The 4th APT/ITU Conformance and Interoperability Event

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1. Introduction

The 4th APT*1/ITU Conformance and Interoperability (C&I) Event was held on 13th and 17th November 2016 during ITU Telecom World 2016 at the IMPACT Convention and Exhibition Center in Bangkok, Thailand. This event was jointly organized by APT and ITU to promote activities to deepen the understanding of C&I throughout countries in the Asia-Pacific region, and to improve the capabilities of each APT member nation and resolve their problems. This event featured conformance & interoperability testing, and showcased technologies including SDN/NFV, IPTV, seamless network technologies and "Bridging the Standardization Gap" projects. Four exhibitors took part in testing and showcasing at this event, and around 8,800 people from 130 countries visited ITU Telecom World. This article provides a broad description of the 4th APT/ITU C&I event.

2. Cooperation of ITU with national/regional SDOs

In response to strong demands from developing countries, the ITU-T adopted resolution 76*2 at WTSA08 (October 2008, Johannesburg, South Africa), and has been working to resolve interoperability issues as a key priority. Each of the ITU-T's study groups has developed recommendations relating to conformance and interoperability, and interoperability events relating to IPTV and home networks have been held by SG16 and SG15 respectively. ITU has decided to implement four action items (1. Assessing product conformity with ITU-T recommendations, 2. Holding interoperability events, 3. Cultivating human resources for capacity building, and 4. Establishing test centers in developing countries) and a business plan. As the lead SG for test specification and C&I testing, ITU-T SG11 is working to set up an action plan to address C&I issues. At WTSA12 (November 2012, Dubai, UAE), SG11 was assigned as the parent SG of Joint Coordination Activity on Conformance and Interoperability Testing (JCA-CIT), which coordinates C&I initiatives associated with multiple ITU-T study groups. Eight meetings of JCA-CIT were held from April 2013 to July 2016 to strengthen SG11's efforts. Resolution 76 is still attracting considerable interest from developing countries, and was significantly revised and reaffirmed at WTSA-16 (October- November 2016, Hammamet, Tunisia).

In Japan, TTC*3 has completed the specifications JT-Q3401 and JT-Q3402 based on the ITU-T NGN UNI/NNI specifications ITU-T Q.3401/Q.3402 by adding technical details for interconnections, and HATS*4 has performed terminal-to-terminal interconnection tests based on this UNI specification. In June 2009, TTC established IoP-AG (Interoperability Advisory Group), which is continuing to study NGN interoperability and submit contributions to SG11. At ITU-T SG11, this activity has so far resulted in the completion of ITU-T Recommendations Q.3909 (test framework), Q.3948 (VoIP test specification) and Q.3949 (TV phone test specification) which were proposed by TTC. Based on the test specification recommendations developed by SG11, the HATS Interoperability event took place on December 11–12, 2012 with the support of the ITU. Since then, HATS and ITU have continued to jointly organize annual Interoperability events in Japan.

3. APT/ITU Conformance and Interoperability event

3.1 Discussions for preparation in ASTAP

The APT/ITU conformance and interoperability event was first discussed based on Japanese contributions proposed at the 36th APT Management Committee (November 2012, Bangkok). The first C&I event was held in September 2013 during the 22nd ASTAP*5 meeting in Bangkok. Since then, we have regularly held this event back-to-back with the ASTAP meeting in the autumn season every year. However, for the fourth year in 2016, there was no autumn ASTAP meeting because WTSA-16 was held in October – November 2016, so there was no chance to organize an event during the ASTAP meeting in 2016. At the 26th ASTAP meeting (September 2015), we reviewed the report of the 3rd C&I event which was held during the 26th ASTAP meeting, and we started discussing the 4th C&I event. At this meeting, three options were proposed to promote and attract more visitors and exhibitors:

1) Collaborating more closely with ITU, including collocated

*1 APT: Asia Pacific telecommunity
*2 Resolution 76 "Studies related to conformance and interoperability testing, assistance to developing countries, and a possible future ITU mark programme"
*3 TTC: Telecommunication Technology Committee
*4 HATS: Harmonization of Advanced Telecommunication Systems
*5 ASTAP: Asia-Pacific Telecommunity Standardization Program

events at ITU meetings

2) Joining other APT events such as the APT Policy and Regulatory Forum (PRF)

3) Creating a new APT forum independent of ASTAP to organize C&I events.

Based on these proposals, detailed studies were started at the 27th ASTAP meeting in March 2016. In ASTAP EG-ITU-T (Expert Group on ITU-T Issues), the outline of the ITU Telecom World 2016 (November 2016) was introduced and it was proposed that the C&I event should be held during ITU Telecom World 2016, either at the same venue or nearby. We also agreed to establish a Coordination Committee to facilitate discussions, and appointed Kaoru Kenyoshi as its chairperson. Since May 2016, we have held three telephone conferences to investigate the specific details of testing and showcasing, announce the event, and invite participation from individuals and companies. This event was announced on the APT and ITU websites, and participants were invited from the APT and ITU member countries. As the result of these efforts, OKI electric, NEC, NICT and TTC provided showcases and took part in the event.

3.2 Outline of the 4th C&I event

The 4th APT/ITU C&I Event was held on 13th and 17th November 2016 during the ITU Telecom World 2016 in Bangkok. Around 8,800 people from 130 countries visited ITU Telecom World.

1) Testing: 13th November 2016

a) IPTV Conformance and Interoperability testing (OKI, NEC)

2) Showcasing: 14th – 17th November 2016

a) SDN/NFV (NEC)

b) IPTV(including IPTV-MAFR (Multimedia Application Framework)) (OKI)

c) Seamless network (NICT)

d) Bridging the standardization Gap (TTC)

We organized IPTV Conformance and Interoperability testing as a closed event among participating companies at the IMPACT Forum on the day before the opening of ITU Telecom World 2017. During ITU Telecom World 2017, we organized a showcase at the ITU pavilion in the exhibition area at IMPACT Challenger, which was visited by many guests.

3.3 Showcases

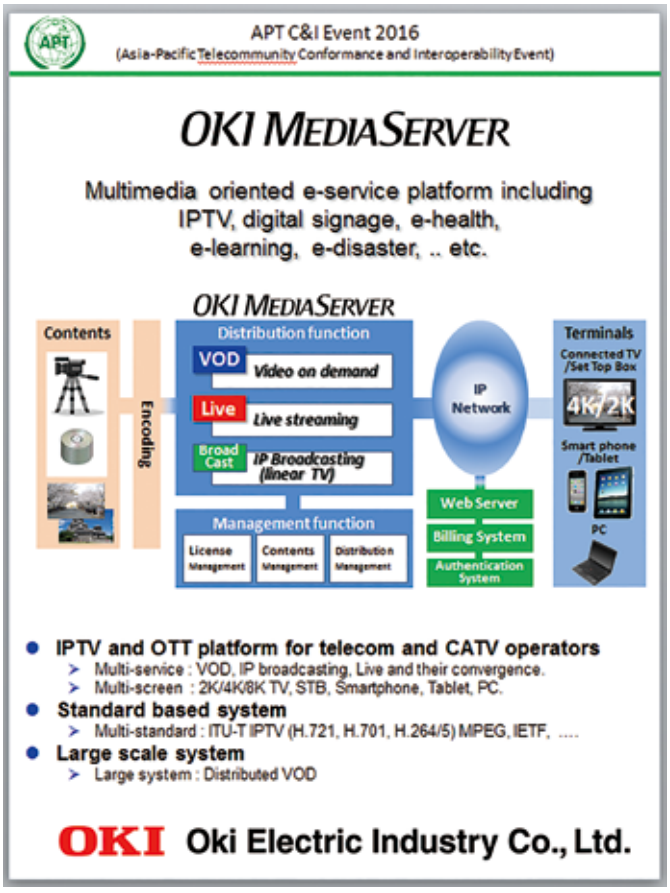
The following showcases were provided by the exhibitors:

1) IPTV (Oki Electric, Japan)

Oki exhibited Internet Protocol TV (IPTV) solutions based on ITU-T standards (ITU-T H.721, H.265, etc.). Their OKI MediaServer is a core product that provides a platform for e-services such as IPTV, digital signage, e-health, e-learning, and e-disaster, including a state-of-the-art 4K/8K ultra high definition television linear TV service. 4K/8K television has around 4,000/8,000 horizontal pixels respectively, which allows it to display clear and life-like video over IP networks implemented by telecom carriers and CATV operators. There was also a demonstration of an e-health service powered by IPTV. Visualizing a viewer's physical condition via an IPTV display may help the viewer to be more health-conscious and start exercising more.

2) SDN/NFV (NEC Corporation, Japan)

Figure 1: Oki Media Server



NEC Corporation exhibited a Network-as-a-Service (NaaS) solution focusing on helping service providers generate new revenue in both B2B and residential markets by using SDN/NFV technologies. This solution provides a complete, end-to-end environment that supports the definition, provisioning, orchestration and lifecycle management of complex services. It

leverages advances in both network and function virtualization to allow a new level of flexibility and automation, lowering costs and reducing time-to-market.

Part of this solution is a cloud marketplace, which is unique in that it brings together basic network services (such as vCPE and Software defined WAN), value-added network services (such as firewalls, bandwidth-on-demand, and WAN optimization) and cloud-based business productivity applications. This marketplace allows service providers to personalize their offers.

The solution is powered by AVP (Agile Virtualization Platform and Practice) for consulting and comprehensive system integration services. AVP consists of: i) an Agile Collaboration environment, where business planners, system architects and operators can collaborate to rapidly create new applications, ii) Business Enablement Applications (BEA), which are designed to fill the gaps with existing BSS by providing pre-integrated applications supporting emerging business models, and iii) Hybrid Operations Management (HOM), which is focused on operating both virtual and traditional networks simultaneously.

3) Seamless network (NICT, Japan)

The seamless network concept was exhibited by NICT, who presented an overview of on-going projects of seamless access network technologies related to ASTAP EG-SACS (Expert group on seamless access communication system). Radio over fiber (RoF) technology, which achieves seamless convergence between radio and optical networks, is applicable not only to low-latency signal transport technology including millimeter-wave front-haul/back-haul systems for rural areas and train communication networks, but also to distributed radar system in the millimeter-wave band for foreign object debris detection. They also presented a video showing a field trial demonstration of the millimeter-wave radar system at Narita International Airport in Japan.

4) Bridging the standardization Gap (TTC, Japan)

TTC exhibited one of its activities regarding "Bridging the standardization Gap". The purpose of this activity is to overcome the standardization gap from the viewpoint of using the latest ICT/NGN to improve people's lives and bring more

Figure 2: NaaS Solution

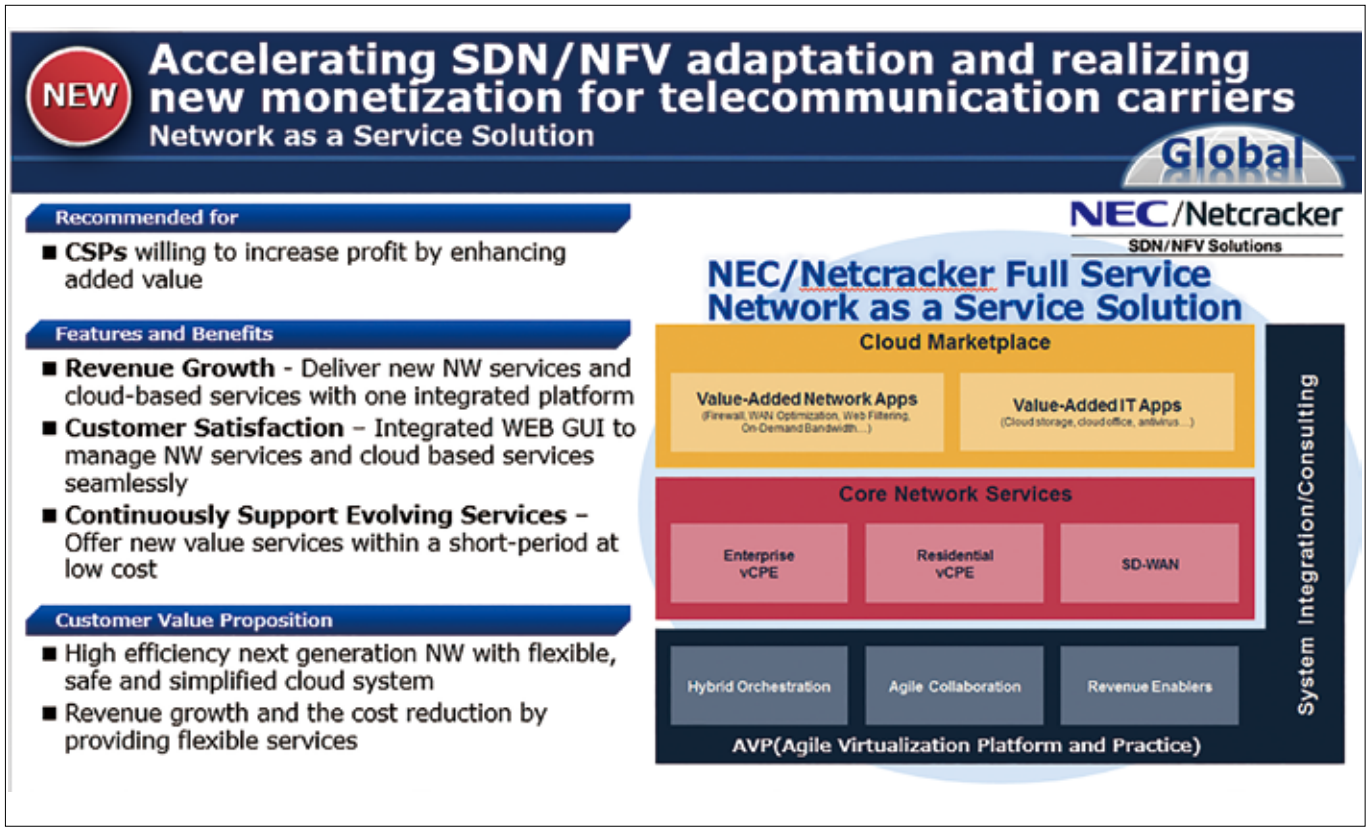


Figure 3: RoF system

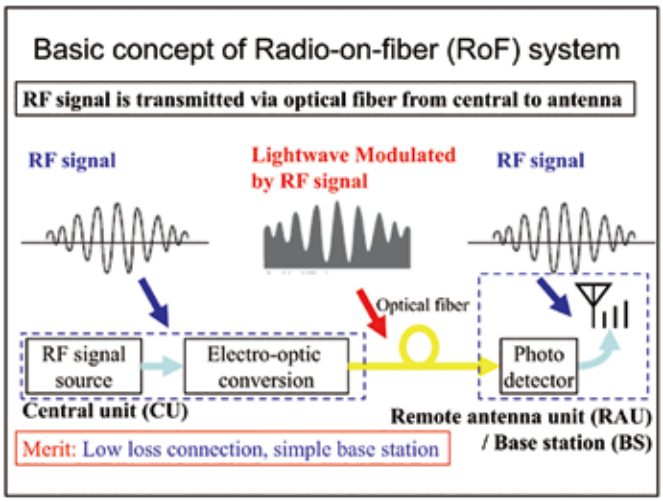
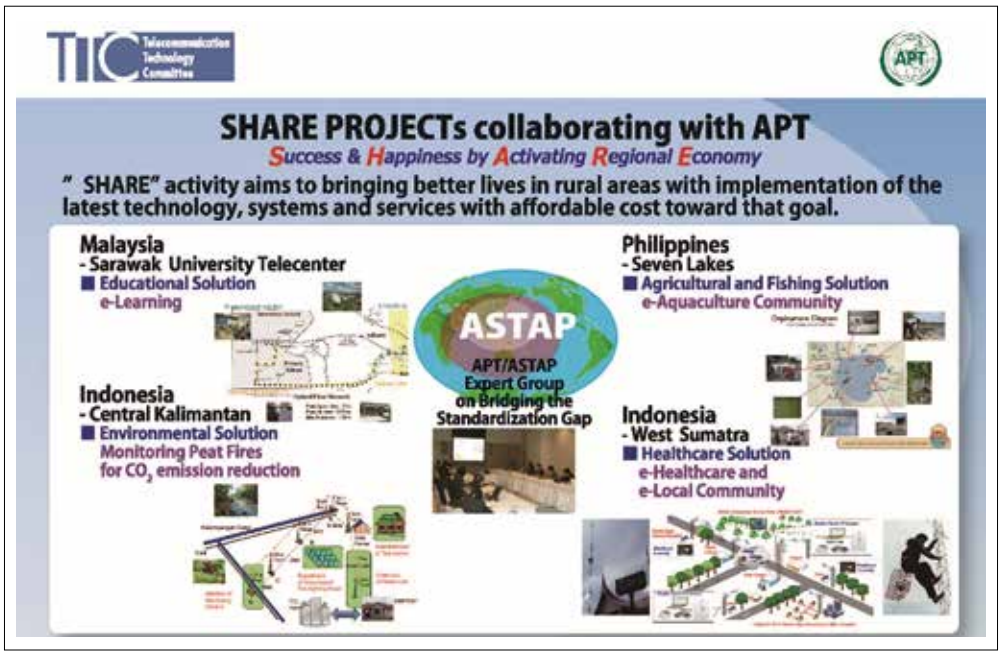


Figure 4: Business Activities of TTC



happiness to developing countries, and implementing the latest technologies, systems and services in an affordable way. In other words, this activity aims to build capabilities to apply the latest standardized technologies and systems to various applications and services based on experience of implementing new solutions in projects supported by APT. Contributions from Indonesia, Japan, Malaysia, Philippines, Thailand and Vietnam as well as collaborative initiatives with Asia-Pacific Telecommunity projects have resulted in several projects being carried out in different countries, each addressing five applications over ICT/NGN to be developed as solutions for social issues in rural areas, namely: e-agriculture, e-education, e-environment, e-healthcare and e-disaster management.

TTC introduced the new "Handbook for ICT Projects for Rural Areas". This handbook is a collaborative effort of various member countries, namely Indonesia, Japan, Malaysia, Philippines, Thailand and Vietnam to provide the research community with a guidebook on initiating ICT projects in rural areas. It was developed based on the experience gained by the members when implementing ICT projects in areas of education, agriculture, aquaculture, health and the environment management in Indonesia, Malaysia, Philippines, Thailand and Vietnam.

3.4 Outcomes and future events

The 4th APT/ITU C&I event was the first event to provide conformance and interoperability testing and showcasing during ITU Telecom World. It showed off the latest activities and solutions of APT and ITU on C&I, not only to APT member countries but also to visitors to ITU Telecom World from around the world. The showcases were attended by government officials, VIPs of the ITU, major mobile and network operators from Thailand such as TOT, CAT and AIS, and ICT administrators. It was useful for exhibitors from industries such as OKI and NEC to find new business opportunities and strengthen their customer relations. It was feared that the event might not happen due to the death of King Bhumibol Adulyadej of Thailand one month before. But in the end, most of the visitors wore black and white mourning colors to express their condolences. After the opening ceremony of ITU Telecom World, the princess and prime minister of Thailand and Mr Houlin Zhao, ITU Secretary-General visited the exhibitions.

APT will continue to prepare for the 5th C&I event in 2017. The most promising option is to hold it during ITU Telecom World 2017 (25-28th September 2017, Busan, South Korea). We plan to discuss the details of this event at ASTAP-28 (March 2017, Bangkok).

4. Closing

Spurred on by the experience of the latest APT/ITU C&I event, we have started discussions aimed at forging closer links between the business world and the activities of the APT to contribute directly to the construction of the network infrastructure in APT member countries. Holding a C&I event was proposed due to the considerable amount of interest in C&I in all countries, and the expectation of active participation from industries. We have continued to hold an annual C&I event since 2013. We hope to be able to hold this event jointly with APT and ITU in order to combine our cumulative experience and knowledge of APT and emerging topics in ITU-T such as 5G, IoT, e-service and VoLE interoperability. We aim to hold future C&I event to contribute to the development of Asia-Pacific countries and support the business activities of our exhibitors. I would like to thank everyone who helped make the C&I event a success, and I hope you will be able to offer your continued support at the next event.

Photo 1: Exhibition Entrance

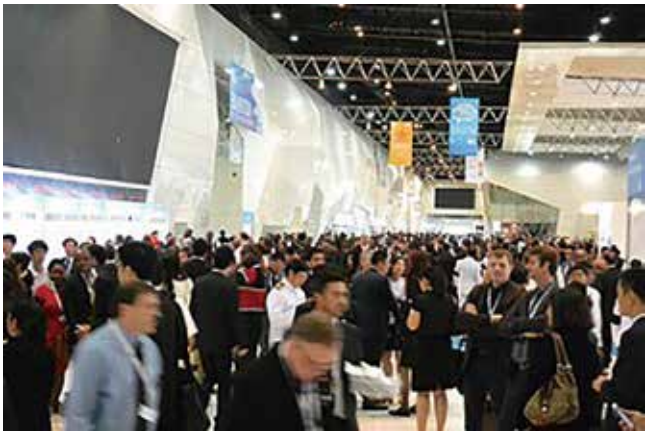


Photo 2: Exhibition Overview (APT/ITU C&I booth on the upper left)

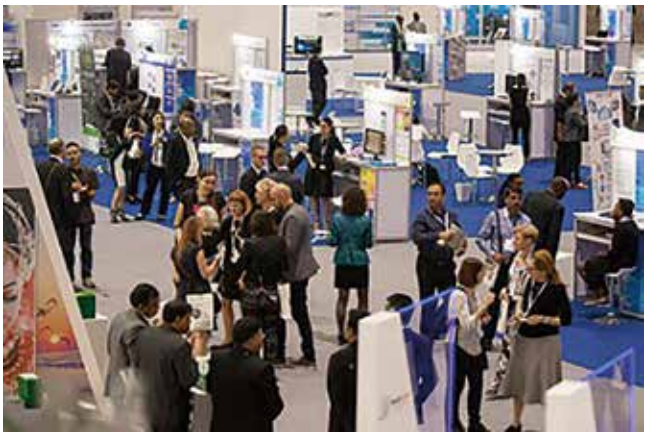


Photo 3: Exhibition Overview (APT/ITU C&I booth)