

*Before the*  
**National Telecommunications and  
Information Administration**  
Washington, D.C.

*In re* The National Strategy to Secure  
5G Implementation Plan

Docket No. 200521–0144

**COMMENTS OF THE  
ALLIANCE FOR TELECOMMUNICATIONS INDUSTRY SOLUTIONS**

The Alliance for Telecommunications Industry Solutions (ATIS) submits these comments in response to the National Telecommunications and Information Administration’s (NTIA) *Request for Comments (RFC)*, released May 28, 2020, regarding the implementation of the National Strategy to Secure 5G. As one of the leading developers of 5G standards, ATIS is pleased to provide its input to the *RFC*. ATIS notes that 5G standards are built on a system architecture and open equipment interfaces defined by industry-driven technical specifications. ATIS believes that collaboratively developed industry standards are essential to the security and market success of 5G and “NextG” technologies and urges the US Government to collaborate with existing forums, such as ATIS, to support North American 5G needs in the development of global standards.

**I. BACKGROUND**

ATIS is a global standards development and technical planning organization that develops and promotes worldwide technical and operations standards for information, entertainment, and communications technologies. ATIS’ diverse membership includes key stakeholders from the Information and Communications Technologies (ICT) industry –wireless, wireline, and VoIP service providers, equipment manufacturers, broadband providers, software developers, consumer electronics companies, public safety agencies, and internet service providers. Nearly 600 industry subject matter experts work collaboratively in ATIS’ industry workgroups, including groups focusing on wireless access technology, mobile core networks, system security, lawful intercept, critical communications, North American requirements for 5G evolution and 5G supply chain security.

ATIS is also a founding partner and the North American Organizational Partner of the Third Generation Partnership Project (3GPP), the global collaborative effort that has developed the Long-Term Evolution (LTE), LTE-Advanced and 5G wireless specifications. In this role, ATIS works with its members, including its U.S. governmental members that participate in 3GPP through ATIS,<sup>1</sup> to ensure that 3GPP specifications meet North American commercial,

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<sup>1</sup> These participants include: Cybersecurity and Infrastructure Security Agency (CISA), Federal Communications Commission (FCC), National Institute of Standards and Technology (NIST), National Telecommunications and

regulatory and security needs. ATIS also publishes 3GPP specifications as formal US standards, facilitating their implementation in North America.

In addition to ATIS' key role as a partner in 3GPP, ATIS is the main North American industry organization developing, refining, and providing input to the International Telecommunication Union (ITU) on defining mobile generational (4G, 5G) requirements and evaluating candidate mobile technologies. ATIS' Wireless Technologies and Systems Committee (WTSC) hosted the work of the North American Independent Evaluation Group for examining and providing input on proposed ITU-R IMT-2020 technologies.

ATIS has been at the forefront of ICT industry efforts to develop and deploy next generation wireless and wireline networks. This work includes not only addressing technical and operation challenges but also promoting a cohesive strategic vision of next generation networks. In May 2020, ATIS published its views on [\*Promoting U.S. Leadership on the Path to 6G\*](#)<sup>2</sup> to encourage an end-to-end approach, beginning with pre-competitive 6G research and extending across development, manufacturing, standards development, deployment readiness, commercialization and realization. Ultimately, early research should be targeted to commercialization intent and the realization of 6G technologies and services in the market, including the impacts on the workforce, customer needs and the national economy. Success will be achieved by applying a cohesive strategy as part of a public/private partnership that extends U.S. leadership from innovative ideas and early research to market realization and adoption.

## **II. ATIS INPUT TO RFC QUESTIONS**

In the *RFC*, NTIA seeks to inform the development of an Implementation Plan for the National Strategy to Secure 5G (Strategy).<sup>3</sup> The Strategy, which was released on March 23, to explain how the U.S. government will secure 5G infrastructure domestically and abroad, outlines four lines of effort: (1) facilitating the rollout of 5G domestically; (2) assessing the cybersecurity risks to, and identifying core security principles of, 5G capabilities and infrastructure; (3) addressing risks to United States (U.S.) economic and national security during development and deployment of 5G infrastructure worldwide; and (4) promoting responsible global development and deployment of secure and reliable 5G infrastructure. ATIS' input to specific *RFC* questions are provided below.

### **A. Line of Effort One: Facilitate Domestic 5G Rollout**

In the *RFC*, NTIA seeks input regarding how the U.S. can facilitate the domestic rollout of 5G technologies and the development of a robust domestic 5G commercial ecosystem. ATIS believes that the U.S. Government should work with industry to collaborate on a holistic approach that extends from pre-competitive research to full commercialization of new

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Information Administration (NTIA), U.S. Department of Defense, U.S. Department of Transportation, and the First Responder Network Authority.

<sup>2</sup> This document is available from: <https://sites.atis.org/wp-content/uploads/2020/05/Promoting-US-Leadership-on-Path-to-6G.pdf>.

<sup>3</sup> [National Strategy to Secure 5G of the United States of America](#), released March 23, 2020.

generations of wireless technology. While the rollout of 5G technologies has already begun, the continued evolution of 5G and the path to 6G offer the U.S. an opportunity to demonstrate leadership across the ecosystem of manufacturers, developers and providers.

As noted in ATIS' *Promoting U.S. Leadership on the Path to 6G*, defining the key components of U.S. technological leadership begins with identifying a vision for the next decade. 5G will enable billions of hyper-connected devices, as well as and big data and artificial-intelligence-enabled capabilities that will change how consumers communicate and interact, not only with other people but with devices. New capabilities and applications will emerge that take advantage of the ultra-high-bandwidth/low-latency connectivity of 5G and massive amounts of intelligent connectivity. This progress, however, takes time. History has shown that the path to the next generation of advanced networks often begins a decade in advance, as research creates the aspirational view of what is possible and development efforts translate those aspirations into market reality.

NTIA also seeks comment on how the U.S. Government can best foster and promote the research, development, testing, and evaluation of new technologies and architectures. ATIS believes that collaboration between government, industry and academia is necessary to develop a common vision that will drive U.S. leadership over the next decade and beyond. This vision must consider both how the network will change but also what new functionalities may be offered as a result of the network changes. For example, ATIS' vision for 6G of networks, devices and applications extends well beyond greater bandwidth, less latency, additional spectrum and greater reliability. 6G will offer new cognitive, predictive and contextual capabilities to deliver a new levels of user experience including:

- Distributed intelligence, which will permeate networks and devices and enable new microservices operating on the network edge to create exciting and innovative opportunities for vertical markets and enterprises.
- Communications in the high GHz and THz bands, which will open up a new generation of embedded devices and ubiquitous connectivity that will allow everyday objects to become sources of data and intelligence and applications to autonomously predict and act on a customer's needs and preferences.
- User-defined security and privacy perimeters, which will establish a path for the U.S. to be the leader in developing and deploying secure networks and devices. 6G will ultimately harness the power of the network to augment security and operational capabilities (detect, inform, defend) built into the networking devices themselves.

NTIA seeks input on what steps the U.S. Government should take to further motivate the domestic 5G commercial ecosystem to increase 5G research, development, and testing. ATIS believes that sustainable technology leadership requires incentives to spur early investment, speed to market and widescale commercial adoption. These incentives are also necessary to help level the ICT playing field. The U.S. ICT industry is competing with regions of the globe that subsidize private sector development, and that sometimes violate intellectual property rights and inject unfair trade barriers. As explained in ATIS' *Promoting U.S. Leadership on the Path to 6G*, the U.S. can best counter these technology barriers by adopting a national plan for technological excellence that relies on a set of committed principles and actions:

- (1) The U.S. Government should make available additional R&D funding focused on a core set of technological breakthrough areas where the U.S. can lead. These technologically focused areas -- AI-Enabled Advanced Networks and Services, Advanced Antennas and Radio Systems, Multi-Access Network Services, Healthcare and Agriculture -- leverage U.S. industry's key competency areas and promote both early consumer adoption and opportunities to sell U.S. developed and produced products and services into the global market. ATIS also urges the government to acknowledge the important role that standards play in research and development and in the deployment of innovative technologies by confirming that the R&D funding would also include funding for enhanced governmental participation in those standards development organizations that are producing next generation ICT standards.
- (2) The U.S. Government should expand R&D tax credits to encourage investment in a set of core technologies that will promote U.S. leadership. An expanded tier of R&D tax credits, including credits for industry participation in standards-setting, that can be directly attributed to a national framework of technology leadership areas would further incent industry to align around a set of common goals, promoting U.S. leadership in both development and adoption.
- (3) The U.S. Government should work with industry to develop a consumer- and business-centric solution to wireless spectrum challenges by creating a national spectrum policy. Recent experience has demonstrated that fast-tracking the availability of new wireless spectrum in both licensed and unlicensed bands can promote more rapid adoption by the market and accelerate innovation across industry. This spectrum policy should synchronize market needs with spectrum availability of low-, mid- and high-frequency spectrum to promote and encourage advanced applications to market — and realize the full benefits of U.S. leadership.
- (4) The U.S. Government should explore innovative ways to promote widespread commercial adoption of U.S.-developed and -produced hardware/software through financial incentives to public and private sectors. Cities and other local municipalities can act as technology labs and innovation zones that promote U.S. technology leadership. These zones should also include rural markets, as U.S. leadership should also generate opportunities in the areas of smart agriculture, smart energy, remote learning and public safety. In addition, integration with vertical industries and enterprise markets as first adopters could be incentivized through tax credits and grant opportunities.

The *RFC* also asks about areas of research and development that the U.S. Government should prioritize to achieve and maintain U.S. leadership in 5G. ATIS' *Promoting U.S. Leadership on the Path to 6G* identifies the core technologies that will drive U.S. leadership along the path to 6G. Informed by leading North American ICT companies, the following innovative technologies and market opportunities are expected to fuel the next decade of investment and development:

- *AI-Enabled Advanced Networks and Services*. AI is already recognized as a breakthrough area of development that will significantly impact how people and things interact with one another and with their environment.

- *Advanced Antennas and Radio Systems.* The future of wireless communications (both licensed and unlicensed) depends on rapid development and market availability of ultra-high-frequency devices that operate above 95GHz and in THz spectrum.
- *Multi-Access Network Services.* Integration of different terrestrial networks (wireless and fixed) with the growing potential for non-terrestrial solutions, such as unmanned aerial systems and satellites, will allow for ubiquitous coverage in any terrain, geography or physical environment.
- *Healthcare.* The current COVID-19 pandemic has demonstrated the need for government and industry to work together on innovative approaches to expanding telehealth capabilities and diagnosing patients outside of healthcare facilities, including smart health, remote diagnostics and telesurgery, using new capabilities such as multi-sensory applications, the tactile internet and ultra-high-resolution 3D imagery.
- *Agriculture.* In order to meet anticipated need for more food, the farming industry will need to look to new technologies. In the future, wireless sensors/IoT, robotics, autonomous farming vehicles, drones, satellite imagery, big data and AI will enable a new era of precision agriculture. This will ensure the most efficient, effective use of fertilizer, seeds, herbicides and pesticides and target very specific areas. Precision agriculture also will enable farming operations that don't require a single human to set foot in the fields. The U.S. is uniquely positioned to take on the challenge of leading the world in smart agriculture solutions that will meet future food consumption needs in both national and global markets.

## **B. Line of Effort Two: Assess Risks to and Identify Core Security Principles of 5G Infrastructure.**

To implement line of effort two, NTIA asks about the factors the U.S. Government should consider in the development of core security principles for 5G infrastructure and when evaluating the trustworthiness or potential security gaps in U.S. 5G infrastructure, including the 5G infrastructure supply chain. ATIS recommends that the core security principles and the evaluation of trustworthiness be based on the results of a formal risk analysis jointly performed by industry and government given the existing network infrastructure. Moreover, because security is an end-to-end issue, all aspects and layers of the communications path must be considered and the vulnerabilities prioritized. The final result should consider that, while not all potential vulnerabilities are high risk for specific applications, new vulnerabilities may be uncovered that must be mitigated with high priority.

To assist in network architecture security risk assessments, ATIS has developed an Architectural Risk Analysis (ARA) process to identify the security gaps associated with a specific application, system and architecture along with the relative risk, in order to prioritize the deployment of necessary controls and mitigations. The ARA methodology involves defining the attack surface of solution assets, assessing the risk to each asset and assessing how well the associated threats are mitigated through security controls.

The ARA process is documented in a variety of ATIS reports:

- [An Architectural Risk Analysis for Internet of Things \(IoT\) Services](https://access.atis.org/apps/group_public/download.php/46163/ATIS-I-0000072.pdf)  
[https://access.atis.org/apps/group\\_public/download.php/46163/ATIS-I-0000072.pdf](https://access.atis.org/apps/group_public/download.php/46163/ATIS-I-0000072.pdf)
- [Cybersecurity Architectural Risk Analysis Process](https://access.atis.org/apps/group_public/download.php/35401/ATIS-I-0000057.zip)  
[https://access.atis.org/apps/group\\_public/download.php/35401/ATIS-I-0000057.zip](https://access.atis.org/apps/group_public/download.php/35401/ATIS-I-0000057.zip)

ATIS is also engaged in specific security efforts including:

- [Improving Vehicle Cybersecurity: ICT Industry Experience and Perspectives](https://access.atis.org/apps/group_public/download.php/35648/ATIS-I-0000059.pdf)  
[https://access.atis.org/apps/group\\_public/download.php/35648/ATIS-I-0000059.pdf](https://access.atis.org/apps/group_public/download.php/35648/ATIS-I-0000059.pdf)
- [Technical Impacts of DNS Privacy and Security on Network Service Scenarios](https://access.atis.org/apps/group_public/download.php/52568/ATIS-I-0000079.pdf)  
[https://access.atis.org/apps/group\\_public/download.php/52568/ATIS-I-0000079.pdf](https://access.atis.org/apps/group_public/download.php/52568/ATIS-I-0000079.pdf)
- CSDE - The C2 Consensus on IoT Device Security Baseline Capabilities  
[https://securingdigitaleconomy.org/wp-content/uploads/2019/09/CSDE\\_IoT-C2-Consensus-Report\\_FINAL.pdf](https://securingdigitaleconomy.org/wp-content/uploads/2019/09/CSDE_IoT-C2-Consensus-Report_FINAL.pdf)
- 5G Security Requirements  
[https://www.techstreet.com/atis/standards/atis-1000077?product\\_id=1941469](https://www.techstreet.com/atis/standards/atis-1000077?product_id=1941469)

Finally on this line of effort, NTIA asks whether there are stakeholder-driven approaches that the U.S. Government should consider to promote adoption of policies, requirements, guidelines, and procurement strategies necessary to establish secure, effective, and reliable 5G infrastructure. ATIS believes that collaborative multi-stakeholder approaches that include government and industry most often lead to realistic and practical solutions. ATIS has a long history of bringing together government and industry stakeholders to develop standards and common approaches to many important needs, including Wireless Emergency Alerts, emergency services and many other challenges related to next generation technologies. For example, ATIS' 5G Supply Chain Working Group launched at the end of 2019 includes over 40 government agencies and industry members focused on the development of standards that can operationalize supply chain requirements and apply these standards to 5G assured networks. This work will lead to the development of supply chain controls that can be applied to certification and audit processes in the future.

ATIS notes that the need for collaboration extends beyond standards development to the creation of a public-private partnership that can address issues on a more holistic scale. As discussed in ATIS' *Promoting U.S. Leadership on the Path to 6G*, U.S. leadership in the development of next generation wireless technologies will require this type of public-private partnership to be successful. ATIS strongly believes that attempting to solve these issues in a fragmented manner will not facilitate U.S. leadership across the entire ecosystem of research, development, manufacturing, standards, 6G readiness and full commercialization.

### **C. Line of Effort Three: Address Risks to U.S. Economic and National Security during Development and Deployment of 5G Infrastructure Worldwide.**

As part of its evaluation of this line of effort, NTIA seeks comment on the opportunities for U.S. companies related to the deployment of 5G networks worldwide. One major area of innovation and opportunity associated with 5G is the emergence of vertical markets and the

value of 5G. ATIS has established a focus group to assess and identify potential needs of 5G Vertical Enablement Platforms across vertical enterprises sectors. This focus group has recognized that emerging 5G and IoT technology solutions are creating new business opportunities across many vertical market sectors. This rapid innovation will drive the needs and opportunities to develop additional frameworks and platform capabilities to support 5G enabled applications and services that span the ICT and vertical sectors. As part of this new work, therefore, ATIS is developing a landscape of the 5G-enabled vertical requirements, based on an assessment of industry data to identify cross-industry platform enablement opportunities and other 5G collaborative platform needs.

#### **D. Line of Effort Four: Promote Responsible Global Development and Deployment of 5G.**

For line of effort four, NTIA seeks input on how the U.S. Government best encourage and support U.S. private sector participation in standards development for 5G technologies. It is ATIS' view that the development of standards that support U.S. needs must be closely coupled with a broader strategy that connects research, development, manufacturing and commercialization objectives. Greater collaboration between U.S. Government, industry and standards coordination groups, such as ATIS, is also essential. Standards leadership is driven by strong alignment of regional needs and the communication of those needs to relevant global standards development organizations. For example, ATIS WTSC spearheaded the development of the standards in support of and required for the launch of Wireless Emergency Alerts (WEA) in the U.S. per regulatory mandates. These continued efforts bring together industry and key Government participants (e.g., FEMA) to collaboratively address and progress issues related to WEA. ATIS members also continue to develop and submit contributions into 3GPP to ensure WEA is part of the global Public Warning System interoperable solution.

To promote U.S. leadership on 5G and beyond, ATIS believes that the vital role played by global standards development must be recognized and encouraged. To this end, ATIS urges the U.S. Government to clarify that R&D tax credits apply to the development of next generation standards and the assessment of future technologies and architectures. Further, a special classification of R&D tax credits should be considered that is associated with a national set of 5G and beyond objectives, as defined by government and industry, which will further incentivize the private sector to promote U.S. leadership and contribute to the development of a core set of technologies that can drive the U.S. market.

The tools or approaches that could be used to mitigate risk from other countries' 5G infrastructure is also an issue on which NTIA seeks input in the *RFC*. As noted above, ATIS believes that these tools and approaches should be determined based on the results of a formal risk analysis jointly performed by industry and government considering all aspects of the communications path and evaluating and prioritizing risks.

## II. CONCLUSION

ATIS appreciates the opportunity to provide its input to the *RFC* and welcomes the opportunity to provide additional information about the industry work described in these comments.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Thomas Goode", written in a cursive style.

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