= A Serial Introduction Part 1= Winners of ITU-AJ Encouragement Awards 2016

In May every year, the ITU Association of Japan (ITU-AJ) proudly presents ITU-AJ Encouragement Awards to people who have made outstanding contributions in the field of international standardization and have helped in the ongoing development of ICT.
These Awards are also an embodiment of our sincere desire to encourage further contributions from these individuals in the future.
If you happen to run into these winners at another meeting in the future, please say hello to them.
But first, as part of the introductory series of Award Winners, allow us to introduce some of those remarkable winners.

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Fields of activity: FSAN (Full Service Access Networks)

Standardization of Next-Generation Optical Access Systems for Mobile Fronthaul Applications

It is a great honor for me to receive the ITU-AJ Encouragement Award (ICT Field), and I would express my appreciation not only to the Selection Committee but to all who have helped me along the way.

I began participating in the Full Service Access Networks (FSAN) meetings in 2014. FSAN is a group of the world's leading telecommunications companies working collaboratively to form a consensus on future optical access systems, and works together with ITU-T Q2/SG15 to develop standard specifications based on the consensus.

In FSAN, I have mainly been involved in discussions of next-generation optical access systems that offer higher speed (>40 Gbit/s) and lower latency (<0.5 ms) for mobile fronthaul applications. The background of this topic is the rapid growth of mobile data traffic caused by high-speed mobile devices such as smartphones and data-intensive applications. In order to meet the growing demand for wireless network capacity, deployment of the Centralized Radio Access Network (C-RAN) architecture has long been anticipated for its ability to enhance the signal quality of Long Term Evolution-Advanced (LTE-A) and other advanced features. The problem is that standard specifications for optical access links to convey digital baseband LTE waveform signals between central offices and antenna sites (which require the high-capacity and low-latency features mentioned earlier) have not yet been developed.

The primary goal of FSAN meeting discussions is to reach consensus on the necessary technical requirements for such an optical access system and to draft a technical white paper detailing the requirements by 2016. As an editor of the white paper, I am often called upon to lead discussions regarding technical details and requirements of mobile fronthaul networks.

The white paper is scheduled for release in 2016. This document will be a significant contribution to ITU-T Q2/SG15, which will ultimately define the actual international standard for next-generation optical access systems. I remain committed to advance the ICT field and to help consolidate interconnectivity and communication that improves the quality of life for people everywhere.

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Fields of activity: 3GPP, TTC

Initiatives and steps toward IMS standardization [standards]

It is a great honor to receive the ITU Association of Japan (ITU-AJ) Encouragement Award, and I would like to express my appreciation to the ITU-AJ and to my colleagues for their support and encouragement.

I have served in a number of capacities on interface standards between international and domestic operator/carrier IP networks, which are critically important for migrating the PSTN to an IP-based network. Starting in 2010, I served on CT WG3 (CT3) of the 3GPP (The 3rd Generation Partnership Project), while also working for the TTC Signalling Working Group. Then in 2013, I took over as Vice-Chairman of 3GPP CT3, and in 2014 I became leader of the Session Initiation Protocol (SIP) SWG of the TTC Signalling Working Group.

The primary concern of 3GPP CT (Core Network & Terminals) is standardization of a protocol level specification (Stage 3) based on the service architecture specifications developed in SA (Service & Systems Aspect). Currently, one of the most significant study items is the IMS (IP Multimedia Subsystem), the platform supporting voice and a full range of other multimedia services. CT3 deliberations regarding IMS focus on IMS interconnection standards between different carriers, IMS-PSTN interworking standards, and standards for interconnecting networks that support different carriers and different protocols.

Going back to activities begun in 2010, we finally completed the 3GPP release of an IP network interface standard in 2013 that fully considers commercial viability as an interconnectivity standard. Also in 2013, a TTC standard was approved for seamless interconnection of mobile and fixed networks.

Currently, the 3GPP CT is working on standardization of a VoLTE roaming scheme, various IMS improvement and extension measures, and has stepped up deliberations on domestic (TTC) standardization of migration from PSTN to an IP network. I will continue to do my best to advance the cause of IMS-related standards for both international and domestic operators/carriers in the years ahead.

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Fields of activity: Wireless Power Transmission

Frequency harmonization and standardization of Wireless Power Transmission technologies

ITU-R Study on Wireless Power Transmission (WPT) technologies has involved a number of recent technical issues in QUESTION ITU-R 210-3/1 since its latest revision in 2012. In Japan, the March 2016 Ministerial Ordinance for partial revision of the Radio Act stipulated the first WPT-related Radio Regulation including frequency ranges for WPT technologies. Meanwhile, no clear-cut WPT definitions have been adapted in global radio communication regulations and/or standards. In country-specific or regional WPT studies, some radio administrations refer to existing technologies such as Short Range Devices. However, the technical requirements and conditions for coexistence with incumbent systems have not been specified for WPT. International or regional recommendations for frequency ranges and technical standards should therefore be drafted so as to maximize beneficial use of WPT without causing any harmful interference.

In 2014, ITU-R SG1 approved Report ITU-R SM.2303 "Wireless power transmission using technologies other than radio frequency beam." Currently, development of a Recommendation on frequency ranges for global or regional operation and Human Hazards of non-beam WPT systems for mobile devices is in progress. In addition, in November 2015 WRC-15 and CPM19-1 decided that "*Studies concerning Wireless Power Transmission (WPT) for electric vehicles*" should be addressed under Agenda Item 9.1, Issue 9.1.6 for urgent study by WRC-19. ITU-R SG1 WP 1B will be responsible for preparing the CPM texts for Issue 9.1.6. These developments represent significant progress for WPT development on frequency harmonization and for studies on the impact of WPT to radiocommunications systems.

Japan has been actively involved in WPT-related groups in ITU-R SG1 and in the APT Wireless Group, where I served as editor of key documents and as a coordinator as required. During this period, Japan made significant and timely contributions to discussions of the latest radio regulatory status and study results and their impact on WPT systems. These discussion results were well-incorporated in the Report and in the draft Recommendation, which reflects Japan's leading role in frequency surveys and technical studies of WPT.

During the same period, I assumed the role of Chairperson of the Standards Development Group (SDG) of the Broadband Wireless Forum WPT-Working Group (Leader = Dr. Shoki, Hiroki, (Toshiba Corp.)). Three WPT technologies for mobile devices were approved by the Association of Radio Industries and Businesses as national standard "ARIB STD-T113" in 2015. The SDG plans to explore additional technologies for standardizing and establishing new rule making for higher power non-beam WPT systems and beam applications.

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Fields of activity: 3GPP Radio Access Network Standardization

Creating standard specifications from service and customer perspectives

It is a great honor to receive the ITU-AJ Encouragement Award. The award recognizes my work in 3GPP (3rd Generation Partnership Project) with regard to the RAN (Radio Access Network) architecture for LTE/LTE-Advanced, RAN-CN node interfaces, barring mechanisms for VoLTE (Voice over LTE), and (e)MTC L2/3 specifications.

There are two important things I always keep in mind when pursuing standardization work: (1) standard specifications are created to realize functions that are needed in the actual market, and (2) standard specifications should be written so they can be implemented in real-life networks and terminals. Here is a summary of work I have done.

Many network and terminal vendors and operators from around the world participate in 3GPP standardization meetings, and bring proposals based on their own perspectives. With regard to standardizing functions needed in actual markets, ETWS (Earthquake and Tsunami Warning System) is an example of a function that is standardized based on Japan regional requirement. Warning messages for disaster alert need to be sent promptly to large numbers of users. I proposed a mechanism to significantly shorten the message delivery time that was adopted as part of the specification. As a result, the ETWS function is supported from the beginning of the 3GPP LTE specification (Release 8 specification).

In order to provide services that utilize standardized functions, the specification must be implemented in actual network equipment and terminals. However, not all implementation engineers are aware of the background and the motivation of each standardized function since they do not attend the standardization meetings. Therefore, specifications must be written clearly and accurately so that, the resulting behaviour will be the same irrespective of the specific implementation. One example is the standardization of the barring mechanism for VoLTE. The barring mechanism is necessary to ensure network reliability, especially when networks are congested. To ensure that users can still make voice calls even when the network is congested, the standard incorporates my proposal of a mechanism that allows separation of barring for voice data and for packet data. To ensure that the specifications are clearly written and can be finalized, and hence able to be implemented within a short period of time, I attended several 3GPP working groups and collaborated with vendors in drafting those specifications. This resulted into a timely VoLTE service launch with all necessary functions included.

Going forward, I will continue to contribute and work on standardization, especially in the study and specification of a 5th generation radio system taking customer demands, ever-growing service requirements, and lessons learned from LTE standardization into account.