Dileep Srihari
Senior Policy Counsel, Access Partnership

"A Safe Wireless Future: Securing Our Networks and Supply Chains"
Subcommittee on Communications and Technology
House Committee on Energy and Commerce
June 30, 2021

Chairman Doyle, Ranking Member Latta, and Members of the Subcommittee:

My name is Dileep Srihari and I am Senior Policy Counsel at Access Partnership, a global technology policy consulting firm. My work focuses on data policy, cybersecurity, and telecommunications infrastructure issues, including diversification and security of the information & communications technology (ICT) supply chain. Thank you very much for the opportunity to appear before you. I am honored to be here today.

My statement will focus on three broad topic areas:

- *First*, the promise of open network architectures including Open RAN, along with concrete steps Congress should take to promote the growth of that ecosystem;
- *Second*, maintaining and promoting U.S. technological leadership in the global communications space; and
- *Third*, ensuring that NTIA and the FCC are well-positioned to meet heightened expectations.

I. Promoting Open Network Architectures

Where Things Stand

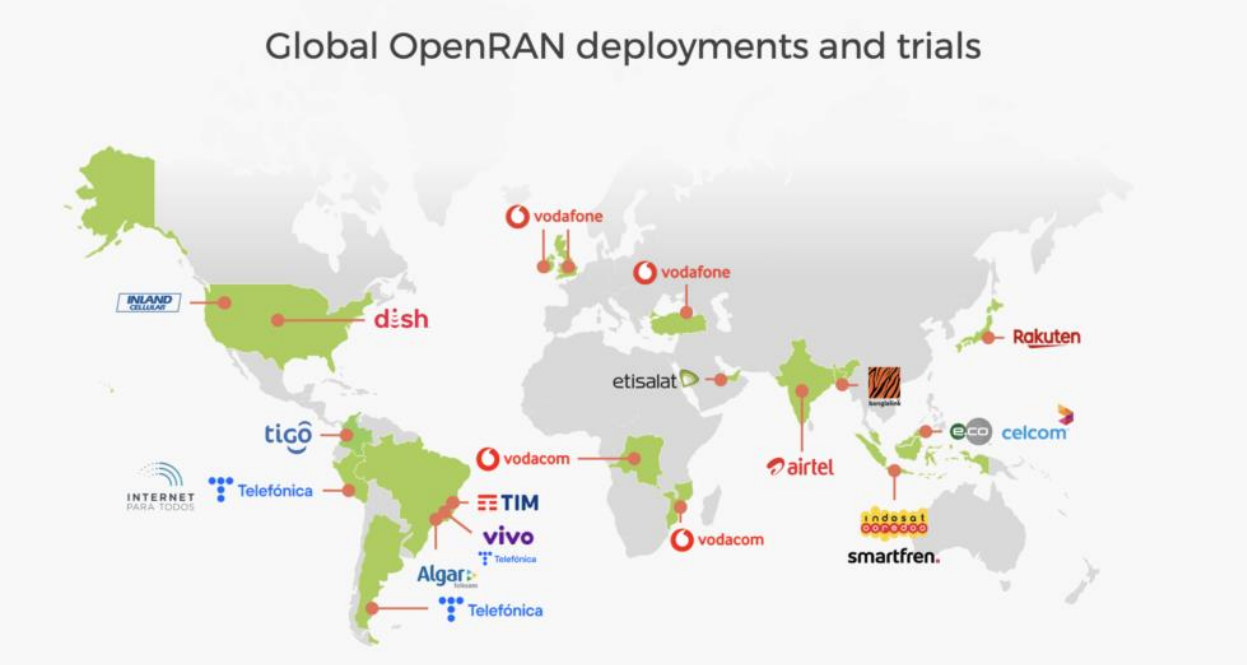
Open network architectures enable the disaggregation of traditional network infrastructure elements – such as the *base station* in a radio access network (RAN) – into sub-elements and functions. A system of standardized interfaces allows the various sub-elements to communicate with each other, enabling interoperability between products and vendors and thus increased competition. Open architectures also allow network functions that were previously implemented through dedicated or customized hardware to be implemented through software instead, with the software running on more general-purpose hardware.

While the global RAN infrastructure market has recently been dominated by a handful of companies, the move toward Open RAN is unlocking the market and enabling new entrants, including both large and small American companies. In particular, the move from customized hardware to software is also leveraging the competitive global advantage of the United States in the software space. This virtualization of network functions also allows operators to move some

functions away from the edge of their networks closer to the core – or vice-versa – unleashing the potential of cloud-based network infrastructure and ultra-low-latency networking.

All of this brings numerous benefits for operators and, in turn, consumers. To begin with, open and disaggregated architectures provide operators with increased flexibility, avoiding the problem of "vendor lock-in." Open architectures also reduce the cost of infrastructure deployments: for example, Japanese company Rakuten has cited savings of 40% in capital expenditures (CAPEX) and 30% in operational expenditures (OPEX) through their adoption of an Open RAN solution.[1] The movement toward software and cloud-based architecture also leads to technological benefits based upon artificial intelligence and machine learning, including automated threat detection and mitigation. Finally, by enabling more companies to compete based on security, open network architectures will ultimately increase network security.

Open RAN deployments are moving forward rapidly in both urban and rural environments around the world. As shown below, most trials and early deployments at this moment are happening outside the United States:



Source: Telecom Infra Project[2]

[1] Comments of Rakuten Mobile USA, LLC, filed Apr. 28, 2021 in FCC GN Docket No. 21-63, at 5-6, https://ecfsapi.fcc.gov/file/104290618324318/Rakuten%20Comments.pdf.

[2] Telecom Infra Project, *TIP's OpenRAN Project Group Accelerates the Development, Validation, and Deployment of OpenRAN Solutions*, June 24, 2021, https://telecominfraproject.com/openran-project-group-accelerates-development-validation-deployment-openran-solutions/.

However, most of these overseas deployments have involved American *vendors* supplying the Open RAN technology to the foreign operator, providing either a software solution or a complete systems integration. Meanwhile, DISH plans to deploy a nationwide network in the United States based on Open RAN, and other U.S. carriers are making plans or have already started to deploy the technology.

Next Steps

Congress should continue taking steps to encourage the adoption of Open RAN and other open network architectures more widely, both at home and abroad. Specific steps for consideration should include:

Funding the USA TELECOM Act. The USA TELECOM Act, enacted last year as part of the FY21 NDAA, authorized an NTIA-administered grant program to promote open network technology. It also authorized a multilateral telecommunications security fund. However, Congress has not yet enacted appropriations for either fund.

- The United States Innovation and Competition Act (USICA, S. 1260), recently passed by the Senate, would appropriate $1.5 billion for the NTIA grant program. It would also appropriate $500 million for the multilateral program, along with a multilateral effort on semiconductors. As the House considers its response to the Senate bill, this Subcommittee should strongly push for the funding to be included. Federal investment in Open RAN and other open network architectures is critical to establishing the technology, and would complement efforts by governments in Germany, the United Kingdom, and elsewhere.

Supporting Testbeds and Participation in Standards-Setting. Section 2520(a) of USICA would authorize a testbed for open network architectures at NTIA's Institute for Telecommunications Sciences in Boulder, CO. In addition, Section 2520(b) would create a grant program for smaller companies to participate in global standards-setting organizations, especially companies who would not otherwise be able to participate without the grant. The House should support these provisions, and also ensure that funding will be made available for private-sector testbeds and other testing and validation activities as well.

Operator Education and Outreach. Even within the United States, awareness of Open RAN and other open network architectures remains limited – especially among small and rural operators. The federal government has an important role to play in conducting outreach, and Acting Chairwoman Rosenworcel has taken the lead by planning an "Open RAN Showcase" for operators that will be held on July 14-15, 2021.[3]

[3] FCC, *Open RAN Solutions Showcase – Day 1*, https://www.fcc.gov/news-events/events/2021/07/open-ran-solutions-showcase-day-1 (visited June 28, 2021).

- The **Open RAN Outreach Act (H.R. 4032)** would require NTIA to conduct outreach and provide technical assistance to small communications network providers to raise awareness. Meanwhile, Section 8 of the Secure and Trusted Communications Networks Act of 2019 created the C-SCRIP program by which NTIA is conducting outreach to smaller operators on supply chain security risks.[4] There may be potential opportunities for synergy between the C-SCRIP program and outreach on Open RAN.

- Thoughtfully, the bill's definition of "open network architecture" includes not just Open RAN, but also open core and open transport as well. This is consistent with the approach taken in Section 2520 of USICA. While Open RAN often receives more attention, the movement toward open and disaggregated network architectures is a broader one that includes all elements of end-to-end connectivity from the edge to the core.

Streamlining Access to Funding for Overseas Projects. American ICT vendors continue to face significant headwinds in winning business from telecom operators around the world, especially in developing countries. In many cases, local operators and governments are unaware of Open RAN, requiring significant effort by the vendors to fill the knowledge gap. Meanwhile, incumbent vendors leverage their established relationships – and in some cases, large subsidies from their home countries – to capture the market and raise the barrier for new entrants and new technologies.

The federal government has taken some helpful steps in recent years, including the reauthorization of the U.S. Export-Import Bank in late 2019. However, U.S. Open RAN vendors still encounter difficulties in obtaining the financing necessary to compete with other vendors when responding to operators' requests for proposals (RFPs). Congress should therefore consider further steps in this area. For example, agencies such as EXIM or the U.S. Trade and Development Agency (USTDA) should consider guaranteeing funding in advance to *any* U.S. company that may win a particular RFP, thus strengthening the competitiveness of American proposals. USAID can also play an enhanced role, either in directly promoting development or by supporting education and outreach efforts around the world.

II. Maintaining U.S. Leadership in Next-Generation ICT

It has been said that "the best defense is a great offense." In the context of today's hearing, one of the best methods to strengthen the supply chains underlying U.S. networks is to ensure that the domestic ICT industry continues to lead the way in global technology development.

Looking Ahead to 6G. It is not too soon for the United States to begin looking forward to the next generation of wireless technology, not least because of what is happening elsewhere. In

[4] NTIA, *C-SCRIP*, https://www.ntia.doc.gov/cscrip (visited June 28, 2021); Secure and Trusted Communications Networks Act of 2019 § 8, Pub. L. No. 116-124, 134 Stat. 158, 168, https://www.congress.gov/116/plaws/publ124/PLAW-116publ124.pdf.

Europe, the Hexa-X consortium project has been sponsored by the European Union, and describes its purpose as being a "flagship action capable [of putting the] EU at the forefront of research and development in [6G]."[5] The project has received funding from the EU's Horizon 2020 research and innovation program. Meanwhile, China announced plans in 2019 to launch a nationally coordinated R&D effort focused on 6G, and while this was reasonably regarded as being hyperbole at the time, there is little doubt that China intends to seek leadership in this space.[6]

- The **FUTURE Networks Act (H.R. 4045)** would establish a 6G Task Force under the auspices of the FCC to begin developing an American effort in this area. While industry should ultimately lead the way toward standardization of next-generation technologies, bringing together various stakeholders from industry, government, and elsewhere at an early stage of development should prove beneficial.

Re-Investing Spectrum Auction Proceeds in R&D. In the decade since the 2012 Spectrum Act was enacted,[7] the federal government has collected over $150 *billion* in gross proceeds from spectrum auctions.[8] If even *half* of this amount had been re-invested into the telecommunications ecosystem, the United States would potentially have achieved universal broadband access by now, and the U.S. ICT industry's posture would likely have been much stronger in comparison to global competitors.

While it may be difficult or impossible to redirect proceeds from prior auctions, Congress should learn the lessons of the past and act now to ensure that a significant portion of *future* auction proceeds are reinvested into the ICT ecosystem. Some have proposed a ten-percent "rural dividend" from spectrum auctions, but Congress should also establish a "research dividend" as well. Even *one* percent of auction proceeds over the past decade – roughly $1.5 billion – would have represented a significant federal investment into wireless R&D.

---

[5] Hexa-X, Hexa-X Consortium, https://hexa-x.eu/consortium/ (visited June 27, 2021).

[6] Brandi Vincent, *China Said It's Developing 6G. What Does That Mean?*, Nextgov, Nov. 11, 2019, https://www.nextgov.com/emerging-tech/2019/11/china-said-its-developing-6g-what-does-mean/161225/.

[7] Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, title VI (commonly referred to by the FCC as the "Spectrum Act").

[8] FCC, *Auctions Summary*, https://www.fcc.gov/auctions-summary (visited June 27, 2021). Notable auctions include the 2015 AWS-3 auction ($41.3 billion), the 2017 broadcast incentive auction ($19.3 billion), and the 2021 C-Band auction ($81.1 billion).

III. Aligning Federal Agencies to Meet the Challenge

Several of the bills under consideration in today's hearing would take steps to better align or prepare NTIA and the FCC to meet the challenge. For example:

- The **TEAM TELECOM Act (H.R. 4029)** would codify the Team Telecom process. Codification makes sense given the consequential role that Team Telecom has been playing in recent years, while also bringing a measure of transparency to the process including some procedural safeguards.

- The **Communications Security Advisory Act of 2021 (H.R. 4067)** would codify the FCC's Communications, Safety, Reliability, and Interoperability Council (CSRIC). Codification would elevate the importance of the body and build on the recent announcement from Acting Chairwoman Rosenworcel that she wants the CSRIC to consider supply chain security matters in earnest.[9]

- The **NTIA Policy and Cybersecurity Coordination Act (H.R. 4046)** would recognize the increasingly important role that NTIA is playing in ICT supply chain security. The bill would reconfigure the Office of Policy Analysis and Development (OPAD) into the Office of Policy Development and Cybersecurity. Some of the other measures being considered today would likely be implemented by that office.

Re-Investing in NTIA. Five of the nine bills being considered today would potentially add to, or reconfigure, NTIA's workload. A sixth would require work by the Department of Commerce as a whole, of which a significant part would be handled by NTIA. As Congress increases its expectations of NTIA, it should ensure that the agency's resources continue to increase concomitantly. For example, while conducting operator outreach on Open RAN and conducting a national cybersecurity literacy program are both important undertakings, this Subcommittee must ensure that the agency's staff has the capacity to execute them.

- Many or most of the activities in the bills being considered today would fall under NTIA's umbrella "Domestic and International Policies" budget category.[10] The staffing for this function is quite small, with only 27 staff positions as recently as FY2020.[11] This was increased to 39 positions in FY2021 and the President is proposing an increase to 52 positions in FY22 in order to implement Executive Order 13873 on Securing the ICTS

---

[9] FCC Public Notice, *FCC Acting Chairwoman Announces Advisory Committee Will Focus on 5G Network Security and Software Vulnerabilities*, Apr. 15, 2021, https://docs.fcc.gov/public/attachments/DOC-371641A1.pdf.

[10] NTIA, *FY 2022 Budget as Presented to Congress*, May 2021, at 25-28, https://www.commerce.gov/sites/default/files/2021-05/fy2022_ntia_congressional_budget_justification.pdf.

[11] *Id.* at 17.

Supply Chain.[12] As the agency's duties continue to increase, this Subcommittee should strongly support further efforts to increase NTIA staffing.

Confirming an NTIA Administrator. The lack of a confirmed NTIA Administrator is increasingly problematic given the growing importance of the functions that Congress expects the agency to carry out. For various reasons, the position was vacant during the previous Administration for much too long. Congress should urge the current Administration to act promptly to fill the vacancy.

IV. Cybersecurity Education

Finally, the **American Cybersecurity Literacy Act (H.R. 4055)** is also under consideration today. Although not focused primarily on network infrastructure supply chains, a federal government campaign to educate the public could potentially help prevent many security breaches.

While estimates vary, it is widely accepted that a large fraction of successful cybersecurity attacks result from poor "cyber hygiene" – such as weak passwords or basic user error – rather than sophisticated technical attacks. A better understanding of basic cyber hygiene principles among a larger fraction of the American public could potentially reduce the collective impact of data breaches on individuals, businesses, and governments alike.

****

Thank you again for the opportunity to appear before you today. I look forward to answering your questions.

[12] *Id.* at 29.