should be included in which a "Federal AI Standards Coordination Board" consisting of representatives from all relevant federal departments and agencies is set up to align the requirements of the various federal departments and agencies. The purpose of the board would be to coordinate requirements submission to the expected plethora of AI standardization activities to come, and to ensure a coordinated, shared representation of the totality of US federal government AI expert participation in those activities so as to maximize exposure while minimizing resource requirements. Standards development is only as good as the quality of the input. The federal government all too often is limited in their ability to provide input due to budgetary resource constraints. The proposed AI Standards Coordination Board addresses this impediment.	Under 3.1, add: "In addition to a Standards Coordinator, create a Standards Coordination Board. *Suggested Lead: Department of Commerce*."
3.4	510-515	Considering the immense international efforts to develop "ethical" AI, the U.S. government should work with international partners and organizations to influence and coordinate on developing positions on AI ethics to ensure that the private sector is not handcuffed by differing positions on AI ethics.	Add: "Partner and accelerate the exchange of information between Federal officials and counterparts in like-minded countries on AI standards, **ethics,** and related tools. *Suggested lead: NIST, Department of State, International Trade Administration, National Institute of Justice."*

Appendix II		Missing Published Standard	Organization: ANSI Title: SAE CRB1-2016 – Managing the Development of AI Software Details: describes an alternative software life cycle model for expert system development. Since the field of Artificial Intelligence is so broad, this report limits the software to be considered. Systems that would be of the greatest interest to DoD over the next 5 to 7 years would be expert systems that have the following attributes: - may reason with uncertainty - are not necessarily rule-based - are non-learning systems. For these systems, a developmental cycle is articulated, and each phase of the cycle described.
Appendix II		Missing Published Standards	ISO/IEC 2382:2015: Information Technology - Vocabulary Consolidation and revision of ISO/IEC 2382 – 28 Artificial Intelligence – Basic concepts and expert systems, -31 Artificial Intelligence – Machine Learning, -34 Artificial Intelligence – Neural Networks
Appendix II		Missing Standard	IEEE SA – 3333.1.3 Standard for the Deep Learning-based metrics of content analysis and QOE
Appendix II		Missing Standards Activity	Although not a standard per se, the federal government should evaluate engagement in the IEEE Symbiotic Autonomous Systems Initiative whose focus is to develop

			new field of Symbiotic Systems Science, foster interdisciplinary technology deployments taking into account Ethical, Legal, and Societal considerations
Appendix II		Missing Standards	ONNX - Open Format to represent deep learning models Flexibility to move deep learning models seamlessly between open-source frameworks to accelerate development for data scientists