TSB DIRECTOR'S NORTH-AMERICAN CTO CONSULTATION MEETING

9 May 2018, California, United States

COMMUNIQUÉ

High-level ICT industry executives have called for ITU standardization work on security, privacy and trust to devote more attention to the implications of Artificial Intelligence (AI) and Machine Learning (ML), IMT-2020 (5G), and the rise of voice as a dominant human-machine interface. This call has come in parallel with reaffirmation of industry's support for ITU's leadership in evolving the transport network in support of 5G.

Chief Technology Officers (CTOs) met with the senior management of the ITU Telecommunication Standardization Bureau at the annual CTO Consultation Meeting in California, United States, 9 May 2018, kindly hosted by Symantec. The meeting provided CTOs with an opportunity to exchange views on industry needs and related standardization priorities.

Security, privacy and trust in the presence of AI and ML

CTOs highlighted that AI applications are developed to focus on efficacy and efficiency in constrained environments, without always considering and protecting against the emergence of new security vulnerabilities or other unintended consequences. In describing the risks posed by AI to security, privacy and trust, CTOs pointed to possibilities including threat-detection methods that misclassify malicious threats as benign, automated systems that fail to detect key stimuli, or authentication mechanisms capable of misidentification.

Having the right, diversified data is key to data analytics. However, the volume of available data has grown so large that the number of skilled security analysts pales in comparison – the opportunity to leverage AI and ML in security is clear, suggested CTOs. AI and ML have the potential to scale security systems in such a way that human analysts will become more effective and accurate in their detection of security threats and related decision-making.

If AI and ML are to be part of security defences, industry will then need to explore how these defences could be subverted.

Meeting participants called for ITU-T Study Group 17 to assign priority to its studies of standardization needs relevant to security, privacy, and trust in the presence of AI and ML.

Shifting to end-to-end security with 5G

5G systems will incorporate advanced software-defined networking (SDN), network function virtualization (NFV) and cloud computing capabilities, significantly altering network architectures and network management-control. The ICT industry will continue to gain new stakeholders as other industry sectors scale-up their adoption of ICTs.

CTOs expect focus on security to increase as 5G systems take shape, with the transition to 5G presenting an opportunity for digital service providers to act as a gateway to offer security solutions to end users and support a shift towards end-to-end security. CTOs highlighted the importance of an orchestrated, holistic approach to 5G security.

Discussing the evolving technical and business dynamics of the ICT ecosystem, CTOs noted that the diversity of digital service providers has called the classic definition of a telecommunications operator into question, a subject currently under discussion in ITU-T Study Group 2 (Operational aspects).

CTOs discussed the ongoing review of the structure of ITU-T Study Group 17 (Security), exploring how modifications to its structure could assist the group in supporting industry-specific 'vertical' environments in addition to its current focus on horizontal relevance. One key aspect of such a restructuring, said CTOs, could be an improvement in ITU-T Study Group 17's ability to meet the security demands of cloud computing.

Voice as a dominant human-machine interface

CTOs noted that voice is emerging as a primary interface between humans and machines, with the effect that AI is fast becoming a more prominent user interface. The meeting made an example of the rapid entrance of smart speakers into consumers' homes. Smart speakers are a prime example of AI reducing friction between the user, the service and the service provider, a trend that CTOs expect will continue to accelerate. CTOs agreed that the development of AI-powered voice-assisted user interfaces and user experience (AI-voice-UI/UX) is outpacing standardization and regulation.

The meeting's review of market activity and its expected evolution resulted in CTOs encouraging ITU to investigate the implications of AI-voice-UI/UX for authentication and e-commerce, audio security and the protection of personal data, and control protocols and interoperability.

ITU leadership in cloud-optimized and 5G transport

End-to-end flexibility will be one of the defining features of 5G networks. Network softwarization and slicing, underpinning deeply programmable networks able to be sliced into virtual networks with specialized capabilities such as low latency or high reliability, will give networks the agility required to support the specific requirements of any particular 5G application.

CTOs highlighted the importance of cloud-optimized networking to the 5G vision. 5G network slicing, said CTOs, will in some cases require comprehensive performance monitoring and highly dynamic network operation and optimization. Transport networks are evolving to interconnect clouds of all types, at all levels of distribution, in a flatter network with meshed, dynamic cloud-driven traffic patterns. CTOs agreed that the dynamic, automated creation of network slices requires adaptive architectures incorporating programmability at the packet and optical layer, allowing for different architectures and performance-assurance mechanisms specific to different slices, including the related services.

Programmable, reusable assets and resources will be essential to the overall optimization of the network, said CTOs, enabling orchestrators to configure such resources rapidly in the creation of network slices. The inability to predict the characteristics of future services reinforces the importance of dynamic programmability.

CTOs highlighted federated network orchestration – the ability to achieve end-to-end network slicing across different operators' networks – as an issue deserving of more attention. CTOs said the same of

performance assurance for different slices, highlighting the importance of appropriate performance indicators and noting that industry is awaiting clarity on how 5G networks will request services from the transport network.

Meeting participants reaffirmed industry's support for ITU-T Study Group 15's leadership of international standardization work to evolve the transport network in support of 5G and cloud-optimized services, work that is coordinated with related activities of organizations including, for example, MEF, ONF, 3GPP, NGMN, TMF, and ETSI ZSM.

Next steps

The Rapporteur on ITU-T standardization strategy thanked attendees of the CTO meeting for their valuable guidance and gave examples of how recommendations made by past CTO meetings had given rise to new ITU standardization activities.

The CTO meeting's participants expressed their gratitude to ITU for the opportunity to exchange views on standardization priorities.

Chaesub Lee, the Director of the ITU Telecommunication Standardization Bureau, extended an invitation to CTOs to participate in the next CTO meeting scheduled for 9 September 2018 in Durban, South Africa, at ITU Telecom World 2018.

The participating organizations were:

Aeris Communications Inc., United States; **Apple**, United States; **Dolby Laboratories**, United States; **Ericsson**, Canada; **Huawei**, China; **Knowles Corporation**, United States; **Nokia**, Finland; **Symantec**, United States; **TTC**, Japan; **Twilio**, United States; Chairmen **ITU-T Study Group 15** and **Study Group 17**; **TSB**.