

= A Serial Introduction Part 1= Winners of ITU-AJ Encouragement Awards 2017

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: Space weather



International Standardization of Ionospheric Propagation

It is a great honor to receive the ITU-AJ Encouragement Award. NICT has been monitoring ionospheric propagation for more than 60 years. The study of ionospheric propagation, especially long distance high-frequency propagation, has been discussed for many years and many people have believed there is nothing new to learn. However, this research field has become more popular than ever with demand to increase the utility of global navigation satellite systems (GNSS). GNSS are used in various fields and have become part of the social infrastructure, but satellite positioning using only a single frequency can be affected by ionospheric disturbances resulting in error of up to 70 m. It is important to monitor ionospheric conditions for stable use of GNSS.

As described above, GNSS using a single frequency can be affected by ionospheric perturbations, but on the other hand, it is possible to estimate the total electron content (TEC) along the path between the satellite and the receiver using a multi-frequency GNSS receiver. Using a network of special GNSS receivers, we can estimate the two-dimensional distribution of TEC. This technique has given many fruitful scientific results in ionospheric research.

For this study it was important to collect as much GNSS data

as possible. However, in some cases, owners of the receivers do not like to release their data because it is considered to be a kind of social security information in some countries and regions. To avoid this issue, we proposed a new format in which precise positioning information is removed to facilitate data exchange. The format, named "GTEx," has been successfully included in ITU-R P.311.

Another topic in ionospheric propagation is long-distance low frequency (LF) propagation. LF is widely used for transmission of standard time and frequency signals for broadcasting. As the propagation distance for LF is very long, transmission power must be negotiated among neighboring countries. For this negotiation, it is important to know an estimate of LF electric field strength attenuation over long distances. NICT, has observed the electric field strength from the Shirase, an Antarctica exploration ship, to estimate an empirical propagation model along a North-South baseline. The measurement results have been used for revision of ITU-R P.684. The observed data was also added to the ITU databank in 2015.

Ionospheric information will become more important with more advanced use of these applications and we will continue efforts to contribute to the standardization of this information.

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Fields of activity: 3GPP



From HSPA and LTE/LTE – Advanced Standardization to 5G Standardization

I am extremely honored to receive this encouragement award. I would like to thank everyone at the ITU Association of Japan and all related persons. I would like to take this opportunity to review my past activities related to standardization at the 3GPP.

When I first began participating in 3GPP standardization meetings, 3GPP was studying HSPA as enhancements to the W-CDMA standard specifications, and the specifications for HSDPA on the downlink and HSUPA on the uplink were released in 2002 and 2004 respectively. I contributed to creating the HSUPA radio interface standard specification.

Later, 3GPP released the LTE and the LTE-Advanced specifications in 2007 and 2010 respectively. I also worked as an editor, implementing specifications for LTE standardization, and it

was a very good experience to be involved, from basic studies for the new system, through to completing the specification. I learned the importance of having both technical and negotiation skills, in putting together a standard specification amidst various claims of each company, and in negotiation, to clearly convey my own claims while understanding the underlying intentions of others' claims.

3GPP is currently creating 5G standard specifications, with the first specification scheduled for release in December, 2017. 5G expectations are high, and there is demand to realize advanced requirements and support a wide range of use cases. I am serving as rapporteur for the group studying radio access network architecture, and will work to complete a 5G standard specification satisfying all such requirements.

Memiko Otsuki

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Fields of activity: Telecommunications Regulations,
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Standing at the Starting Point

— International Standardization of Telecommunications Policies —

I am very honored to receive the ITU-AJ Encouragement Award. I would sincerely like to thank all of the people at the ITU Association of Japan and others that have supported me in these activities.

I have been involved in standardization activities, mainly in ITU-T Study Group 3, since 2009. SG3 is the only study group within ITU-T dealing with international standardization of non-technical issues. SG3's main role is to establish standards for tariffs for telecommunications, but in the past few years, research has expanded to a wide range of regulatory and policy issues related to ICT. I participated in the recent World Telecommunication Standardization Assembly (WTSA-16) as a member of the delegation of Japan and worked on many new and revised ITU-T resolutions. I also served as chairperson for drafting one of them, "Studies concerning the protection of users of telecommunication/information and communication technology services."

Reaching a consensus in negotiations among stakeholders

with different interests at an international conference requires much time and patience. However, having members with totally opposite opinions gradually find compromise, and finally arrive at a unified goal to strive for is especially satisfying. Through my ongoing participation in these meetings, I've come to believe that open communication with members from the various countries, and a comprehensive understanding of their cultural and business background is very important in negotiations.

In the past, it was a goal of mine to engage in ITU activities. Now, after being involved for some time, and being impressed with the skills and character of many experts, I finally feel as though I have arrived at the starting point in this field. For the current study period in SG3, I plan to work on issues related to mobile financial services as an associate rapporteur. It will be a challenging role, but I intend to invest all of my effort so that I can continue to contribute to the development of global telecommunications.

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Fields of activity: Ultra-High Definition Television (UHDTV)



Standardization of Real-time Serial Digital Interfaces for UHDTV Signals and Image Parameter Values for High Dynamic Range Television

It is a great honor to receive the ITU Association of Japan Encouragement Award. I wish to express my deep gratitude to all those who have supported me.

Since 2014, I have taken part in meetings of ITU-R SG6 (WP6B and WP6C), and have been responsible for the standardization of real-time serial digital interfaces for ultra-high definition television (UHDTV) signals and image parameter values for high dynamic range television (HDR-TV).

The recommendation on UHDTV image parameter values (Rec. ITU-R BT.2020) was established in 2012. Shortly thereafter, the then-WP6B chairperson expressed his opinion that developing UHDTV interfaces to promote UHDTV program production was urgent. My first task was to contribute the UHDTV interface developed in Japan to ITU-R and establish it as an international standard. Two other proposals were offered from outside Japan, and the task of unifying the three proposals, each with their different features was quite difficult. Ultimately, the recommendation (Rec. ITU-R BT.2077), which includes all three proposals, was established in 2015.

The second task was to develop a recommendation for HDR-TV.

The discussion was based on an American contribution that proposed a completely new transfer function, the perceptual quantization (PQ) system, for a new HDR television system. We had concerns that the proposed system was not suitable for broadcasting, while simultaneously acknowledging the advantages of the proposal. Thus, we developed another HDR system suitable for broadcasting, the Hybrid Log-Gamma (HLG) system, in cooperation with the BBC. Again, a long and tough discussion followed about how to unify the two proposals; each contributor insisted their proposal had the greatest number of advantages. The recommendation for HDR-TV image parameter values (Rec. ITU-R BT.2100) was finally agreed upon in a February 2016 meeting. UHDTV test broadcasting incorporating the HLG system was launched in August 2016 in Japan.

I have learned from these experiences that in addition to submitting technically superior proposals, negotiating and establishing trusting relationships are critical to developing standards. I am, as always, committed to standardization work and will continue to contribute to next-generation broadcasting services.