December 19, 2023

RE: Comments on Implementation of the United States Government National Standards Strategy for Critical and Emerging Technology (USG NSSCET) National Institute of Standards and Technology (NIST), Commerce Docket Number 230818-0199

ANSI is pleased to provide input to NIST to help identify and prioritize key concepts, proposed initiatives and related activities to optimize the U.S. government's implementation of the National Standards Strategy for Critical and Emerging Technology (NSSCET) and further enhance the U.S. government's ability to support and promote a private sector-led, open, fair and consensus-based international standards system, in which the U.S. government is an active stakeholder and participant.

We note that the NSSCET looks at the standards system largely through a national security lens and focuses on standards for critical and emerging technology (CET), emphasizing the importance of prioritizing efforts for standards development for a subset of CET that are essential for U.S. competitiveness and national security. With this focus in mind, the NSSCET has brought renewed attention to the importance of public-private collaboration in standards and innovation.

In pursuing the objectives of the NSSCET, it is important for the U.S. government to keep in mind that CET areas are diverse; each has its own characteristics, with different technology maturity profiles and different roles for standards. In some technology areas, potential standards solutions are relatively easy to identify and there are only a few relevant standards development models to consider. In other areas, issues are diverse and there are numerous, sometimes seemingly competing standards activities underway or planned. Implementing a one size fits all solution is not an effective approach, and could do more damage than good.

As a stakeholder in the private sector-led system the U.S. government should be mindful of the need to work within that system to achieve its goals as outlined in the NSSCET. This means remaining laser focused on respecting the private sector's leadership and contributions to maintaining the integrity of the system. Effective government-wide implementation of the strategy should focus on partnering with the private sector to enhance a sustained, long-term, proactive approach to standards development.

We recommend as an overarching approach that any policies which may be considered in response to the NSSCET should be principles-based and not prescriptive in nature – informing industry-led standardization efforts that are fit for purpose and able to adapt quickly as market needs evolve.

General/Introduction

The U.S. standardization system is one of the most wide-reaching, inclusive and impactful public-private partnerships in our nation's history. The system is market driven, flexible and responsive; and highly integrated with the global standards system. It has evolved over time to meet new needs as they emerge, embracing a range of standards development models. Stakeholders in both the private and public sectors have a choice of where they take standards work items at any stage in the technology cycle. This has enabled the rapid advancement of standards deliverables when needed.

There is a longstanding recognition in the U.S. that standards are a building block for U.S. innovation, competitiveness, security, and quality of life. This fact has been formally recognized in both U.S. law and policy, in the *United States Standards Strategy (USSS)*, and now in the NSSCET. Within this framework, government stakeholders should not take unilateral steps to attempt to "predetermine" standardization outcomes, including in areas that are priorities for the U.S. government, and instead should collaborate with private-sector stakeholders, civil society and other interests to help shape consensus-based and market-driven standards outcomes.

The fact that our system is open, market-driven, voluntary and private-sector-led is critical to achieving the widely shared policy goals of expanded U.S. leadership and innovation on the global stage, and enables the U.S. to deliver responsive, globally relevant solutions in connection with critical and emerging technology.

The U.S. government should:

- Be an active stakeholder in relevant standards processes and effectively promote the interests of the U.S. government in those processes.

- Support the integrity of the international standards system, promoting the World Trade Organization Technical Barriers to Trade Agreement principles of transparency, openness, consensus, impartiality, due process, effectiveness and relevance in bilateral, regional and multilateral engagements.

- Seek to engage a wide range of market participants in standards efforts, recognizing that market forces continue to be the primary factor informing industry standardization efforts that are fit for purpose and able to flex quickly as market needs evolve.

Investment

The following recommendations are intended to inform U.S. government policies that promote standards development for CET; utilize federal R&D spending to drive technical contributions to CET standards; and facilitate the adoption of CET-related standards.

- The rapid pace of change in the technology and standards space has made maintaining awareness of and tracking activities a huge challenge. The U.S. government should partner with ANSI and standards organizations to encourage information exchange and coordination for priority CET-related standardization, leveraging existing public-private sector fora and communities of interest where they exist.[1]
- Information about CET standards landscapes is valuable – to enable stakeholders to identify priority standards venues and activities. ANSI has a 20 year history of successful standards facilitation activities – via panels, workshops and collaboratives – that should be leveraged.

The lifecycle for standardization of CET, or specific applications of CET, often begins with a set of pre-standardization activities that occur before standardization starts. These include research and development (R&D) activities that can feed technical contributions to standards. Pre-standardization research is particularly relevant in foundational technology areas - those that can enable progress and applications in a variety of problem domains. Such areas include but are not limited to advanced communications, artificial intelligence, and biotechnology. A pre-standardization focus on research can drive significant contributions and engagement in standards bodies in these areas.

- Government agencies should invest in CET-related research directly in their mission areas, as well as through cooperative agreements with universities and industry. Government agencies could require, as part of the agreement, that the researcher consider the implications of the research outcomes for standardization.
- The government should also conduct targeted outreach to the academic and research communities to identify and engage these communities in pre-standardization research.[2]
- NIST should engage and educate funding agencies, such as the National Science Foundation, Department of Energy, Department of Defense, etc. (all of which provide research grants and funds to academia and SMEs) on how to work with standards organizations, to include conducting joint research, identifying standards gaps and priorities, referencing standards, funding and participation in the development process.
- NIST should also develop programs, training and the professional support so awardees understand the value of transferring their research and knowledge to the standards community.

The publishing and adoption of a standard is not the end of the standard lifecycle. A continually changing technology landscape necessitates updates to, and occasionally retirement of, existing standards. Part of ongoing research and development within standards organizations

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[1] In the critical infrastructure space, the Sector Coordinating Councils (SCCs) established by the Department of Homeland Security's Cybersecurity and Information Security Agency (CISA) could be a home for keeping tabs on the standards landscape for their space. This network could be supplemented by a Cross-Coordinating Group that can call on the Standards Working Groups under the SCCs-- with the volume of works across a changing number of standards organizations.

[2] Academic contributions are currently underutilized. There is little incentive for university researchers to participate in standards development because academics cannot gain professional credit or recognition for their contributions in the same way that they can in the research community. This gap could potentially be addressed through partnerships such as the Government-University-Industry Research Roundtable (GUIRR) and the Federal Laboratory Consortium, which NIST chairs.

is to review existing standards to ensure that they stand the test of time, and if they do not, update them to coincide with the changing technical requirements.

- Government agencies should look to inform and potentially partner with standards organizations as they initiate research and development projects to support new standards initiatives as well as maintenance of existing standards. As above, government programs and funded projects should be designed to have specific standards-related outcomes whenever possible. More investment in such focused activities would be valuable, as would collecting and consolidating information on what research is being done.
- With respect to facilitating standards implementation, government engagement and related activities, such as those outlined below, can help "de-risk" both development and implementation activities.
  - o Identifying use cases for specific fast moving technologies; creating "sandboxes"[3] for testing various approaches to interoperability (through plug-fests, for example), testing and validation, regulatory compliance where relevant.
  - o Facilitating and possibly funding data repositories that can support safe and trusted technology testing and deployment (in the AI space for example). There is a demonstrated need for tools and coordination to build and share data and information and break down barriers to information that may or may not be publicly available.

Participation

The following recommendations are intended to inform U.S. government policies to increase the level and consistency of participation and foster early collaboration with the private sector to identify priority areas of standardization for CET.

The race to develop globally accepted standards is continuing apace—and economic, security, and public health challenges continue to raise the stakes at home and around the globe. Part of the challenge in private sector engagement is knowledge and awareness. Two additional hurdles to participating in standards development are the time (of the subject matter experts) and difficulty navigating standards processes (especially for experts who would not ordinarily participate in standards development). Identifying and leveraging existing resources for information about CET-related standards in progress, for comment, and published would be helpful. Identifying opportunities for early engagement could help increase private sector engagement.

- The U.S. government can influence the private sector to commit to or increase standards participation through its actions:
  - o Departments and agencies should rely on organizations that develop international standards to develop CET requirements or recommendations that are needed for their mission (or assigned through the Executive branch or

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[3] A regulatory sandbox is a tool allowing businesses to explore and experiment with new and innovative products, services or businesses under a regulator's supervision.

legislation) – rather than establishing a government-led process that competes for the limited time/resources of an organization. Departments and agencies should publicize where they are taking such work and encourage interested parties and allies to participate in the effort.

o Departments and agencies should point to existing international standards when creating technical regulation or procurement rules. Not only does this encourage US stakeholder participation, it provides leadership globally on how modern economies can best manage/regulate technology.

Government should be mindful that the standard setting system is broad and diverse, and participation only tells part of the story. The standards landscape in specific CET areas varies and a one-size-fits all strategy will not be effective. Government strategies will need to be tailored to address unique needs associated with each CET area.

- Government policy makers should work collaboratively with private sector stakeholders to advocate for respect for the integrity of standardization efforts, recognizing that these efforts encompass a wide variety of participation models.
- The administration should work with Congress to advocate for additional funding to allow more U.S. government personnel to participate in standardization activities, including attending standards development meetings.
- The federal government should also encourage state/local government participation where relevant, as these policymakers and regulators may have a role in some CET areas.[4]

Some standards developers are adapting their processes to meet stakeholder demands. Rapid experimentation and innovation - often necessary in the early stage of development and consensus building - can be accomplished in open source software (OSS) organizations and communities.

- To keep pace with this dynamic environment, the U.S. government needs to develop an agile and nuanced approach to the NSSCET implementation plan, which should address open source software (OSS) strategy in relation to formal standards development deliverables - not necessarily in an "either-or" approach or context.

ANSI looks forward to partnering with NIST to work with relevant standards organizations to raise the visibility of priority activities and broaden stakeholder understanding of key standards development processes.

Workforce

The following recommendations are intended to inform U.S. government policies on how the government can leverage digital tools and resources to improve access to standards development processes, increase engagement; incentivize the modification of existing

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[4] Examples include critical minerals and the need to engage indigenous communities in sustainability discussions; automated and connected transportation infrastructure, where state and local restrictions and/or infrastructure gaps may limit broader deployment of some technology solutions; and AI, where state regulatory activity has spiked since 2022, in the absence of federal legislation

curricula or development of new curricula; and support recognition for standards development participation.

As new technologies evolve, there is a related demand for a higher and/or different level of technical expertise among participants. It may be difficult for some standards professionals to remain current and engage effectively and with relevant technical input in some areas. Knowledge transfer, through training, education and mentorship programs, is critical.

ANSI has a broad range of programs, resources and tools in the standards education space and would be pleased to partner more closely with NIST and other government agencies on joint activities.

ANSI's Committee on Education (COE) oversees all ANSI initiatives related to standards and conformity assessment education and outreach. The committee works with the entire standards and conformity assessment community to introduce the importance of standards to the academic community, and to the public at large, and continually seeks out partnerships and opportunities to engage and inform new constituents. The COE brings together representatives from SDOs, industry, academia and government to collaborate on standards training and education initiatives.

ANSI is currently reviewing existing training and education offerings to ensure continued relevance to current and new audiences. ANSI is also working to strengthen and expand collaboration with academia.

In addition to core messaging on the TBT principles for international standards, the appropriate role of government as a stakeholder in the system, and other system-level messages, ANSI offerings will address the importance of technical standards activities and standards skill sets in CET areas.

- NIST and government agencies should collaborate with ANSI, standards developers, industry, academia, technical and trade schools, to develop new or enhance existing standards education programs that build awareness of the value of standards and the standardization process to U.S. prosperity and quality of life, as well as recognition of the role of standards as tools that enable the application of technology solutions.
- NIST should continue to empower educational institutions to incorporate standards curricula into courses, leveraging its Standards Education grant program. The scope of this program could be expanded to include community colleges and technical schools.
- Education, training, and retraining (mid-career) programs should be tailored to relevant audiences, including industry executives, individuals who participate in the development of standards, implementers of standards, university and college students, young and emerging professionals, and other interested parties.
- Standards education programs should be inclusive and address the needs of the full range of stakeholder groups within the United States appropriately.
- Education and training providers should work to attract and educate additional stakeholder groups, such as start-ups, small- and medium-sized companies, academia, and members of civil society.
- Consider benchmarking against other countries to apply lessons learned from their experiences to efforts in the U.S. for standards education programs.

ANSI would be pleased to coordinate with NIST, other government agencies, and private sector stakeholders on training for federal agency staff, standards curricula development, and other touch points in the education and training space.

Integrity and Inclusivity

The following recommendations are intended to inform U.S. government policies to support coordination, communication, and collaboration, both within the U.S. government and with partners and allies, to reinforce TBT principles for the development of international standards.

Within the U.S. government, action is needed to address the gaps between policy and technical levels in government agencies as well as to enhance coordination among agencies. Both areas can benefit from clear messaging and frequent communications, within and among agencies. In the absence of focused communication efforts, there is potential for fragmentation of government policy as a result of multiple government agencies engaging in standards-related policy activities independently. One area of current concern is a disconnect between government trade policy-related activities pursuant to the implementation of the NSSCET and new government paths that different agencies are forging that are not necessarily coordinated with the existing trade policy framework.

It will also be important to review proposed CET-related government policy approaches to ensure that they do not have unintended consequences for U.S. participation within international standards arenas[5]; and to proactively monitor and rebut similar legislative efforts by other technical and trading partners that could lead to fragmentation in the standards ecosystem.

- There is a clear opportunity in implementing the NSSCET for the U.S. government to review existing agency programs and for agencies to work more closely with each other to communicate the need for policy, and robust revisiting of policy where appropriate account for emerging and dynamic spaces. A suggestion to consider would be either to establish an interagency working group or working groups for this purpose or identify a lead at NIST for each CET so NIST can help effectively coordinate multiple agency activities. Government-led working groups should also engage industry, SDOs, and other interested parties and should focus on contributing working group outputs to developing international standards as the end goal.

It is extremely important to take a consistent approach to the treatment of standards in government-to-government dialogues -both bilateral and multilateral- and coordinate with the private sector on related objectives, engagement strategies, and messaging. [6]

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[5] such as the since revised 2019 Bureau of Industry and Security rule and related "General Advisory Opinion Concerning Prohibited Activities in the Standards Setting or Development Context When a Listed Entity Is Involved''

[6] The artificial intelligence space provides a clear example of the need for close public-private sector cooperation and coordination. The Executive Order announced on October 30, 2023 directs the Secretaries of Commerce and State "*To advance responsible global technical standards for AI development and use outside of military and intelligence areas…lead preparations for a coordinated effort with key international partners and with standards development organizations, to drive the development and implementation of AI-related consensus standards, cooperation and coordination, and information sharing.*"

- Government to government discussions should promote the existing WTO TBT provisions and good regulatory practices as a method for ensuring fair and open access to international markets, and avoiding a bifurcation of the international standards system (and resulting standards) into regional or national factions. Information on standards-related government-to-government discussions should be shared widely and private sector stakeholders engaged early to provide input and inform these discussions.
- Moreover, the government has the opportunity to reinforce that U.S.-domiciled SDOs (e.g., ASTM International, IEEE-SA and UL Standards & Engagement, among others) are developing international standards pursuant to the principles for international standards development articulated by the WTO TBT Committee. The U.S. government should reinforce that international standards exist beyond those developed by IEC, ISO, and ITU.
- Strengthen government-funded international outreach programs to promote understanding of how stakeholder-driven standards can benefit businesses, consumers and society as a whole. Examples include the U.S. Agency for International Development-ANSI Standards Alliance, U.S. Trade and Development Agency programs, and International Trade Administration programs – Market Development Cooperator Program, Commercial Law Development Program, and standards attaches.

Conclusion

ANSI and its members look forward to continuing to contribute toward a strong public private partnership for the development of global standards, to optimize the government's implementation the NSSCET. ANSI believes that through private sector feedback the NSSCET may have stronger alignment and greater compatibility with best international practices and agreements to which the U.S. government is a party, such as the WTO/TBT. Ensuring that key principles are well-crafted within the NSSCET is of critical importance as this document will be not only an essential tool for U.S. public-private sector coordination but also a model for the U.S. government's harmonization efforts globally.

Thank you for the opportunity to comment. ANSI would be happy to provide clarification or further engage with NIST in any way deemed useful that may bring more insight to the implementation of the NSSCET.