AFTER ACTION REPORT:

U.S. – VIETNAM 5G STANDARDS WORKSHOP

August 31st- September 1st, 2021

US-Indio Pacific Standards and Technology Cooperation Program (STCP)
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EXECUTIVE SUMMARY

On August 31 - September 1, 2021, the American National Standards Institute (ANSI), through the United States Trade and Development Agency (USTDA) funded U.S.-Indo-Pacific Standards and Technology Cooperation Program (STCP), coordinated the U.S.-Vietnam 5G Standards Workshop. The virtual workshop took place online via Zoom.

Below are key highlights from the workshop:

- The Vietnam Ministry of Information and Communications (MIC) co-organized the workshop alongside USTDA and ANSI and significantly contributed to the success of the workshop by closely collaborating with all stakeholders throughout the planning phase, facilitating dialogue during the workshop.
- Although eight U.S. companies were represented on the agenda, a total of ten U.S. firms participated in the workshop; as well as five U.S. government agencies/departments.
- Mr. Trieu Minh Long, Director General, Department of International Cooperation of the MIC, and Verinda Fike, Regional Director for the Indo-Pacific, USTDA, gave opening remarks on Day 1 of the workshop.
- One representative from the Viet Nam Telecommunications Authority (VNTA), Mr. Nguyen Tuan Vinh, delivered a presentation providing an overview of Vietnam's most up-to-date regulations and standards for 5G rollout and infrastructure. For the rest of the panel sessions, co-moderators from MIC, VNTA, and the Authority of Information Security facilitated discussions.
- Almost 130 individuals participated in the workshop, with a majority being Vietnamese government and industry representatives.
- 100% of all surveyed participants indicated that the workshop met at least some of their objectives in attending.
- 71% or more of surveyed participants believed that the workshop will improve or greatly improve international best practices and advance technology. Over 80% of all respondents believed that the workshop will at least somewhat improve all of the five topics: international best practices, 5G standards and Open RAN, spectrum allocation and licensing, cybersecurity in 5G, and advanced technology.
- Several outcomes are in development following this workshop, with some U.S. companies indicating that they are currently following up with Vietnamese workshop participants. Overall, statements from the Vietnamese government regarding policy options for 5G standards are encouraging.

This Public Report includes the following elements: (i) Executive Summary, (ii) Final Agenda, (iii) Detailed Workshop Summary including technical analysis and links to workshop photos and presentations, and (iv) Participant and Stakeholder Feedback.

FINAL WORKSHOP AGENDA

August 30 - 31, 2021, 8:30PM-11:00PM (U.S. EDT)

August 31 - Sep 1, 2021, 7:30AM-10:00AM (Vietnam)

DAY 1	
8:30PM- 8:45PM	**Opening remarks** *Speakers:* - Verinda Fike, Regional Director for the Indo-Pacific for the U.S. Trade and Development Agency (USTDA) - Mr. Trieu Minh Long, Director General, Department of International Cooperation, Ministry of Information and Communications (MIC)
8:45PM- 9:30PM	**Session 1: Overview of Vietnam's most up-to-date regulations and standards for 5G rollout and infrastructure** *Speaker:* - Mr. Nguyen Tuan Vinh, Service and Technology Division, Viet Nam Telecommunications Authority (VNTA) <u>Proposed topics:</u> - A glance at the regulation and laws - Current standards development and adoption - Vietnam's path to 5G deployment - Industry implications and opportunities - Update on spectrum auction/allocation status
9:30PM- 9:45PM	**Q&A**
9:45PM- 10:30PM	**Session 2: 5G Standards and ORAN Specifications** ***Moderator:*** *Patrick Lozada, Director of Global Policy, Telecommunication Industry Association (TIA)* *Speakers:* - Travis Russell, Senior Director of Cyber Security, Oracle - Paul Jesemann, APAC CTO, Mavenir

	<u>Proposed Topics</u> - 5G standardized activities of ANSI/U.S. Industry - Open RAN: Policy/RnD; Vendors & Ecosystem
10:30PM- 10:45PM	**Q&A** ***Vietnamese Co-Moderator:*** *Ms. Nguyen Thi Ngoc Trang, Department of Science and Technology, MIC*
DAY 2	
8:30PM- 9:30PM	**Session 3: Network and Infrastructure:** ***Moderator:*** *Cary Ingram, Senior International Trade Specialist | Telecommunications Technologies, Industry & Analysis, Department of Commerce | International Trade Administration* *Speakers:* - Alex Orange, Senior Director, Government Affairs SEA, Qualcomm - Jayne Stancavage, Global Executive Director, Product & Digital Infrastructure Policy, Intel Corporation - Tom Sullivan, Chief of the International Bureau, Federal Communications Commission (FCC) <u>*Proposed topics:*</u> - Implementation method: SA/NSA - Public/Priviate/Local 5G - Spectrum allocation and releasing: equipment standards for C-band: 3300-4200 MHz and for 600Mhz, 4,9 GHz và 6 GHz
9:30PM- 9:45PM	**Q&A** ***Vietnamese Co-Moderator:*** *Mr. Pham Manh Ha, Infrastructure Development Division, VNTA*
9:45PM- 10:30PM	**Session 4: Cybersecurity** ***Moderator:*** *Amy Mahn, National Institute of Standards and Technology, Applied Cybersecurity Division* *Speakers:* - Danielle Kriz, Senior Director, Global Policy, Palo Alto Networks - Tom Anderson, Senior Principal Technologist, ATIS - Christopher Martin, Principal, Policy Transformation, Head of Asia, Access Partnership <u>Proposed topics:</u> - 5G Security and Smart Cities
10:30PM- 10:45PM	**Q&A** ***Vietnamese Co-Moderator:*** *Mr. Ho Viet Thang, Legal and Auditing Division, Authority of Information Security*
10:45PM- 11:00PM	**Closing Remarks** - Katrien Hinderdael, Country Manager, Indo-Pacific, U.S. Trade and Development Agency (USTDA)

DETAILED WORKSHOP SUMMARY

Background

As the second workshop held under the U.S.-Indo-Pacific STCP, the U.S-Vietnam 5G Standards Workshop focused on providing a forum to support Vietnam's efforts in leading the adoption and implementation of 5G standards. This workshop offered an opportunity for U.S. industry experts and U.S. public officials to engage with key Vietnamese representatives and to share solutions for meeting 5G demand, while also addressing and promoting security needs, market openness, an enabling regulatory environment, and industry best practices.

Vietnam has one of the fastest-growing digital economies in the Southeast Asia region, acting as a frontrunner and early adopter of 5G networks. Global standards and recognition of international best practices will be vital to coordinate 5G efforts across the region, as well as to facilitate an open regulatory environment for utilizing 5G wireless capabilities in vertical industries. This workshop, organized in partnership with the Ministry of Information and Communications (MIC), allowed Vietnamese and U.S. stakeholders to discuss the importance of 5G standards in facilitating trade and investment cooperation.

The success of 5G as a global wireless broadband platform, as well as an incentive for device manufacturers and software developers to keep improving the systems for mobile connectivity, depends on the technology standards being utilized by the global market. Vietnam is one of the earliest countries in Southeast Asia to successfully pilot 5G technology. Nonetheless, the path to commercialization still poses difficulties. The number of 5G subscriptions in Vietnam is forecasted to reach 6.3 million in 2025, according to Cisco.

Overall, Vietnam has a history of making positive contributions in the utilization and promotion of international standards, around 60% of Vietnam's national standards are harmonized with international and regional standards.[1] As such, the focus on Vietnam in the region can benefit regional and international harmonization.

This workshop also builds upon past U.S.-Vietnam 5G efforts. In December of 2020, the Deputy Minister of Information and Communications, Pham Hong Hai, and Chairman of the U.S. Federal Communications Commission, Ajit Pai, co-chaired a seminar on 5G in Hanoi, including participation of representatives from relevant departments. This event also included the Ministry of Information and Communications, representatives of the U.S. State Department andU.S. Department of Commerce, representatives of the Embassy of the United States in Vietnam, and Vietnamese and ICT companies such as VNPT, Mobifone, Viettel, FPT, Vinsmart, Microsoft Vietnam, Qualcomm, Cisco, Amazon Web Service, and HP.

As of the date of the workshop, some recent developments in Vietnam regarding 5G include:

[1] https://en.nhandan.vn/scitech/sci-tech/item/9184902-around-60-of-vietnam%E2%80%99s-national-standards-are-harmonised-with-international-and-regional-standards-says-official.html

- The government is working on new national technical regulations for terminal devices of terrestrial mobile communication, which will require that all portable data terminals (PDTs) made in, sold, or purchased in Vietnam can support 4G and 5G technologies.
- MIC recently announced (Dec 2020) it has required network operators to upgrade mobile number portability rates by 80%.[2]
- Viet Nam Telecommunications Authority (VNTA) has asked network operators to continue improving the network transfer process and issued circular amendments guiding the deployment of network switching services to create maximum ease for users.
- On June 15, 2021, the Prime Minister issued Decision No. 942/QD-TTg. This approved the e-government development strategy for 2021-2025, with a vision to 2030. The strategy is consistent with the National Digital Transformation Program, approved on June 3, 2020, as well as the National Strategy on the Fourth Industrial Revolution to 2030 on December 31, 2020.
- Vietnam is formulating 5G rules to assist quality control. At present, territorial mobile terminal devices are being managed via a certificate of conformity and declaration of conformity. Technologies related to 5G currently under assessment include, among others: the 3GPP new radio standard (5G NR) for a unified and more capable 5G wireless air interface; a virtualization method through software-defined networking, which allows administrators to control and change networks remotely; and network function virtualization, another 5G-enabling technology.[3]

Summary of Workshop Topics

The target audience included government officials from the MIC, as well as leading U.S. government officials and industry experts. Speakers from the Vietnamese government and private sector provided important context and updates on the current state of play and engaged in substantive discussion throughout the program. The agenda balanced perspectives from U.S. industry, U.S. government, and Vietnam government speakers and representatives. The two-day workshop, consisting of 2.5-hours sessions each day, covered various topics described in the below highlights.

Key Highlights

- The workshop addressed topics on 5G Deployment Roadmap and Standards Development in Vietnam including the ongoing technical and commercial experiments being carried out by Vietnam for 5G services.
- The opening presentation provided by VNTA covered the various frequency bands that are being deployed and licensed, the “made in Vietnam” initiative that is being promoted by the government to boost the production and supply of locally produced terminal

[2] https://vietnamnet.vn/en/sci-tech-environment/5g-subscriptions-in-vietnam-forecasted-to-reach-6-3-million-by-2025-697745.html
[3] https://opengovasia.com/vietnam-formulates-5g-rules-to-assist-quality-control/

equipment, and the roadmap plan for commercial deployment of 5G services which will take place in three phases. Lastly, the presentation also covered the various tasks telecommunications companies ("telcos") and MIC need to address to make 5G commercially viable in Vietnam.

- The remaining panel discussions allowed for a brief introduction to the various companies, including an overview of their core business offerings, and perspectives on the use of open, industry standards, proprietary standards, and international best practices for "cloudification" of networks. Topics of discussion focused on issues related to core network vs Open RAN, the 3rd Generation Partnership Project (3GPP's) globally harmonized standards, the role 3GPP plays in developing standards for 5G, Open RAN integration with 3GPP, and the current state of deployment of Open RAN. Additionally, discussions also explored the associated security considerations and risks of Open RAN, including mention of the U.S. National Security Administration (NSA) and Department of Homeland Security Cybersecurity and Infrastructure Security Agency (DHS-CISA's) guidelines for hardening cloud-native and other best practices for software and radio access network security. Lastly, speakers shared U.S. experience with spectrum auction, allocations, and licensing as well as effective implementation of Non-Stand Alone and Stand Alone (SA) options.

Session 1: Overview of Vietnam's most up-to-date regulations and standards for 5G rollout and infrastructure

VNTA provided a presentation outlining the current landscape in Vietnam, describing how Vietnam is trying to be the first country to commercialize 5G services by going through two steps: technical experiment and commercial experiment. He indicated that three operators started their technical experiment in January, March, and May 2020, and by the end of Q4 2020, MIC allowed the operators to deploy commercial experiments in three big cities in Vietnam.

According to VNTA, the roadmap for commercial deployment will occur in 4 phases:

- Phase 1 – Services will be provided in industrial areas to support smart factories
- Phase 2 – Services will be provided in high tech parks for research and development activities
- Phase 3 – Services will be provided in Research and development in University areas
- Phase 4 – Services will be provided in city and high-density areas

In order to realize these tasks, VNTA recommended telcos do the following:

- Have a plan to use 5G frequency bands granted through auction;
- Develop an investment plan for 5G infrastructure for business and cities according to the four phases outlined;
- Plan for sharing infrastructure and roaming between different telcos in-country; and
- Develop affordable service charges.

Related to standards development, VNTA shared that MIC has promulgated a 5G specification and is implementing several other regulations on terminal devices for both Stand Alone and Non Stand Alone modes. MIC is developing these regulations by referring to ETSI standards, and it is expected that these standards will be promulgated in 2021 and will take effect from July 1, 2022. Telcos will have more than six months to prepare for implementation.

Session 2: 5G Standards and ORAN Specifications

The speakers began by noting that as RAN becomes virtualized and more "softwarized," it is particularly important to ensure that all of the interfaces from the RAN to the core network are based on open industry standards, rather than proprietary standards. Membership in the Open RAN Alliance and Open RAN Policy Coalition is important and helps contribute to this goal.

In addition, in terms of 5G, the "cloudification" process for the network is the most important technology transition we are facing. The challenge is that most operators have not yet fully caught up to it. But this is vital to the future profitability of mobile operators – they play an extremely important role in social development.

The panelists further discussed that the majority of money spent by mobile operators is on radio access networks. If someone is serious about 5G then one has to be serious about having the cloud-native network and thus cannot afford to ignore Open RAN. Standardization allows for global adoption at a significantly lower cost, global interoperability and is vital for an open, thriving ecosystem.

The panelists recommended promoting collaboration between 3GPP, which focuses on wireless network specifics, and the other standards bodies which cover the other technologies used in the ecosystem.

Finally, the panelists noted that the U.S. NSA in partnership with DHS-CISA have just published their guidelines for hardening cloud-native functions, and there are a lot of other best practices already available to ensure that the implementation of this technology is secure. They recommended that Vietnam focus in this area more.

Session 3: Network and Infrastructure:

To begin, Qualcomm described its horizontal business model based on licensing and sharing technology to enable downstream innovation and fund a continuous cycle of invention. This business model has assisted the development of 3G, 4G, and 5G and in the future, there will be 6G. In addition, Qualcomm evaluated the value proposition for 5G in an independent study done by IHS Market and revised in November 2020. The report said that 5G will bring USD 13.1 trillion to the global economy by 2035. In particular, the study suggests that industries such as precision agriculture, construction and mining, digitized education, and connected health care are well poised to open up with 5G. Intel also just announced a USD 1.5 million investment for assembly and test facility upgrade in Vietnam.

FCC also presented its priorities and approach, noting that making spectrum available is very important in the U.S. He further stressed the principles of flexibility and tech neutrality, in order to create an environment for new technology to flourish.

The panelists provided further responses to questions asked by the audience in a document that was distributed to workshop participants after the workshop. The document is included in the Annex.

Session 4: Cybersecurity

The panelists were tasked with discussing considerations for 5G security, and began by stressing that developing a strategy is important, as well as developing guidance. Governments also have a role in encouraging capacity building for their cybersecurity personnel.

Panelists pointed to existing international examples, including the European Union Agency for Cybersecurity (ENISA), which recently released guidance for 5G key security tools. They also noted that it is important not to mandate a specific technology because once you do that, other companies will find a better way to do it and you will have locked yourself into outdated technology.

Collaboration between government and industry and between countries was repeated as a best practice to mitigate attacks. The panelists reminded participants that some threats are new and others are not new with 5G. Building from past experience is also important.

The panelists provided further responses to questions asked by the audience in a document that was distributed to workshop participants after the workshop. The document is included in the Annex.

Relevant Links

Links to a flyer, the final agenda, and other materials from the workshop are available on the U.S.-Indo-Pacific STCP website:

https://www.standardsportal.org/usa_en/toolbox/US%E2%80%93Indo-Pacific-STCP.aspx

Included in the materials on that website is a list of compiled resources and links.

PARTICIPANT AND STAKEHOLDER FEEDBACK

Twenty-two participants or approximately 17% of workshop participants filled out an AAR questionnaire, which was distributed via email to participants following the workshop, with three reminders sent. Highlights from the questionnaires include:

- **100% of all respondents** indicated that the workshop met at least some of their objectives for attending the workshop. 85% indicated that the workshop met most of their objectives.

- **95% of all respondents** believed that the workshop will at least somewhat improve the adoption of cybersecurity practices in 5G and 5G standards in Open RAN.
- **71% or more of all respondents** believed that the workshop will improve or greatly improve international best practices and advanced technology.
- **Over 80% of all respondents** believed the workshop will at least somewhat improve all five topics: international best practices, 5G standards and Open RAN, spectrum allocation and licensing, cybersecurity in 5G, and advanced technology.
- **87% of Vietnamese respondents** are either moderately involved or very involved in standards development; this positively confirms that the workshop included the correct target audience for the workshop.
- Three U.S. industry partners indicated they are following up with some of the workshop participants.
- Overall, a majority of the feedback highlighted positive results from the perspective of increasing education, knowledge, and understanding of various aspects of 5G standards and implementation. Key takeaways included: exchange of perspectives from practitioners, understanding differences between Vietnamese and U.S. standards and 5G policy, and learning about the nature and features of Open RAN, as well as overall global trends and challenges.
- Generally, respondents highlighted that they believe the workshop will have a positive impact on 5G policies as they relate to standards, through sharing knowledge and experiences, increasing the understanding of policymakers on how to align standards across markets.