**Before the**
**NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION**
**Washington, DC 20230**

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| In the Matter of | ) |
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| 5G Challenge Notice of Inquiry | ) Docket No. 210105-0001 |
| | ) RIN 0660-XC049 |
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## COMMENTS OF T-MOBILE USA, INC.

T-Mobile USA, Inc. ("T-Mobile")[1] submits these comments in response to the above-referenced Notice of Inquiry ("NOI") issued by the National Telecommunications and Information Administration ("NTIA"), under the sponsorship of and in collaboration with the Department of Defense ("DoD").[2] NTIA explains that the purpose of the NOI is to gather recommendations on the creation of a fifth-generation ("5G") Challenge to accelerate the development of the open 5G stack ecosystem, particularly open 5G interfaces, in order to support DoD's critical missions.[3] T-Mobile applauds DoD's efforts to modernize its communications systems through the use of open network interfaces, including to upgrade to 5G wireless technology and capabilities. But any Challenge should keep in mind the work that the wireless industry has already performed, and will continue to perform, to develop these technologies. In fact, open network interfaces are already a part of 3rd Generation Partnership Project ("3GPP") 5G protocols, which define the 5G system architecture that enables standards-based 5G deployments.

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[1] T-Mobile USA, Inc. is a wholly-owned subsidiary of T-Mobile US, Inc., a publicly traded company. T-Mobile and Sprint are now one company operating under the name T-Mobile. The merger closed on April 1, 2020.

[2] *See 5G Challenge Notice of Inquiry*, Notice of Inquiry, National Telecommunications and Information Administration, 86 Fed. Red. 1949 (Jan. 11, 2021), https://www.ntia.doc.gov/files/ntia/publications/fr-5g-challenge-noi-01112021.pdf ("NOI").

[3] *Id.* at 1950.

These existing open 5G network interfaces provide the wireless industry with the flexibility and adaptability to meet a variety of application requirements and allow it to support a multitude of use cases, including those presented by DoD. A focus on DoD-specific alternatives to currently developed and developing protocols may therefore unnecessarily duplicate industry efforts. And DoD efforts to promote and ultimately take advantage of open network efforts still in the early stages, like those pursued by the O-RAN ALLIANCE, risk failing to meet DoD requirements in a timely manner.

Rather than pursuing the Challenge, DoD could accelerate 5G network diversity by taking advantage of the work that, among others, 3GPP has already performed to implement solutions unique to DoD. It can also work with Congress to seek funding for and implement the already-established 5G grant program intended to accomplish exactly what the NOI seemingly hopes to achieve through the Challenge – the promotion of radio access networks that feature open and interoperable technology.

## I. INDUSTRY HAS DEVELOPED, AND WILL CONTINUE TO DEVELOP, SYSTEMS THAT FEATURE OPEN INTERFACES

T-Mobile recognizes the benefits of open network architectures for 5G – they can create a larger and more diverse product ecosystem, increasing competition and reducing the over-reliance on any one vendor – particularly vendors that the U.S. has found pose significant national security risks.[4/] In addition, open network architectures can enable faster upgrades in

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[4/] *See Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs – Huawei Designation*, Memorandum Opinion and Order, 35 FCC Rcd 14435 (2020); *Protecting Against National Security Threats to the Communications Supply Chain Through FCC Programs – ZTE Designation*, Memorandum Opinion and Order, 35 FCC Rcd 13146 (2020).

comparison to traditional hardware, promote innovation, and foster collaboration among stakeholders.[5]

But the NOI is unnecessarily premised on DoD playing a leading role in developing open network architectures.[6] While DoD should continue to be an early adopter of 5G technology, DoD need not create a distinct Challenge program to accomplish that. Instead, DoD can take advantage of the wireless industry's existing substantial investments in, and development of, 5G open interfaces.

The wireless industry has historically invested hundreds of billions of dollars to build and continually upgrade wireless networks. Indeed, since 2010, the wireless industry has invested over $286 billion in wireless networks.[7] And over the past four years, the wireless industry has invested over $100 billion in U.S. 5G deployment – $29 billion of which was invested in 2020 alone, exceeding investments made by the Nation's global 5G rivals.[8] By 2030, 5G deployment in the U.S. will add between $1.4-1.7 trillion to the country's gross domestic product, and it will create between 3.8-4.6 million jobs.[9]

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[5] 5G AMERICAS, THE STATUS OF OPEN SOURCE FOR 5G 13 (Feb. 2019), https://www.5gamericas.org/wp-content/uploads/2019/07/5G_Americas_White_Paper_The_Status_of_Open_Source_for_5G_Feb_2019.pdf.

[6] NOI at 1950.

[7] *See* CTIA, 2020 ANNUAL SURVEY HIGHLIGHTS 2 (Aug. 2020), https://api.ctia.org/wp-content/uploads/
2020/08/2020-Annual-Survey-final.pdf.

[8] *See* CTIA, BUILDING THE 5G ECONOMY at 17-18 (Jan. 2021), https://api.ctia.org/wp-content/uploads/2021/01/2021-Wireless-Briefing-2_2.pdf.

[9] BOSTON CONSULTING GROUP, 5G PROMISES MASSIVE JOB AND GDP GROWTH IN THE U.S. 5 (2021), https://api.ctia.org/wp-content/uploads/2021/01/5G-Promises-Massive-Job-and-GDP-Growth-in-the-US_Feb-2021.pdf.

The wireless industry is now well underway in implementing 5G across the U.S. and worldwide. T-Mobile, for example, is "lighting up Ultra Capacity 5G," which uses its 2.5 GHz and millimeter wave spectrum, bringing 5G services to over 1,000 cities and towns across the U.S.[10/] T-Mobile's Extended Range 5G uses its 600 MHz spectrum to reach more than 280 million people across nearly 1.6 million square miles.[11/] Other wireless carriers are also in the process of deploying 5G networks,[12/] creating a highly competitive environment to provide superior coverage, capacity, and service.

And just as it has already invested hundreds of billions of dollars in technology development generally, the wireless industry, including T-Mobile, has been actively engaged in work to further develop open network architectures. In fact, industry groups such as 3GPP, in whose activities T-Mobile participates, have already developed protocols and standards for 5G networks that include open interfaces.[13/] All three nationwide providers have been building

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[10/]     Press Release, *T-Mobile to Expand and Advance the Nation's Largest 5G Network with New 5-Year Agreements*, T-MOBILE (Jan. 13, 2021), https://www.t-mobile.com/news/network/5g-best-coverage-ericsson-nokia.

[11/]     Press Release, *T-Mobile 5G Is Fastest Based on New Independent Test*, T-MOBILE (Jan. 25, 2021), https://www.t-mobile.com/news/network/fastest-largest-5g-network; *see also* Monica Alleven, *T-Mobile Taps 2020 Merger With Sprint to Lead in 5G Era*, FIERCE WIRELESS (Dec. 29, 2020), https://www.fiercewireless.com/operators/t-mobile-taps-2020-merger-sprint-to-lead-5g-era ("T-Mobile has said its Extended Range 600 MHz 5G is capable of producing speeds two times faster, and in some cases, three times faster than LTE.").

[12/]     *See Hindsight is 2020: The Year of Connectivity*, AT&T TECHNOLOGY BLOG (Dec. 18, 2020), https://about.att.com/innovationblog/2020/12/year_of_connectivity.html; Karen Schulz, *Verizon Extends Nationwide 5G to Cover 230 Million People*, VERIZON (Dec. 17, 2020), https://www.verizon.com/about/news/verizon-extends-5g-coverage.

[13/]     *See* Rene Summer, *Mobile Radio Access Networks: What Policy Makers Need to Know*, ERICSSON BLOG (Sept. 17, 2020), https://www.ericsson.com/en/blog/2020/9/ran-what-policy-makers-need-to-know ("Ericsson Mobile Radio Access Networks Blog"); *see also 3GPP Membership – Individual Members*, 3GPP, https://webapp.etsi.org/3gppmembership/Results.asp?SortMember=Name&DirMember=ASC&SortPartner=Name&DirPartner=ASC&SortMarket=Name&DirMarket=ASC&SortObserver=Name&DirObserver=ASC&SortGuest=Name&DirGuest=ASC&Name=t-mobile&search=Search#Member (showing that T-Mobile is a member of 3GPP).

networks that take advantage of the open interfaces in 3GPP architectures.[14/]  T-Mobile, in

particular (and as noted below), has developed a standalone 5G network that takes advantage of

3GPP 5G end-to-end solutions that use open interfaces and the ability to mix and match

vendors.[15/]  Similarly, while, as noted in further detail below, the O-RAN ALLIANCE's open

radio access network standards and specifications (collectively "O-RAN") are still being

developed, that organization has also been evaluating specifications that complement 3GPP

standards by defining interface profiles, additional new open interfaces, and new nodes.[16/]

These industry efforts have focused on, and will continue to focus on, a range of open-

network issues that the Challenge seeks to address.  Open networks are more prone to cyber-

security threats – an outcome that the U.S. has been working hard to avoid and that is

particularly important for DoD systems.[17/]  Current industry-based efforts can concentrate on

identifying and resolving open network security issues as open networks are being developed.

Indeed, the open interfaces that have been, and are continuing to be, developed by the wireless

industry are already taking this into account.  Additionally, industry efforts on open interfaces

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[14/]     *See* Press Release, *T-Mobile to Expand and Advance the Nation's Largest 5G Network with New 5-Year Agreements*, T-MOBILE (Jan. 13, 2021), https://investor.t-mobile.com/news-and-events/t-mobile-us-press-releases/press-release-details/2021/T-Mobile-to-Expand-and-Advance-the-Nations-Largest-5G-Network-with-New-5-Year-Agreements/default.aspx; Bevin Fletcher, *Verizon Deploys Samsung vRAN in 5G Expansion*, FIERCE WIRELESS (Jan. 22, 2021, 1:22 PM), https://www.fiercewireless.com/5g/verizon-deploys-vran-from-samsung-for-5g-expansion; Press Release, *AT&T and Nokia Accelerate the Deployment of RAN Open Source*, AT&T (Jan. 8, 2019), https://about.att.com/story/2019/open_source.html.

[15/]     Press Release, *T-Mobile Achieves Significant 5G Firsts with Cisco, Ericsson, MediaTek, Nokia, OnePlus and Qualcomm*, T-MOBILE (May 4, 2020), https://investor.t-mobile.com/news-and-events/t-mobile-us-press-releases/press-release-details/2020/T-Mobile-Achieves-Significant-5G-Firsts-with-Cisco-Ericsson-MediaTek-Nokia-OnePlus-and-Qualcomm/default.aspx.

[16/]     *See* Ericsson Mobile Radio Access Networks Blog.

[17/]     As T-Mobile has explained to DoD, a DoD network based on open network technology would be a particularly attractive cyber-attack target given the sensitive information that would be shared over the network.  *See* Comments of T-Mobile USA, Inc., Department of Defense Request for Information on Spectrum Sharing, Product Service Code D399, NAICS Code 541511, at 7 (filed Oct. 19, 2020).

can focus not only on the RAN, but also on devices – a consideration that should be important to DoD.

Because the wireless industry is already deeply engaged in the development of open network interfaces through 3GPP, the O-RAN ALLIANCE, and other efforts, it is unlikely that DoD's separate involvement would accelerate the results those groups expect to achieve. To the contrary, establishing a Challenge may work at cross-purposes to current industry efforts. Any separate DoD efforts, outside existing structures, could be counterproductive, draining resources from an effort already underway.

## II. DoD CAN TAKE ADVANTAGE OF THE OPEN INTERFACE WORK THAT HAS ALREADY OCCURRED IN 3GPP AND OTHER FORA

While industry will continue to aggressively explore additional open interface options, as described above, DoD can already take advantage of 5G network characteristics to satisfy its requirements –without independently promoting an open 5G stack or implementing its own network that uses open interfaces. In particular, 3GPP open interfaces can, for instance, take into account unique DoD needs, like hardening. In addition, 3GPP standards enable multi-vendor deployments across different sites and multi-vendor deployments by different vendors on the same site, promoting network interoperability.[18] Existing open interfaces can transform the military's 5G networks by enabling the defense sector and the wireless industry to work together to establish more efficient, robust, and secure networks.[19] In fact, 3GPP has specified several

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[18]    *See* Ericsson Mobile Radio Access Networks Blog.

[19]    David Vergun, *DOD Works With Industry to Ramp Up 5G Network Innovation*, DOD NEWS (Nov. 10, 2020), https://www.defense.gov/Explore/News/Article/Article/2410280/dod-works-with-industry-to-ramp-up-5g-network-innovation/.

open interfaces,[20] like the F1 interface between a distributed unit and central unit in the RAN, which is the primary interface for 5G RAN architecture.

DoD need not deploy its own network to take advantage of these benefits. As T-Mobile has previously explained to DoD, rather than build its own dedicated physical network, DoD can use the capacity of T-Mobile's network to meet its objectives through techniques like network slicing.[21] Network slicing, which can be offered on standalone 5G networks, occurs when a 5G network is subdivided into several different virtual networks that are optimized for a user's specific business case.[22] Each of the subdivided 5G networks operates as a "virtually independent business operation[] on a common physical infrastructure."[23] As the Telecom Infra Project points out, network slicing allows entities to "identify the right network connectivity solution (at the right quality [and] reliability) needed within their larger solution context."[24] A commercial wireless provider with a standalone 5G network could create a "logically separated

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[20]     *See* Ericsson Mobile Radio Access Networks Blog. Industry has recognized 3GPP standards as "one of the best examples of specifying open interfaces." *See id.*

[21]     *See* FEDERAL MOBILITY GROUP, 5G FRAMEWORK TO CONDUCT 5G TESTING 17 (Nov. 2020), https://www.cio.gov/assets/files/Framework-to-Conduct-5G-Testing-508.pdf (stating that "[c]arriers are a source for temporary use of licensed 5G spectrum.") ("Federal Mobility Group Report").

[22]     *See 2021 & 5G's Expansion*, CTIA BLOG (Jan. 14, 2021), https://www.ctia.org/news/blog-2021-and-5g-expansion ("Network slicing—or the ability to create optimized 5G networks within a traditional network for different use cases—is a feature many in the wireless industry have been looking forward to realizing. With the move to 5G standalone networks, providers are able to offer these virtual wireless channels with capabilities optimized for enterprise, public safety and government use."). Standalone 5G networks feature end-to-end 5G capabilities. On the other hand, non-standalone networks combine 5G and prior wireless generation technologies. *See* Hannes Ekström, *Non-standalone and Standalone: Two Standards-based Paths to 5G*, ERICSSON BLOG (July 11, 2019), https://www.ericsson.com/en/blog/2019/7/standalone-and-non-standalone-5g-nr-two-5g-tracks. T-Mobile was the first carrier to launch a standalone 5G network. Press Release, *T-Mobile Launches World's First Nationwide Standalone 5G Network*, T-MOBILE (Aug. 4, 2020), https://www.t-mobile.com/news/network/standalone-5g-launch.

[23]     GSMA, AN INTRODUCTION TO NETWORK SLICING 3 (Nov. 2017), https://www.gsma.com/futurenetworks/wp-content/uploads/2017/11/GSMA-An-Introduction-to-Network-Slicing.pdf.

[24]     TELECOM INFRA PROJECT, CREATING ECOSYSTEMS FOR END-TO-END NETWORK SLICING 7 (2018).

network slice" for DoD that would serve as DoD's own private virtual network,[25] unique to its mission-critical needs and with all the appropriate safety precautions to ensure the security of communications and operations.[26] GSMA has developed a Generic Slicing Template that enables enterprises to talk to commercial network providers using a set of parameters (instead of network architectures or protocols) that can define a business relationship between a slice customer and slice provider.[27] DoD could use that template to express its needs to obtain a network slice from any commercial wireless provider, without having to consider how the network slice is implemented. DoD could also use network slices for 5G backhaul.[28]

DoD already partners with commercial networks to meet its communications requirements. In October 2020, for example, DoD announced that it partnered with several commercial entities to experiment with 5G technologies at five U.S. military test sites. The projects include piloting 5G-enabled augmented/virtual reality for mission planning and training, testing 5G-enabled Smart Warehouses, and evaluating 5G technologies to enhance distributed command and control.[29] And DoD's Non-Secure Internet Protocol Router NETwork (NIPRNet) and Secret Internet Protocol Router NETwork (SIPRNet) wireline networks are actually run by

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[25]    *See* GSMA, SMART 5G NETWORKS: ENABLED BY NETWORK SLICING AND TAILORED TO CUSTOMERS' NEEDS 2 (Sept. 2017), https://www.gsma.com/futurenetworks/wp-content/uploads/2017/09/5G-Network-Slicing-Report.pdf.

[26]    *See* Jeff Verrant, *Building Digital Trust With 5G*, GCN (Nov. 13, 2020), https://gcn.com/articles/2020/11/13/5g-advanced-security.aspx ("[N]etwork slicing . . . allows the creation of virtual networks on the same physical infrastructure, enabling isolation of traffic supporting highly secure applications. With slicing, a commercial 5G service provider can offer government agencies, such as public safety, a protected slice of its network to meet mission-critical requirements.").

[27]    *See* GSMA, FROM VERTICAL INDUSTRY REQUIREMENTS TO NETWORK SLICE CHARACTERISTICS (Aug. 2018), https://www.gsma.com/futurenetworks/wp-content/uploads/2018/09/5G-Network-Slicing-Report-From-Vertical-Industry-Requirements-to-Network-Slice-Characteristics.pdf.

[28]    *See* Federal Mobility Group Report at 11-12.

[29]    *See* Press Release, *DOD Announces $600 Million for 5G Experimentation and Testing at Five Installations*, DEP'T OF DEF. (Oct. 8, 2020), https://www.defense.gov/Newsroom/Releases/Release/Article/2376743/dod-announces-600-million-for-5g-experimentation-and-testing-at-five-installati/.

two commercial network providers – AT&T and Verizon.[30/]  Moreover, in 2017, DoD awarded

T-Mobile, AT&T, and Verizon a contract for wireless services and devices to support four

branches of the military, the DoD, and other federal agencies.[31/]

## III.  DoD NEED NOT RELY ON ALTERNATIVE OPEN NETWORK SYSTEMS

While the NOI does not specify O-RAN as the architecture it seeks to accelerate for

implementation, instead of, or in addition to, 3GPP features, O-RAN architecture is still being

developed and should not, therefore, be the focus of the Challenge.  As 5G Americas points out,

"Open RAN architecture is still evolving and realistic expectations should be considered on the

time frame Open RAN can be realized."[32/]  Indeed, some estimate that it will take several more

years for O-RAN to be fully deployed.[33/]  By the time O-RAN – or any open network separately

supported by DoD through the Challenge process – is implemented, the open interface features

of 5G systems will have already been deployed for several years.  Therefore, DoD's

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[30/]      *See*, *e.g.*, Doug Beizer, *AT&T to Assist Marines with Secure Network*, WASHINGTON TECHNOLOGY (Feb. 22, 2007), https://washingtontechnology.com/articles/2007/02/22/att-to-assist-marines-with-secure-network.aspx; *U.S. Army Unified Capabilities Soft Client Subscription Service*, AT&T (Apr. 3, 2018), https://www.fbcinc.com/e/AFCEABelvoir/presentations/TownHall_ David%20Blake_1115am.pdf; Marie Sakowicz, *Enterprise Voice Services: Unclassified and Classified Voice Services*, DEF. INFO. SYS. AGENCY, https://www.disa.mil/-/media/Files/DISA/News/ Events/Symposium/1--Sakowicz_EnterpriseVoiceServices_approved-FINAL.ashx?la=en&hash= FFE1FDF12AF8F33789D6589E96DD6BC9105C9F1D.

[31/]      *See* Dep't of Def., *Contracts for Oct. 30, 2017*, https://www.defense.gov/Newsroom/ Contracts/Contract/Article/1357776/ (last visited Oct. 19, 2020).  Other federal agencies have awarded contracts to commercial wireless providers for use of their network and expertise.  *See, e.g.*, Press Release, *AT&T Mobilizes the U.S. Department of Education*, AT&T (Dec. 8, 2015), https://about.att.com/ story/mobilizes_department_of_education.html; *see also* Federal Mobility Group Report at 4 (noting that four federal agencies, including DOD, "have acquisition initiatives that include mobility products and services such as wireless carrier services, mobile devices, mobile hardware/infrastructure.").

[32/]      *See* 5G AMERICAS, TRANSITION TOWARD OPEN & INTEROPERABLE NETWORKS, at 27 (Nov. 2020), https://www.5gamericas.org/wp-content/uploads/2020/11/InDesign-Transition-Toward-Open-Interoperable-Networks-2020.pdf.

[33/]      *See* Diana Goovaerts, *Blog: North American Operators Opine on Open RAN*, MOBILE WORLD LIVE (Dec. 16, 2020), https://www.mobileworldlive.com/blog/blog-north-american-operators-opine-on-open-ran (noting that Open RAN specifications in the U.S. have not yet matured).

determination to use the Challenge process to accelerate 5G deployment through O-RAN may not be realistic.

T-Mobile is not the only provider to observe these limitations. During the FCC's Forum on 5G O-RAN, Verizon and AT&T expressed concerns about the timing of its adoption.[34] Noting that "'O-RAN is still developing specifications,'" a representative from AT&T explained that O-RAN would be "gradual[ly] introduc[ed]" into AT&T's existing network.[35] A representative from Verizon likewise explained that as "an early adopter" of O-RAN, Verizon is "at the first step" of incorporating the technology into its network.[36] In February 2020, DISH announced plans to build a virtualized and O-RAN-based 5G network.[37] However, as of February 2021, DISH has only conducted a test of the network using O-RAN-compliant radios from its vendor, MTI.[38] Non-U.S. providers are facing problems, too. Rakuten Mobile's O-RAN network in Japan, for example, has faced network deterioration, slow subscriber growth, and poor performance.[39]

Moreover, unlike the open interfaces that are an inherent part of 3GPP architecture, the "openness" of O-RAN may heighten security risks because there is no overall security

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[34] *See* Sean Kinney, *AT&T and Verizon Call Out Scale, Maturity and Integration as Open RAN Challenges*, RCR WIRELESS (Sept. 21, 2020), https://www.rcrwireless.com/20200921/open_ran/att-and-verizon-scale-maturity-integration-are-open-ran-challenges.

[35] *See id.*

[36] *See id.*

[37] *See* Diana Goovaerts, *Dish Plans Open RAN Approach for 5G Network*, MOBILE WORLD LIVE (Feb. 19, 2020), https://www.mobileworldlive.com/featured-content/top-three/dish-plans-open-ran-approach-for-5g-network.

[38] *See* Linda Hardesty, *Dish Tests 5G O-RAN Radios from Obscure Vendor MTI*, FIERCE WIRELESS (Dec. 8, 2020, 1:00 PM), https://www.fiercewireless.com/operators/dish-tests-5g-o-ran-radios-from-obscure-vendor-mti.

[39] Matt Kapko, *Rakuten Challenges Portend Trouble for Dish Network*, SDX CENTRAL (Jan. 23, 2021, 8:00 AM), https://www.sdxcentral.com/articles/news/rakuten-challenges-portend-trouble-for-dish-network/2021/01/.

assessment.[40] Because O-RAN is reliant on open source software, it is dependent on open source communities engaging in secure development practices.[41] And the disaggregation of its functions increases the security threats to the RAN.[42]

While much progress has been made toward implementing O-RAN, the technology is still developing. Accordingly, the U.S. should continue to focus on currently developed and developing open-interface systems. Current trusted vendors, like Cisco, Mavenir, Ericsson, and Nokia, have invested heavily in 3GPP standards development and developed network components that rely on open interfaces.[43] A focus on O-RAN rather than the 3GPP standards on which these vendors' equipment is based could threaten their continued viability, potentially limiting current 5G network build-out and benefiting competitors that may pose a risk to national security.

While O-RAN may support and complement 3GPP standards, it will also not replace the full range of standards provided by 3GPP that are necessary for commercial wireless networks. Indeed, the O-RAN ALLIANCE has never intended "to create a full set of standards needed to implement a fully functional mobile communication network."[44] Because O-RAN features are

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[40] *See* Ericsson Mobile Radio Access Networks Blog (noting that O-RAN Alliance "takes [3GPP] a step further in disaggregating the RAN.").

[41] Amy Zwarico and Sebastien Jeux, *The O-RAN ALLIANCE Security Task Group Tackles Security Challenges on All O-RAN Interfaces and Components*, O-RAN ALLIANCE BLOG (Oct. 24, 2020), https://www.o-ran.org/blog/2020/10/24/the-o-ran-alliance-security-task-group-tackles-security-challenges-on-all-o-ran-interfaces-and-components.

[42] *See id.*

[43] *See* ERICSSON, STANDARDIZATION LEADERSHIP (2020), https://www.ericsson.com/4af13e/assets/local/future-technologies/doc/standardization-leadership-report.pdf; Press Release, *Nokia Announces Over 3,000 5G Patent Declarations*, NOKIA (Mar. 24, 2020), https://www.nokia.com/about-us/news/releases/2020/03/24/nokia-announces-over-3000-5g-patent-declarations/.

[44] *See* Ericsson Mobile Radio Access Networks Blog.

years away, DoD efforts would be better spent evaluating how to take advantage of existing

3GPP 5G technologies like network slicing and virtualization that leverage what commercial

networks are already accomplishing.

## IV. CONGRESS HAS ALREADY TAKEN STEPS TO ACHIEVE OPEN NETWORK GOALS

As described above, the development of open network technologies can provide many

benefits to the 5G ecosystem, including equipment diversity.  Congress recognized this by

establishing, in Section 9202 of the 2021 National Defense Authorization Act, the Public

Wireless Supply Chain Innovation Fund (the "Innovation Fund"), which authorizes NTIA to

award grants of up to $50,000,000 to accelerate the development of open network

technologies.[45/]  The Innovation Fund seeks to award grants to:  (i) support the deployment of 5G

supply chains that use open and interoperable RAN; (ii) accelerate the deployment of open

interface equipment that is based on standards set by 3GPP, the O-RAN ALLIANCE, and other

standards development organizations; (iii) promote the deployment of new 5G equipment that is

compatible with future open standards-based equipment; (iv) enhance the security of multi-

vendor network equipment; and (v) facilitate an interoperable and more diverse vendor market.[46/]

The purposes of the Innovation Fund overlap directly with the goals of the Challenge.  To

avoid the duplication of federal or private sector research, as required by the NDAA,[47/] NTIA

and DoD should focus their efforts on ensuring that the Innovation Fund is implemented rather

than creating a Challenge that seeks to achieve the same objectives.  Indeed, because NTIA is the

administrator of the Innovation Fund and DoD serves on the federal advisory committee, they

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[45/]     *See* National Defense Authorization Act, Pub. L. No. 116-283, § 9202 (Jan. 1, 2021) ("NDAA").

[46/]     *Id.* § 9202 (a)(1)(C).

[47/]     *Id.* § 9202(a)(1)(D).

can ensure that implementation of the Innovation Fund meets DoD's needs while addressing the specific issues raised in the Challenge.

To date, Congress has not appropriated any money to the Innovation Fund.[48/] To help accelerate open networks for government use, NTIA and DoD should work with Congress to ensure that funds are appropriated to the Innovation Fund in the immediate future. And once funds are available, they should be awarded to entities that will work with DoD on open network implementation.

## V.      CONCLUSIONS

T-Mobile appreciates NTIA's desire to create a 5G Challenge to support DoD's 5G needs. But instead of seeking to accelerate the development of the open stack to meet unique DoD needs, DoD should focus its efforts on how it can leverage the wireless industry's existing work in developing open interfaces, use commercial wireless networks for its own mission-critical communications, and effectuate federal government programs specifically dedicated to achieve the DoD's open network goals. Doing so will quickly and efficiently maximize DoD's ability to deploy effective 5G technologies.

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[48/]      Senate Warner stated that he "look[s] forward to working with Senate Appropriators next year to ensure that . . . [the Fund] receive[s] full funding in the coming year." Press Release, *Rubio, Warner Secure Critical 5G Provisions in Defense Bill*, MARCO RUBIO U.S. SENATOR FOR FLORIDA (Dec. 11, 2020), https://www.rubio.senate.gov/public/index.cfm/2020/12/rubio-warner-secure-critical-5g-provisions-in-defense-bill.

Respectfully submitted,

/s/ *Steve B. Sharkey*
Steve B. Sharkey
John Hunter

T-MOBILE USA, INC.
601 Pennsylvania Avenue, N.W.
Suite 800
Washington, DC 20004
(202) 654-5900

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