DECEMBER 2020

NSI | THE NATIONAL SECURITY INSTITUTE
At George Mason University's Antonin Scalia Law School

PROMOTING 5G AND FUTURE TECHNOLOGY DEVELOPMENT BY SUPPORTING GLOBAL STANDARDS

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NSI LAW AND POLICY PAPER

THE U.S. NEEDS TO SUPPORT GLOBAL STANDARDS WORK TO PROMOTE 5G AND FUTURE TECHNOLOGY DEVELOPMENT

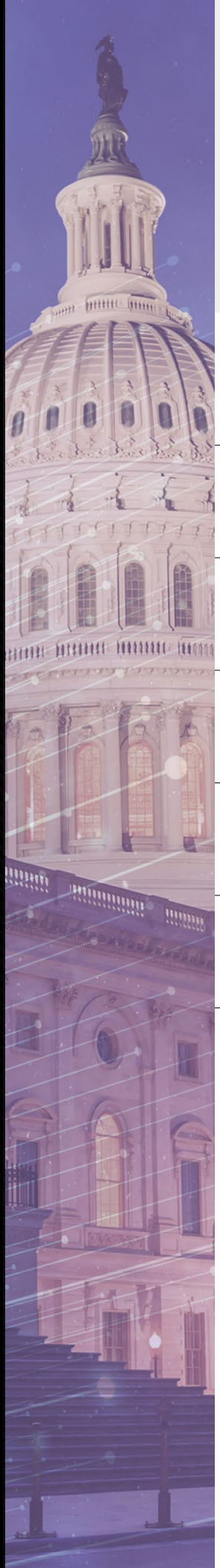
THIS NSI LAW AND POLICY PAPER:

1. **Describes** domestic and global standards work that has been critical to decades of global interoperability and is building the foundation for 5G and future technology.

2. **Identifies** where policymakers should be more cautious when supporting increased government influence in global standards work.

3. **Argues** that the United States should support and expand private participation in key global standards bodies, but not insert the government as a gatekeeper or in a directive role.

4. **Proposes** actionable recommendations that can help U.S. policymakers develop sensible policy that supports—rather than undermines—global standards work.



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ROLE OF INTERNATIONAL STANDARDS AND THE ORGANIZATIONS THAT CREATE STANDARDS

- **The Role of International Standards.** Global technology standards serve to promote global technology innovation by enabling interoperability, innovation, and economies of scale in global markets.
- **Standards Development Process**. The world's varied Standards Development Organizations (SDOs) apply their "own rules, processes, and terminology to the standards development process."
- **5G and Telecommunications SDOs.** While, the American National Standards Institute maintains a list of thousands of SDOs, this paper focuses on two that are relevant to telecommunications and 5G namely the International Telecommunications Union (ITU) and the 3rd Generation Partnership Project (3GPP).

KEY U.S. PLAYERS IN GLOBAL STANDARDS WORK

- **Private Sector.** The private sector has traditionally taken a leading role in creating and implementing global tech standards.
- **Associations.** As members of SDOs, industry associations also make significant contributions to domestic and international standards development.
- **United States Government.** The United States government plays varied roles in global standards work, including as a direct participant and as a supporter and convener of the private sector, depending on the venue.

U.S. POLICY GENERALLY EMPHASIZES THE DESIRABILITY OF VOLUNTARY PRIVATE SECTOR-LED STANDARDS

- **International Standards Are Building Blocks.** The United States government has repeatedly noted that "international standards serve as the critical building blocks for technological development by enabling functionality, interoperability, and safety."
- **Federal Law Prioritizes Private-Led Standards.** Federal law promotes the development of standards by offering key antitrust protections including permitting information sharing that may have otherwise been prohibited.

IS U.S. POLICY TOWARDS GLOBAL STANDARDS SETTING CHANGING?

- **Potential Foreign Threats in Global Standards.** Driven by perceptions of undue Chinese influence, many in Congress and the Executive Branch have argued that the U.S. government should pay closer attention to global tech standards work.
- **Potentially Enhanced U.S. Engagement.** Multiple government agencies and leaders have argued that the U.S. government should take a more directive role in SDOs to address U.S. interests in emerging technology matters.

Key Issues At Stake

- Whether U.S. policy will change to a more directive approach, with U.S. government agencies actively seeking to set or influence standards in global standards setting organizations

- Whether a more aggressive or directive role by the U.S. government will cause other governments to also become more actively involved and, if so, whether this will cause global technology standards to fragment.

Author's views

POLICYMAKERS MUST RESPECT DIFFERENCES IN HOW THE VARIOUS STANDARDS BODIES WORK

- **Standards bodies are not all the same.** In order to assess the proper role of government in global standards setting organizations, and to avoid unintended consequences, policymakers need to account for the different goals and roles of standards bodies, their historical roles and responsibilities, and the positive benefits they have achieved for U.S. and allied industry over time.
- **Direct Government Participation in ITU.** When it comes to the ITU, the U.S. government directly negotiates terms of agreements and resolves policy and technical issues to promote global interoperability, accessibility, and innovation.
- **The Difference in Private Sector-Led Organizations.** 5G SDOs do not weigh in on questions of policy or geopolitics, such as the propriety of government surveillance activities or law enforcement data collection practices although 3GPP can and does address uniform technical standards for lawful intercept and functions.[1]
- **The Importance of SDO Independence.** The U.S. government should be cautious in fundamentally changing its approach to historically private sector-led standards setting bodies.

THE U.S. GOVERNMENT SHOULD AVOID A "TOP DOWN" APPROACH TO TECHNOLOGY STANDARDS

- **Champion industry-led standards.** The U.S. should adopt a "bottom up" approach to global standards because this is the best way to ensure that technologically superior approaches rise to the top.
- **Reject calls to direct outcomes.** Efforts to have government purchase or manage networks are antithetical to the United States' reliance on private initiative to run private networks, which has created immense value and innovation.

THE U.S. GOVERNMENT SHOULD SUPPORT BROADER PRIVATE PARTICIPATION

- **Promote and support industry collaboration on standards.** Rather than taking a direct role in standards setting organizations where the private sector has typically led, the government should instead prioritize support for private efforts in standards bodies, encouraging and facilitating broader private participation.
- **Avoid creating barriers to participation.** After the Bureau of Industry and Security added Huawei and affiliates to its Entity List to address the threat posed to U.S. interests, the U.S. private sector had to work with the government to ensure that their participation in certain standards setting bodies alongside Huawei would not run afoul of export control laws.

Actionable Recommendations

- **Create a federal advisory committee (under the Federal Advisory Committee Act (FACA))** to evaluate and advise on how to support global standards work.

- **Publicize U.S. government activity and private sector global standards work** to expand contributions from the U.S. innovation base.

- **Provide incentives for tech sector participation** in global standards work.

- **Reject calls for government direction** of private sector-led global standards work or the creation of champion companies, technologies, or networks.

BACKGROUND

THE ROLE OF INTERNATIONAL STANDARDS AND THE ORGANIZATIONS THAT CREATE STANDARDS

- **The Role of International Standards.** Global technology standards serve to promote innovation by enabling interoperability, innovation, and economies of scale in global markets. Such standards are typically set by SDOs that are focused on developing, publishing, and disseminating technical standards using a consensus-based development process. The global standards landscape is diverse in entities, systems, and processes.
- **Standards Development Process.** The world's varied SDOs apply their "own rules, processes, and terminology to the standards development process."[2] SDOs are generally made up of "Boards, Committees and staff who establish and maintain the policies, procedures and guidelines that help ensure the integrity of the standards development process."[3]
- **5G and Telecommunications SDOs.** The American National Standards Institute maintains a list of thousands of SDOs,[4] some of which are particularly relevant to telecommunications and 5G:
  - The ITU is a treaty-based organization that brings nations together to address spectrum use and technology compatibility and serves as the United Nations' specialized agency for information and communications technologies (ICTs). The 193 member states come together every three to four years to negotiate treaty updates working with 264 sector members, 21 associate members, and 156 academy members, reflecting "a cross-section of the global ICT sector, from the world's largest manufacturers and carriers to small, innovative players working with new and emerging technologies, along with leading R&D institutions and Academia."[5] As relevant here, the ITU "develops and adopts the international regulations and global standards which, through their worldwide application, enable the harmonization and implementation of broadband mobile networks (3G, 4G and now 5G) around the world"[6] and has been driving 5G through its International Mobile Telecommunications for 2020 and Beyond program.
  - 3GPP is a key private sector-led organization that operates by consensus, drawing from regional SDOs in Asia, Europe, and North America. These regional SDOs, in turn, have wireless carriers, equipment manufacturers and other stakeholders as members. Companies contribute to 3GPP as individual members through their membership in a participating SDO, which is a 3GPP organizational partner. There are around 600 total members in 3GPP made up of network operators, manufacturers, and others that lead the wireless communications ecosystem.[7] According to 3GPP, its consensus-based and transparent approach, procedural rules, and elected leadership promote regional balance and "has been successful in preventing the fragmentation of the GSM (and its successors) ecosystem." 3GPP produced the reports and specifications that standardized mobile wireless industry security features and mechanisms for 3G, 4G, and 5G technologies[8] and is working

to promote the evolution of telecommunications standards that increase speed and capacity, reduce latency, and improve security.[9] According to 3GPP, a "key" aspect of its success and culture comes from recognizing that its "[d]elegates represent company positions, not individual or regional positions."[10]

KEY U.S. PLAYERS IN GLOBAL STANDARDS WORK

- **Private Sector.** The private sector has traditionally taken a leading role in creating and implementing global tech standards. For example, in the telecommunications sector, private sector experts—more often than not coming out of large, private businesses that do their own research and development and have the resources to send personnel and contributions to domestic and global standards bodies—have led such work.
  - In the 5G context, AT&T has publicly argued that it is "the tip of the spear, driving the 3GPP standards body and leading the world on how 5G will be deployed,"[11] while Orange, Nokia, and Huawei lead three of 3GPP's 5G-focused technical specification groups.[12]
  - Companies as varied as Airbus, Apple, BAE, Blackberry, Charter Communications, Cisco, Daimler AG, Dish Network, Ericsson, Google, HTC Communications, Huawei, Intel, Juniper Networks, LG Electronics, Nokia, NTT, Panasonic, Qualcomm, Samsung, Telefonica, and ZTE are 3GPP partners, working on consensus standards through their regional organizational partners.[13]
- **Associations.** As members of SDOs, industry associations also make significant contributions to domestic and international standards development.
  - For example, the Consumer Technology Association (CTA) has over 1,100 active participants,[14] made up of consumer technology manufacturers, service providers, regulators and other industry leaders. CTA's work has generated over 100 standards for the technology industry transparency since 1924.[15]
  - The GSM Association (GSMA) is the global association of mobile operators. GSMA brings major carriers together to analyze and document technical specifications for global operations and interoperability, creating standards for roaming[16] through consensus-based process.[17]
  - CTIA-The Wireless Association is a wireless association that administers several certification programs and supports global standards work to promote wireless innovation.[18] CTIA has argued that the "vast ecosystem" of communications networks, mobile devices, applications, and services "exists thanks to rigorous technological standards—operational requirements determined by industry bodies."[19]

- **United States Government.** The United States government plays varied roles in global standards work, including as a direct participant and as a supporter and convener of the private sector, depending on the venue.
  - The United States participates in ITU activities through the State Department, with support from the Department of Commerce through the National Telecommunications and Information Administration (NTIA). The United States is represented at the ITU by an ambassador, who serves as the U.S. Coordinator for International Communications and Information Policy. This role is Senate-confirmed and has responsibility for formulating and advocating international communications policy for the United States. The United States, like other member states, votes at the ITU consistent with the ITU's Constitution. In preparing for ITU meetings, NTIA works with FCC and State Department to represent federal, commercial, and U.S. interests. Private sector advice is also provided to the U.S. Government through the U.S. International Telecommunication Advisory Committee (ITAC), a federal advisory committee.[20]
  - The U.S. government plays a much different role in 3GPP. Government representatives from the Federal Communications Commission, Department of Defense, Department of Transportation, Department of Homeland Security, and NIST participate in 3GPP through ATIS, one of the seven regional organizational partners of 3GPP.[21] Because 3GPP is principally a private sector-led consensus organization that evaluates members' technical contributions to develop and offer standards, the United States acts as more of an observer and convener.
  - Representatives of NIST also participate "in over 1,000 standards development activities in over 110 standardization organizations around the world,"[22] including the "IEEE, IETF, ITU-T, ORAN, ATIS, ISO-IEC/JTC1, FIDO Alliance and WinnForum."[23]
  - When it comes to 5G, NIST works ensure that public safety and "federal cybersecurity needs are represented in 5G standards."[24]

U.S. POLICY GENERALLY EMPHASIZES THE DESIRABILITY OF VOLUNTARY PRIVATE SECTOR-LED STANDARDS

- **International Standards Are Building Blocks.** The United States government has repeatedly noted that "international standards serve as the critical building blocks for technological development by enabling functionality, interoperability, and safety" and has noted that "U.S. participation and leadership in standard-setting influences the future of 5G, autonomous vehicles, artificial intelligence, and other cutting-edge technologies."[25]
- **Federal Law Prioritizes Private-Led Standards.** Federal law promotes the development of standards by the private sector, including by offering key antitrust protections[26] to permit information sharing that may have otherwise been prohibited[27] and encourages government use of private sector-developed standards. For example, the Office of Management and Budget Circular A-119: *Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities*, encourages agency use of

voluntary industry standards "whenever practicable and appropriate" in order to "eliminat[e] the cost to the Federal government of developing its own standards….encouraging long-term growth for U.S. enterprises and promoting efficiency, economic competition, and trade; and furthering the reliance upon private sector expertise to supply the Federal government with cost-efficient goods and services."[28]

- Likewise, the National Technology Transfer and Advancement Act of 1995 directs the government to "emphasiz[e] where possible the use of standards developed by private, consensus organizations."[29]

IS U.S. POLICY TOWARDS GLOBAL STANDARDS SETTING CHANGING?

- **Potential Foreign Threats in Global Standards.** Driven by perceptions of undue Chinese influence, many in Congress and the Executive Branch have argued that the U.S. government should take a more aggressive role in international standards work.
  - A number of U.S. government officials in recent years seem to have been persuaded that Chinese influence in SDOs can promote the interests of the Chinese government, including direct support for Chinese industry at the expense of other competitors, and can tilt standard development in its preferred direction. At a Senate Judiciary Committee hearing in 2019, lawmakers heard "anecdotal reports" that "China is politicizing the international standards process" and that "[i]f China wins the standards battle, it would also help ensure Huawei's dominance."[30]
  - These officials point to leadership positions and technical contributions from Chinese companies, in particular Huawei, which has been identified as a Chinese "national champion."[31] Indeed, one study found that "China's Huawei provided more overall contributions to end-to-end 5G standards than any other company in the world," highlighting the potentially troubling appearance of undue influence in SDOs.[32]
  - Similar concerns have been expressed about Chinese companies' acquisition of standard essential patents for 5G technologies,[33] though the quality and importance of those patents are debated.[34]
  - As a result of concerns about potential Chinese influence in SDOs, key members of Congress have introduced legislation seeking to promote U.S. leadership and "enhance representation of the United States at international forums that set standards for 5G networks and for future generations of wireless communications" including 3GPP.[35]
  - Other legislation in Congress likewise seeks to "promote United States leadership in communications standards-setting bodies" by putting the onus on the NTIA and NIST to become more directly involved in global standards work.[36]
  - Some U.S. private sector participants in key bodies like 3GPP have argued that the ostensible issues posed by Chinese influence in standard setting is more myth than reality and that metrics like raw contribution numbers are not particularly relevant because many such contributions are low quality and never progress. As Qualcomm has explained, 3GPP's "iterative, non-linear, consensus-based approach to decision making is

one of the primary reasons that simplistic approaches to assessing 3GPP leadership based on contribution counting do not work."[37] Similarly, technology associations explain that "[f]irms participating in 3GPP do have influence based on the technical merit of their contributions, but there is no evidence that Chinese firms have disproportionate, meaningful influence at 3GPP or other SDOs."[38]

        - They further assert that because such organizations operate by consensus, supported by operational rules that ensure diversity in participation and operations, the threat of a single country stacking global standards in its favor is overstated.[39]

    - Indeed, the study of relative contributions that highlighted the large quantity of contributions from Huawei also noted that companies like Nokia and Ericsson led in other measures of influence, and that given the "dynamic" nature of 3GPP standardization process, "industry collaboration rather than competition" tends to be the hallmark of that process.[40] The study noted that "[i]t is expected that emerging players and new market requirements will increasingly impact priorities" for future standards."[41]

    - At the same time, there is no doubt that the Chinese government has a clear interest in championing its own technology sector at the expense of global competitors and that its 'national campions' are active in key SDOs.

- **Potentially Enhanced U.S. Engagement.** Multiple government agencies and leaders have argued that the U.S. government should take a more directive role in SDOs to address U.S. interests in emerging technology matters.

    - For example, the Department of Defense has argued that the United States should "play a lead role in shaping information and communications technology standards." To that end, DoD has indicated that it "will fully implement its Standards Engagement Plan and will actively participate" in 3GPP.[42]

    - A similar, more directive role has been advocated by the Executive Branch in the context of artificial intelligence (AI). In February of 2019, the President directed NIST to develop a "plan for Federal engagement in the development of technical [AI] standards."[43]

    - NIST's AI plan, released in August 2019, calls for direct federal government activity in global standards setting bodies, including taking a "leadership" role to "champion" U.S. interests in "AI standards development activities around the world."[44]

    - Likewise, the Cyberspace Solarium Commission recommended that "the executive branch should engage actively and effectively in forums setting international information and communications technology standards. Specifically, the National Institute of Standards and Technology should facilitate robust and integrated participation by the federal government, academia, professional societies, and industry."[45]

KEY ISSUES **AT STAKE**

THE POTENTIALLY CHANGING DIRECTION OF U.S. POLICY

- Whether U.S. policy will change to a more directive approach, with U.S. government agencies actively seeking to set or influence standards in global standards setting organizations or if it will maintain its current approach of being involved at some level, while letting the private sector take the primary lead in most key global standard setting bodies.

THE POTENTIAL IMPACT OF ENHANCED PARTICIPATION BY THE U.S. GOVERNMENT

- Whether a more aggressive or directive role by the U.S. government will cause other governments to also become more actively involved and, if so, whether this will cause global technology standards to fragment.

AUTHORS' **VIEWS**

POLICYMAKERS MUST RESPECT DIFFERENCES IN HOW THE VARIOUS STANDARDS BODIES WORK

- **Standards bodies are not all the same.** In order to assess the proper role of government in global standards setting organizations, and to avoid unintended consequences, policymakers need to account for the different goals and roles of standards bodies, their historical roles and responsibilities, and the positive benefits they have achieved for U.S. and allied industry over time. For example, organizations like the ITU are fundamentally different from 3GPP, and the government needs to take pains to preserve the best elements of both, lest the historically successful approach to global standards be undermined.
- **Direct Government Participation in ITU.** When it comes to the ITU, the U.S. government directly negotiates terms of agreements and resolves policy and technical issues to promote global interoperability, accessibility, and innovation. The United States has traditionally and properly worked in the ITU to champion United States values on internet governance and to combat digital authoritarianism, and it offers official government views on recommendations, informed by advisory committee activity and public comment.[46] ITU activities require direct government involvement, which is key to create consensus treaty-based approaches.
- **The Difference in Private Sector-Led Organizations.** Organizations like 3GPP, on the other hand, convene technical experts to consider and build consensus on the details of network design, function, and interoperability. 5G SDOs do not weigh in on questions of policy or geopolitics, such as the propriety of government surveillance activities or law enforcement data collection practices although 3GPP can and does address uniform technical standards for lawful intercept and functions.[47]
- **The Importance of SDO Independence.** The U.S. government should be cautious in fundamentally changing its approach to historically private sector-led standards setting bodies. As the role of technology in our lives and economies grow, standards will be ever more vital to competitiveness and innovation; more of daily life will depend on technology, for which the pace of innovation moves too quickly to create and harmonize national regulations.
    - Economies of scale and interoperability are likely to be more achievable when SDOs embrace openness and neutrality in the development of standards because more participants will have input and access to the standards.
    - Private sector-led standards have created massive innovation and provided for rapid adoption of advanced technologies. As such, maintaining their historical role is the best way to harness innovation and promote broad global adoption of common standards.

- Limiting the direct role of governments in such organizations can help keep geopolitical issues from undermining the benefits gained from the important technical work conducted by these private sector-led organizations. To that end, while there is undoubtedly a role to play for governments in international standards setting bodies, organizations like 3GPP, ought to remain private sector-led, open, and transparent.

THE U.S. GOVERNMENT SHOULD AVOID A "TOP DOWN" APPROACH TO TECHNOLOGY STANDARDS

- **Champion industry-led standards.** According to the American National Standards Institute "[i]n many countries, the standardization system is top down, where a single standards body – often a government agency – drives all national standardization activities." ANSI lauds the "bottom up" approach to domestic standard setting in the U.S., which it argues allows "standards users to drive standardization activities" which in turn "promotes the speed and flexibility of delivering and implementing solutions to market, encourages participation from a wide spectrum of stakeholders, accommodates input from all interested parties, and helps to prevent unnecessary or overly burdensome regulation." The U.S. should suppurate a similar approach to global standards because this is the best way to ensure that technologically superior approaches rise to the top.
- **Reject calls to direct outcomes.** Various U.S. government officials, including the Attorney General, have suggested that U.S. government ought consider aligning with certain vendors to support Western alternatives to Chinese companies[48] and the Department of Defense has offered a 5G strategy that considers whether the government could "own and operate 5G networks for its domestic operations."[49] A leading Senator on tech issues has said that to counter "China Inc." the United States "may need to find ways to develop a better product, support one or more of the entities out there" or other more directive action.[50] Some policymakers have argued that the U.S. government should actively support or directly invest in Open Radio Access Network (Open RAN) technology and testbeds,[51] with the expectation that interoperable, virtualized radio access networks can provide an alternative to traditional cellular network architecture and thereby promote diversity in suppliers. Indeed, the Cyberspace Solarium Commission issued a Supply Chain White Paper that called for the Federal Communications Commission to "tie 5G infrastructure investment to open and interoperable standards."[52]
    - These very directive approaches have received substantial opposition.[53] Efforts to have government purchase or manage networks are antithetical to the United States' reliance on private initiative to run private networks, which has created immense value and innovation, and some have sounded cautionary notes about "technological mandates" for network design or use of open standards, advocating for vendor neutrality in government policy so that the market can "determine which approaches work best."[54]

THE U.S. GOVERNMENT SHOULD SUPPORT BROADER PRIVATE PARTICIPATION

- **Promote and support industry collaboration on standards.** The government currently has many efforts underway on tech and 5G standards, with interests expressed by an array of agencies, from DoD to NIST to State and beyond. This is positive, but rather than taking a direct role in standards setting organizations where the private sector has typically led, the government should instead prioritize support for private efforts in standards bodies, encouraging and facilitating broader private participation.
    - In addition, the government ought to emphasize its important role as a convener, not a director, for the sharing of information and coordination of activities. This will ensure that the government is not picking winners and losers nor selecting technology but rather allowing the market to decide, while still also ensuring that U.S. national interests are voiced and reflected in such bodies.
- **Avoid creating barriers to participation.** After the Bureau of Industry and Security added Huawei and affiliates to its Entity List to address the threat posed to U.S. interests, the U.S. private sector had to work with the government to ensure that their participation in certain standards setting bodies alongside Huawei would not run afoul of export control laws. This took many months and created uncertainty about what level of involvement was permissible for U.S. companies and made it harder to assess what kind of information could lawfully be exchanged in these critically important settings.[55]


“THE U.S. SHOULD INNOVATE IN DIGITAL POLICY AND PROVIDE THE MODEL OF A FUNCTIONING DIGITAL DEMOCRACY”

ACTIONABLE **RECOMMENDATIONS**

1 CREATE A FEDERAL ADVISORY COMMITTEE (UNDER THE FACA) TO EVALUATE AND ADVISE ON HOW TO SUPPORT GLOBAL STANDARDS WORK

- Effective government attention to global standards requires a strategy that fully appreciates what is in play, who is engaged, and relevant tradeoffs from different approaches.
- Federal Advisory Committees and similar organizations across government provide input on various technology issues, including the President's National Security Telecommunications Advisory Committee (NSTAC) established in 1982,[56] which has produced meaningful reports and advice to the President over many years. The Communications Security, Reliability, and Interoperability Council's (CSRIC), also established under the Federal Advisory Committee Act, provides recommendations to the FCC to promote security and reliability of communications systems, including telecommunications, media, and public safety.
- While there is already an advisory committee related specifically to ITU activity, the U.S. International Telecommunication Advisory Committee (ITAC), no federal advisory committee or working group is focused on private-led global standards work, where the contributions of the private sector are particularly productive and beneficial.
- Establishing a Federal Advisory Committee may help the government to secure reliable information, understand tradeoffs, coordinate federal approaches to diverse global standards work, and identify areas where government support may be helpful.

2 PUBLICIZE U.S. GOVERNMENT ACTIVITY AND PRIVATE SECTOR GLOBAL STANDARDS WORK TO EXPAND CONTRIBUTIONS FROM THE U.S. INNOVATION BASE

- Few private sector companies have the resources to follow all the United States government and private sector activity on 5G and technology issues, much less track and send representatives to the variety of global standards bodies and consultations that take place.
    - This problem is particularly acute for those companies at the leading edge of technology innovation, whether large corporations or particularly small, venture capital-backed startups. The multiple regional and global standards bodies that play in the technology space are not easy to track or access for the average United States innovator that might be affected or want to participate.

- Further complicating things, several government efforts are often principally focused on specific areas, like the communications and telecom sector or improving the sharing of timely and relevant information about supply chain, cybersecurity, and other concerns, rather than on the broader set of issues potentially affecting America's highly innovative technology sector.

- The federal government could therefore play a helpful role in identifying, tracking, and publicizing ongoing global standards work, as well as other international regulatory consultations that will affect U.S. businesses, particularly in the technology.
  - For example, increased transparency about U.S. government efforts to resolve the data transfer challenges posed by recent judicial rulings on data privacy, European efforts to regulate and promote the Internet of Things, or the Organization for Economic Co-operation and Development (OECD) work on AI may help encourage participation.
  - It could be a hugely valuable service to the U.S. economy, including for new startups in emerging technology areas, for the U.S. government to identify relevant international standards workstreams, explain their relevance in simple terms, and provide detailed information about them and the U.S. government position in a central website or repository as well as to explain how private sector organizations might usefully engage with the U.S. government on such issues.
- The United States should also prioritize the engagement of key trade groups and entities—like the Communications Sector Coordinating Council—in assessing what role to play and what agendas to pursue in international standards setting bodies. Prioritizing such engagement would bolster information sharing and collaboration between the U.S. government and the private sector on global security and standards and could promote similar cooperation and coordination at the international level.
- The U.S. government should seek to engage new market entrants and smaller companies in the U.S. market to encourage broader participation and to identify the impact of global standards on this critical, innovative part of the U.S. economic ecosystem.
  - The U.S. government, through the Department of Commerce, should conduct both public and public consultations with smaller companies and technology startups to alert them to opportunities to get involved in the global standards arena and the potential risks from not participating or of doing so in a manner that is problematic.

3 PROVIDE INCENTIVES FOR TECH SECTOR PARTICIPATION IN GLOBAL STANDARDS WORK

- Government officials and members of Congress should consider how to structure incentives to help alleviate the significant resource commitments needed from private companies to send employees as delegates to international SDOs with tax incentives or direct funding.
    - SDO activities can require substantial investment by participating companies, which may not be available to smaller companies or innovators. In addition, government support for non-U.S. companies may make it easier for them to participate in SDO activities.
- Policymakers' efforts to address concerns about other countries' role and influence on global standards work should focus on encouraging technology leaders in the United States and allied countries to join their regional SDOs and work in vital standards bodies to ensure that innovators and diverse market influencers can participate in global standards work.

4 REJECT CALLS FOR GOVERNMENT DIRECTION OF PRIVATE SECTOR-LED GLOBAL STANDARDS WORK OR THE CREATION OF CHAMPION COMPANIES, TECHNOLOGIES, OR NETWORKS

- The government should reject the impulse to use federal regulation and power to command or direct activity in private sector-led global standards work, and should instead channel government interests, like that of DoD and DHS, through the Department of Commerce, including NIST and NTIA working through SDOs like ATIS and the Institute of Electrical and Electronics Engineers (IEEE), as well as through convening private sector organizations to identify areas of common interest and action.
- The United States should be wary of following the path of China to identify "champion" companies, purchase ownership stakes in private businesses, or seek to construct its own telecommunications infrastructure owned or operated by the government.
- The government should not mandate or try to steer the private sector toward the use of particular network architectures or technologies.


“REJECT CALLS FOR GOVERNMENT DIRECTION OF PRIVATE SECTOR-LED GLOBAL STANDARDS WORK OR THE CREATION OF CHAMPION COMPANIES, TECHNOLOGIES, OR NETWORKS.”

ENDNOTES

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[1] *See, e.g.*, *3GPP TS 33.127 version 15.0.0 Release 15*, ETSI (Dec. 2018), https://www.etsi.org/deliver/etsi_ts/133100_133199/133127/15.00.00_60/ts_133127v150000p.pdf.
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[8] *See* 5G Americas Whitepaper, *The Evolution of Security in 5G* 6 (Oct. 2018), https://www.5gamericas.org/wp-content/uploads/2019/07/5G_Americas_5G_Security_White_Paper_Final.pdf. *See also* Justus Baron et al., *Unpacking 3GPP Standards* (Mar. 24, 2015), https://www.law.northwestern.edu/research-faculty/clbe/innovationeconomics/documents/Baron_Gupta_Unpacking_3gpp_Standards.pdf.
[9] Bevin Fletcher, *3GPP completes latest 5G NR spec with Release 16*, Fierce Wireless (July 2020), https://www.fiercewireless.com/5g/3gpp-completes-latest-5g-nr-spec-release-16. In a milestone for 5G, global wireless standards body 3GPP finalized Release 16 on July 3, its second set of specifications for 5G New Radio (NR) technology. Release 15 set the foundation to enable commercial standards-based 5G NR deployments, with a focus on enhanced mobile broadband. Release 16 targets enhancements for new capabilities and expansion into different verticals, including support for unlicensed spectrum, industrial IoT and automotive applications, and integrated access and backhaul (IAB).
[10] Hayes *supra* note 6.
[11] *First in the U.S. to Mobile 5G – What's Next? Defining AT&T's Network Path in 2019 and Beyond*, AT&T (Jan. 9, 2019), https://about.att.com/story/2019/2019_and_beyond.html
[12] Orange, Nokia, and Huawei each chair a TSG, and vice-chairmen come from InterDigital, CATT, Deutsche Telekom, NTT DOCOMO, China Mobile, Ericsson, KDDI, LG Electronics, and Sprint. *3GPP Elects Plenary Leadership for the next 2 years*, 3GPP (Mar. 21, 2019), https://www.3gpp.org/news-events/2023-2019_elections.
[13] 3GPP membership can be explored at https://webapp.etsi.org/3gppmembership/QueryForm.asp
[14] *Standards*, Consumer Tech. Ass'n, https://www.cta.tech/Resources/Standards (last visited Nov. 17, 2020).
[15] *Id*.
[16] *See e.g.*, *R.88 LTE and EPC Roaming Guidelines*, GSMA, https://www.gsma.com/security/resources/ir-88-lte-and-epc-roaming-guidelines-v19-0/ (last visited Nov. 17, 2020).
[17] *5G Implementation Guidelines: NSA Option 3,* GSMA (Mar. 28, 2019), https://www.gsma.com/futurenetworks/wiki/5g-implementation-guidelines/.
[18] *Wireless Standards and Certification: A Brief Explainer*, CTIA (Feb. 6, 2020), https://www.ctia.org/news/blog-wireless-standards-and-certification-a-brief-explainer.
[19] *Id*.
[20] *ITAC-R*, Nat'l Telecomm. and Info. Admin., https://www.ntia.doc.gov/page/itac-r (last visited Nov. 17, 2020).
[21] *About Us*, ATIS, https://www.atis.org/01_about/ (last visited Nov. 17, 2020) ("ATIS is where companies in the information and communications technology (ICT) industry come together to address common, critical priorities.") (ATIS membership information is available here: https://www.atis.org/01_membership/members/).
[22] *NIST's Leadership in Advanced Communications*, Nat'l Inst. of Standards and Tech., https://www.nist.gov/topics/advanced-communications/nists-leadership-advanced-communications (updated July 20, 2020).
[23] *Id*.
[24] *Id*.
[25] *Commerce Clears Way for U.S. Companies to More Fully Engage in Tech Standards-Development Bodies*, Dept. of Com. (June 15, 2020), https://www.commerce.gov/news/press-releases/2020/06/commerce-clears-way-us-companies-more-fully-engage-tech-standards.
[26] *See* Standards Development Organization Act of 2004 15 U.S.C. §§ 4301-4306 (amended the National Cooperative Research and Production Act of 1993 to extend antitrust protections to SDOs while they are engaged in standards development activity).
[27] 15 C.F.R. 744, 772 (2020) (clarified that prior actions to restrict the export of technology to Huawei and other companies did not limit the U.S. companies' activities in standards work).
[28] OMB Circular A-119 14 (Jan. 22, 2016), https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A119/revised_circular_a-119_as_of_1_22.pdf
[29] National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113.
[30] *5G: The Impact on National Security, Intellectual Property, and Competition Before the S. Comm. On the Judiciary*, 116th Cong. 6-7 (2019) (statement of James Andrew Lewis Senior V.P. and Dir., Tech. Pol'y Program Ctr. for Strategic and Int'l Stud.).
[31] Lindsay Maizland and Andrew Chatzky, *Huawei: China's Controversial Tech Giant*, Council on Foreign Rels. (Aug. 2020), https://www.cfr.org/backgrounder/huawei-chinas-controversial-tech-giant.

[32] Guang Yang, *Who Are the Leading Players in 5G Standardization? An Assessment for 3GPP 5G Activities*, Strategy Analytics (March 16, 2020), https://www.strategyanalytics.com/access-services/service-providers/networks-and-service-platforms/reports/report-detail/who-are-the-leading-players-in-5g-standardization-an-assessment-for-3gpp-5g-activities.
[33] *See* Dan Strumpf, *Where China Dominates in 5G Technology*, Wall St. J. (Feb. 26, 2019), https://www.wsj.com/articles/where-china-dominates-in-5g-technology-11551236701; Morris Lore, *Huawei's patents won't save it, says analyst* (June 9, 2020), https://www.lightreading.com/5g/huaweis-patents-wont-save-it-says-leading-analyst/a/d-id/761569 (citing various surveys reaching different conclusions on patent holdings).
[34] *Who is leading 5G development?*, Bird & Bird, https://www.twobirds.com/~/media/pdfs/who-is-leading-5g-development.pdf?la=en&hash=AB57AC4B01AD1F8BE641A590222DE8BDA1D8B082&hash=AB57AC4B01AD1F8BE641A590222DE8BDA1D8B082 (last visited Nov. 17, 2020). Many sources have reported on which companies are leading 5G development in recent months, often concluding that Huawei (or China generally) is in the lead. But such studies paint an incomplete picture, as they are often over-simplistic or flawed" and that "[w]hen counting declarations, simply applying the essentiality filter used in the seminal *Unwired Planet v Huawei* case in the English High Court reverses the view that Chinese companies are leading the 5G patent race.
[35] S.3189, 116th Cong. § 3 (2020).
[36] H.R. 4500, 116th Cong. (2020).
[37] *Understanding 3GPP – starting with the basics*, Qualcomm (Aug. 2, 2017), https://www.qualcomm.com/news/onq/2017/08/02/understanding-3gpp-starting-basics. *See also Top 5 drawbacks of "contribution counting" in 3GPP. (Don't count on it!)*, Qualcomm (Aug. 2, 2017), https://www.qualcomm.com/news/onq/2017/08/02/top-5-drawbacks-contribution-counting-3gpp-dont-count-it ("Quality of contribution is far more important than quantity of contributions. In fact, many 3GPP contributions do not contain any new technology inventions.").
[38] *ITI's 5G Essentials for Global Policymakers,* Info. Tech. Indus. Council (June 2020), https://www.itic.org/policy/ITI5GGlobal_Policymakers.pdf.
[39] AT&T, a major participant in 3GPP and other standards bodies, disputes the suggestion that China dominates or manipulates 5G standards in 3GPP. *See 5G Policy Primer: The Global Standards Process Is Robust And Effective In Advancing U.S. Goals*, AT&T (Jan 2020), https://policyforum.att.com/wp-content/uploads/2020/08/5G-Standards-Whitepaper-March-2020.pdf.
[40] *Strategy Analytics: Infrastructure Giants Lead 5G Standardization*, Strategy Analytics (Mar. 17, 2020), https://news.strategyanalytics.com/press-releases/press-release-details/2020/Strategy-Analytics-Infrastructure-Giants-Lead-5G-Standardization/default.aspx (discussing analysis cited in n.31, *supra*).
[41] *Id*.
[42] *Department of Defense 5G Strategy*, Dept. of Def. 7 (May 2, 2020), https://www.cto.mil/wp-content/uploads/2020/05/DoD_5G_Strategy_May_2020.pdf.
[43] *U.S. Leadership in AI: A Plan for Federal Engagement in Developing Technical Standards and Related Tools*, Nat'l Inst. of Standards and Tech. 7 (August 9, 2019), https://www.nist.gov/system/files/documents/2019/08/10/ai_standards_fedengagement_plan_9aug2019.pdf.
[44] Id. at 23-24.
[45] *Report*, Cyberspace Solarium Comm'n (Mar. 2020), https://www.solarium.gov/report.
[46] For example, consider a recent Public Notice from the FCC soliciting feedback on draft recommendations from the World Radiocommunication Conference Advisory Committee (WRC23 Advisory Committee or WAC) on a number of issues that will be considered by the 2023 World Radiocommunication Conference (WRC-23), so that the FCC can inform the official government position with NTIA and the State Department. *See International Bureau Seeks Comment On Recommendations Approved By World Radiocommunication Conference Advisory Committee*, FCC (Oct. 22, 2020), https://www.fcc.gov/document/ib-seeks-comment-recommendations-approved-wrc-advisory-committee-1 (attachment identifying myriad issues and "U.S. Views" related to maritime aeronautical and radio services)
[47] *See, e.g.*, *3GPP TS 33.127 version 15.0.0 Release 15*, ETSI (Dec. 2018), https://www.etsi.org/deliver/etsi_ts/133100_133199/133127/15.00.00_60/ts_133127v150000p.pdf.
[48] William P. Barr, Attorney General, Keynote Address at the Department of Justice's China Initiative Conference (Feb. 6, 2020).
Various additional government actors have suggested that aligning with Nokia and/or Ericsson through American ownership of a controlling stake, either directly or through a consortium of private American and allied companies would make these corporations more formidable competitors and eliminate concerns over their staying power.
[49] *DOD Seeks Industry Input Into Dynamic Spectrum Sharing*, Dept. of Def. (Sept. 18, 2020), https://www.defense.gov/Newsroom/Releases/Release/Article/2353932/dod-seeks-industry-input-into-dynamic-spectrum-sharing/.
[50] Adam Janofsky, *U.S. Needs to Do More on 5G, Senator Says*, Wall St. J. (Sept. 20, 2019), https://www.wsj.com/articles/u-s-needs-to-do-more-on-5g-senator-says-11568971805.
[5] *See* Jessica Rosenworcel, Comm'r, FCC, Remarks at Open RAN Forum (Sept. 14, 2020).
[52] *Cyberspace Solarium Commission White Paper #4: Building a Trusted ICT Supply Chain*, Cyberspace Solarium Comm'n (Oct. 2020), https://www.solarium.gov/public-communications/supply-chain-white-paper.
[53] Drew Fitzgerald, *Cellphone Carriers Lobby Against Pentagon Plan for National 5G Network*, Wall St. J. (Oct. 9, 2020), https://www.wsj.com/articles/cellphone-carriers-lobby-against-pentagon-plan-for-national-5g-network-11602271148.
[54] *See* Michael O'Rielly, Comm'r, FCC, Remarks at Open RAN Forum (Sept. 14, 2020).
[55] Release of ''Technology'' to Certain Entities on the Entity List in the Context of Standards Organizations 85 Fed. Reg. 118 (June 18,2020) (to be codified at 15 C.F.R. 744, 772) Huawei Technologies Co., Ltd. (Huawei) and 114 of its foreign affiliates were added to the Entity List by the Bureau of Industry and Security (BIS) in 2019, but continue to participate in many important international standards organizations in which U.S. companies also participate. As international standards serve as the building blocks for product development and help ensure functionality, interoperability, and safety of the products, it is important to U.S. technological leadership that U.S. companies be able to work in these bodies in order to ensure that U.S. standards proposals are fully considered. Since Huawei's addition to the Entity List, organizations have consequently sought clarity about U.S. industry participation in standards development. BIS is amending the Export Administration Regulations (EAR) to authorize the release of certain technology to Huawei and its affiliates on the Entity List without a license if such release is made for the purpose of contributing to the revision or development of a ''standard'' in a ''standards organization."
[56] Exec. Order No. 12,382, 3 C.F.R. (1982) (amended by E.O. 13286 of February 28, 2003).

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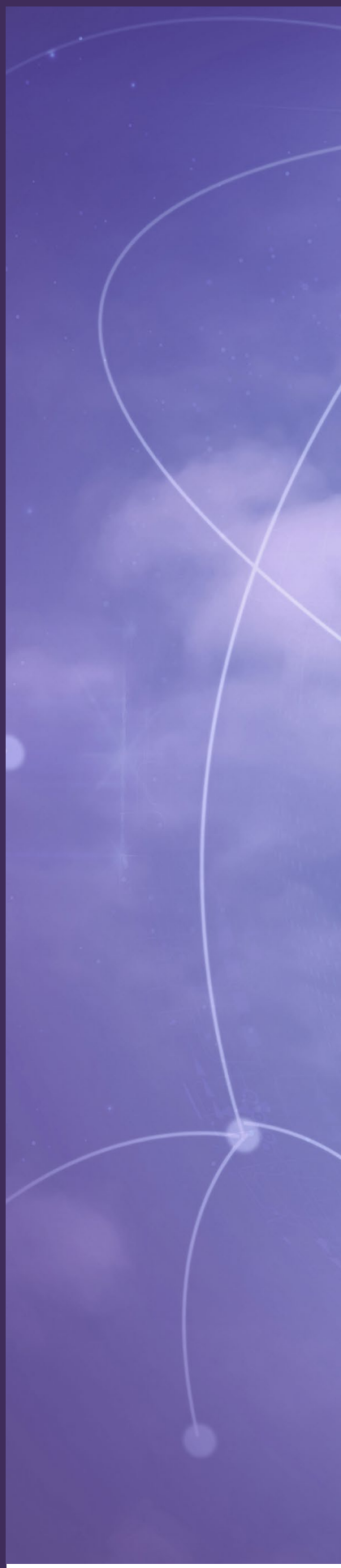

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