



TSB DIRECTOR CTO MEETING

30 March 2017, San Jose, CA, United States

COMMUNIQUÉ

Standardization activities towards *Realizing the 5G Vision* were the focus of a consultation meeting of high-level ICT industry executives (CTOs) with the senior management of the ITU Telecommunication Standardization Sector (ITU-T).

The first CTO Consultation Meeting for the North American region was held in San Jose, California, kindly hosted by David Ward, Chief Technology Officer of Engineering and Chief Architect of Cisco Systems. The meeting provided ITU-T Sector Members based in North America with an opportunity to exchange views with the ITU-T secretariat on industry needs and related standardization priorities and coordination efforts.

Discussions on standards for 5G infrastructure and services highlighted the need for seamless connectivity across fixed and wireless networks—fixed-mobile convergence—as well as the need for chip architectures to meet the low-power and flexibility requirements necessary to high-performance signal processing in 5G infrastructure. The meeting recognized the great potential of information-centric networking (ICN) to enable faster and more robust content delivery, supporting strategies to enable dynamic, experience-oriented performance and quality management, including for voice, video and data services.

CTOs were briefed on the outcomes of the ITU World Telecommunication Standardization Assembly 2016 (WTSA-16), including a new Resolution on non-radio aspects of international mobile telecommunications (IMT), which calls on ITU-T to strengthen and accelerate its standardization activities in the field of 5G networks and services.

5G infrastructure

ITU-T standardization activities in support of 5G are led by ITU-T Study Group 13, building on preliminary studies undertaken by the ITU-T Focus Group on network aspects of IMT-2020. The Focus Group concluded its study in early 2017 with the delivery of a set of draft ITU standards and technical reports covering aspects of 5G architecture and fixed-mobile convergence, the evolution of software-defined networking, end-to-end network management, and ICN.

CTOs were of the view that a unified, access-independent network management framework would be a key enabler of seamless service operation and provisioning across fixed and mobile networks. They called on ITU-T to contribute to and coordinate the standardization required to enable WiFi-cellular integration (simultaneous radios), anchorless mobility, anchorless content and active endpoints at the service layer to enable the network capability of analyzing and optimizing the quality of user experience. To foster convergence, participants invited ITU-T to collaborate with the various organizations active in this space, making full use of its recently established Joint Coordination Activity on IMT-2020.

The meeting discussed the key 5G capabilities and performance requirements detailed by the draft ITU report providing “Minimum requirements related to technical performance for IMT-2020 radio interface(s)”. CTOs stated that 5G will have significant impacts on the semiconductor industry and that 5G will push digital signal-processing platforms to their limits. The discussions emphasized the need for cost-effective novel chip architectures to enable high-performance signal processing, while also meeting the demand for greater flexibility, security, lower power consumption, and limited chip size.

5G applications and services

The ITU representatives stated that the proofs-of-concept demonstrated by the Focus Group showed how ICN could constitute a feasible approach to optimizing content distribution, one of the key problems faced by the Internet today. ITU has delivered standards describing ICN’s framework, requirements and capabilities, and the meeting encouraged ITU-T to accelerate its ICN standardization activities, addressing issues such as scalability, mobility and security. CTOs highlighted that ICN software has been open sourced and is currently being validated in research networks around the world. They invited ITU to contribute to the advancement of ICN technology and to contribute to the expansion of the community driving ICT innovation.

CTOs acknowledged that a key benefit of 5G systems and software-based networking functions would be the ability to optimize performance on a per-session basis. One of the most relevant performance targets would be to enable good end-user experience across a range of services. It was noted that emerging network and computing technologies should ultimately allow multiple media and metadata streams to be managed with a high quality of experience (QoE) for cross-service, user-centric sessions. CTOs highlighted that fulfilling this potential would require the technology and standards community to determine how the targeted user experience should be defined. This definition would inform how services are specified, quantifying the targeted experience as part of a service template and enabling metrics to be made available within the service delivery platform to indicate whether or not the targeted experience is being achieved, providing associated feedback to network functions. Devices would be required to participate actively in the collection and reporting of the metrics.

CTOs encouraged ITU’s standardization expert group for ‘performance, QoS and QoE’, ITU-T Study Group 12, to identify candidate elements to populate the templates specifying the targeted user experience; study in-service mechanisms to evaluate whether or not the targeted experience is being achieved; and, in collaboration with other organizations active in this field, explore optimization priorities and strategies as well as define tokens for the allocation of network and computing resources.

Performance-optimization strategies could also have the potential to address concerns around the deteriorations in voice quality perceived by users of mobile communications, deterioration evidenced by steadily decreasing mean opinion scores (MOS, as defined in ITU-T P.800.1). While CTOs acknowledged that poor voice quality could be attributable to operator policy and resource allocation rather than technical limitations, these CTOs suggested that standards and intelligent tools capable of measuring, logging and reporting end-user experience could make a valuable contribution to improved voice quality.

The meeting underscored the importance of the efficient, sustainable use of the international numbering resources allocated by ITU, for example, in facilitating the identification of Internet of Things devices. CTOs called for standardized approaches to the mitigation of threats to security and privacy, highlighting the potential to update or extend existing protocols such as SSL/TLS. Participants welcomed ITU’s initiative to

investigate the potential of blockchain and its implications for security, and emphasized the value of distributed ledger technology in the provision of IoT services and digital financial services in a 5G environment.

CTOs were briefed on the establishment of a new ITU-T Focus Group to research data processing and management in the context of smart cities. The priority of this open group will be to propose mechanisms supporting the interoperability of datasets and data-management systems. The group will investigate established data-management technologies as well as emerging trends such as blockchain, promoting efficient, scalable approaches to the management of systems data.

Next steps

ITU-T management announced that they would bring this communiqué to the attention of all ITU-T Study Groups as well as the TSAG Rapporteur Group on Standardization Strategy.

The CTO meeting's participants expressed their appreciation to ITU and Cisco Systems for bringing this forum to North America and for the opportunity it provided to exchange views on 5G standardization priorities.

Chaesub Lee, the Director of the ITU Telecommunication Standardization Bureau, extended an invitation to North American CTOs to participate in the next global CTO meeting, tentatively scheduled for 24 September 2017 in Busan, Republic of Korea, the venue of [ITU Telecom World 2017](#).

The participating organizations were:

Cisco Systems, United States; **Dolby Laboratories**, United States; **Ericsson**, United States; **InterDigital**, United States; **Juniper Networks**, United States; **Symantec**, United States; **TELUS**, Canada; **Xilinx**, United States; **ITU**.