INTERNATIONAL
STANDARDS &
SPECIFICATION
SETTING

PREPARED BY

atis | ctia | ITI | ncta THE INTERNET & TELEVISION ASSOCIATION | TIA | USTELECOM THE BROADBAND ASSOCIATION

TECHNOLOGY STANDARDS AND SPECIFICATION DEVELOPMENT provides the foundation for transforming innovation into products and services that change the world. The architectural models, features, and capabilities that are defined by standards and specifications are essential to technological creativity, interoperability, and the establishment of global platforms for innovation and value creation. When developed through industry-driven, transparent, and voluntary development procedures, collaboration between different technology developers is enabled. Contributors submit their ideas in a consensus building process that, following robust debate and review, enables technology that promotes interoperability, unlocks greater functionality, and generates network effects—value that is greatly beyond the sum of the individual parts. The industry-driven model heretofore has been a crucial component to innovation in, and the development of, the global digital economy, which has made enormous contributions in improving quality of life around the world. To ensure that U.S. technology firms continue to be able to compete on a global scale, U.S. industry and government should work together to promote and preserve the widespread use of the industry-driven model.

There has been a growing perception by some that the United States is either falling behind or being outflanked through the global standards and specification development process, particularly by China. These perceptions tend to underestimate the strength of rules-based, consensus-driven standards development organizations to prevent inordinate influence by any actor. However, the U.S. government can take both immediate and longer-term actions to strengthen U.S. leadership in standards, which would bolster U.S. competitiveness.

THE NEXUS BETWEEN STANDARDS AND U.S COMPETITIVENESS

There is an important distinction in the global standards[1] development landscape: industry-driven vs. government-driven organizations. Overwhelmingly, industry prefers to drive technology standards and specification development through industry-driven, voluntary, consensus-based bodies—and the ecosystem has found this approach to be vastly more successful than government-driven efforts. Conversely, in organizations where governments decide and formally vote on standards, there is significantly less meaningful industry engagement. In addition, such government-driven organizations have not typically been enablers of innovation. While there are some challenges with respect to the industry-driven bodies, those bodies maintain and utilize governance mechanisms to ensure a level playing field. The larger challenges exist in the government-driven bodies where geopolitics and diplomatic influence play the main role in decisions of technology and policy.

Even in the government-driven International Telecommunication Union Telecommunication Standardization Sector (ITU-T), where membership is open to industry, we have repeatedly observed the specter of government, rather than market consensus or technical expertise, forming the basis of *policy proposals*. This speaks to the need to address ITU governance issues, even if policy proposals do not entail success with respect to *technical standards contributions*.

---

1   Some organizations (including IETF, W3C, ATIS, ETSI, and IEEE) describe their deliverables as "standards." Other organizations (including 3GPP, the O-RAN Alliance, CableLabs, and the Broadband Forum) describe their deliverables as "specifications."

While some of the dynamics described above are also present in the industry standards and specification-setting bodies, established operating procedures prevent one country (or even one business organization) from having an outsized influence.[2] And where there are examples of increased coordinated voting by organizations, the transparent nature and rules-based process allow participants to identify, address, and prevent any inappropriate behavior, making it harder for one company or country to dominate decisions within these bodies.

The U.S. government can and should take steps to help ensure the continued independence and success of the industry-driven, voluntary standards and specification development model, including encouraging *all interested stakeholders and countries* to participate in international standards development *and adopt international standards* rather than setting their own "country or region specific" standards. Should the U.S. government wish to take a more active role in some manner, the National Institute of Standards and Technology (NIST), which is charged with cooperating with U.S. industry in standards and specification development, and has the relevant technical expertise and experience, would be the most appropriate federal agency to take the lead.[3]

Through the industry-driven development model, U.S. participation in technology standards and specification development has been very successful over many decades; increased participation by entities from another country is not necessarily a threat. On the other hand, relatively recent U.S. policy that limits industry participation in standard-setting efforts poses significant problems for U.S. standards competitiveness. Since May 2019, restrictions imposed by the U.S. Department of Commerce Bureau of Industry & Security (BIS) have hindered U.S. companies' participation in standards and specification-setting organizations, and they have negatively impacted the success of many organizations based in the United States. These restrictions are harming U.S. standards leadership and the effects are likely to be long lasting. The most urgent and important action that the U.S. government should take to improve U.S. leadership in standards and specification development is to amend the current BIS rule[4] to exempt standards and specification development and promulgation activities—that do not involve national security-controlled technology—from the Export Administration Regulations.[5]

---

2   For example, the IETF has a procedure to randomly select members of their Nominating Committee that prevents more than two people from the same organization serving on the committee, so that a single organization cannot flood the selection pool in order to attempt to achieve greater representation in the critical leadership selection process. See https://www.rfc-editor.org/rfc/rfc8713.html.

3   "NIST's mission is to promote U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve our quality of life." See: https://www.nist.gov/director/pao/nist-general-information#:~:text=NIST's%20mission%20is%20to%20promote,improve%20our%20quality%20of%20life; By statute, NIST is directed "to cooperate with other departments and agencies of the Federal Government, with industry, with State and local governments, with the government of other nations and international organizations, and with private organizations in establishing standards practices, codes, specifications and voluntary consensus standards." *See:* National Institute of Standards and Technology Act, 15 U.S.C. 272 Sec. 2(b)(10)

4   https://www.federalregister.gov/documents/2020/06/18/2020-13093/release-of-technology-to-certain-entities-on-the-entity-list-in-the-context-of-standards

5   Standards and specification development and promulgation should be considered as any activity related to the development and promulgation of standards with the intent that the standards become publicly available, including but not limited to developing, publishing, coordinating, contributing to, revising, amending, reissuing, interpreting, or otherwise maintaining a standard, or developing methods, practices, or tools for conducting conformity assessment, testing, certification, or market promotion on the basis of a standard.

STANDARDS AND SECURITY

Standards developed through an industry-led standards and specifications development model are openly available for all participants to see. This means that it is unlikely that any potential security vulnerability would be intentionally introduced by one participant without it being observed by another. Given the evolving concerns over security vulnerabilities, which could include things like government-ordered surveillance backdoors, intentionally weak encryption, or mandated use of government-controlled encryption keys, there has been a growing effort to incorporate "security by design" concepts into technology and voluntary standards development to better address this important issue. This evolution in security practices and the inherent transparency of the standards and specification setting process has further diminished the possibility of security vulnerabilities being introduced through the development of the underlying standards and specifications. It is important to note, however, that security vulnerabilities could be introduced by how an individual manufacturer develops their own product unrelated to the relevant standards/specifications, either through poor implementation or intentional insertion of process or code vulnerabilities. In order to ensure that security vulnerabilities are not intentionally introduced through the standards setting process, it is essential that standards and specifications continue to be developed globally through industry-driven bodies with relevant technical expertise. Historically, it has been the case that wider participation leads to greater scrutiny and technical engagement, which leads to better and more resilient security, whereas "country-unique" standards may lack sufficient input from the global community of experts and could pose security problems if required by law or regulation.

RECOMMENDATIONS

In order to secure and maintain an industry-driven and global model for standards and specification development, the U.S. government should consider undertaking the following actions:

- Exempt information and communications technology (ICT)-related standards and specification development activities from the scope of the Export Administration Regulations in order to re-enable robust U.S. industry participation in critical standards and specification development organizations.

- To better understand the landscape and activity in international standards and specification bodies, the U.S. government can play a coordination and convening role to bring stakeholders together to help identify standards and specification setting organizations, initiatives, and activities that are critical to U.S. leadership in emerging technologies. Through this exchange, the U.S. government could effectively promote awareness of these activities. While the U.S. government should not coordinate industry positions on any given project, a forum to share information can ensure that all stakeholders, including small and medium-sized enterprises and government representatives, have access to information and can make informed decisions about where to best allocate their time and resources.

- Provide targeted financial incentives to support participation in industry-driven global standards and specification development bodies. This was previously proposed by NTIA in the congressionally-mandated National Strategy to Secure 5G Implementation Plan in 2021, and it could include exploring tax incentives or targeted grant programs.

- Along the same lines as above, facilitating the hosting of global standards and specification-setting bodies meetings in the U.S. would facilitate greater industry and U.S. government participation in standards and specification development organizations. Global bodies typically avoid holding their meetings in the U.S. because visa processes or overt visa restrictions often make it very difficult for foreign participants to attend in a timely manner. Implementing a streamlined process for participants in standards and specification-setting meetings to enable travel to the U.S. could be beneficial in making the U.S. a desirable host for these important meetings.

- In international bodies that are member state or government-driven, such as ITU-T, the U.S. should seek like-minded government partners to reform such body's governance and working methods, and to focus on the appropriate technology within the scope of that organization. Reform could include enabling cooperative relationships with other expert organizations (e.g., liaison relationship between 3GPP and ITU-R WP5D).

- Similarly, the U.S. government should partner with like-minded governments to promote the importance of the industry-driven global standards and specification development model by underscoring its value in driving past innovations such as the wireless revolution, which enabled connecting billions of people in developing countries who had little or no access to voice and data communications services.