Organization of ITU-T SG15 in Study Period 2005–2008

Yoichi Maeda, Kenji Nakanishi†, Makoto Murakami, and Hiroshi Ohta

Abstract

This article introduces the organization of Study Group 15 (SG15) for the study period 2005 to 2008. The management team consists of one chairman and four vice-chairmen. For the first time since SG15 was founded, a chairman from Japan was elected. SG15 includes 3 Working Parties and 14 Questions. The activity plans for these Questions are described.

1. Introduction

ITU-T (International Telecommunication Union Telecommunication Standardization Sector) is an international standardization body for electrical communication technologies. ITU-T has revised its organization every four years as the basic study period. This article introduces the organization of SG (Study Group) 15 for the study period 2005 to 2008 [1].

2. Organization

The chairmen and vice-chairmen of all SGs in this study period (2005–2008) were elected through the vote at the ITU-T WTSA (World Telecommunication Standardization Assembly) meeting held in October 2004 [2]. For SG15, one chairman and four vice-chairmen were elected, as shown in **Table 1**. For the first time since SG15 was founded, a chairman from Japan was chosen. This is a significant step up for Japan, because SG15 is the largest and most active SG in ITU-T. It indicates that Japanese standardization activities to date have been highly regarded internationally and that Japan will play an even more important role in international standardization activities in the future.

At the first SG15 meeting of the new study period, held from November 29 to December 3, 2004, it was accepted that SG15 should consist of three Working Parties (WPs) and fourteen Questions (Q.s) in this period. WP chairmen and Question rapporteurs were assigned. Compared with the organization in the last period, the old Questions were shifted to new equivalents as they were except for the old WP2 which was transferred to SG16 and the incorporation of some Questions from SG13 and SG17 with a change in

Table 1. SG15 management team (Study period 2005–2008)

Title	Name	Function
Chairman	Yoichi Maeda (NTT, Japan)	SG15 Chairman
Vice-chairman	Andrew Nunn (BT, UK)	WP1 Chairman
Vice-chairman	Gastone Bonaventura (TI, Italia)	WP2 Chairman
Vice-chairman	Stephen J. Trowbridge (Lucent, USA)	WP3 Chairman
Vice-chairman	Shaohua Yu (China Telecom, China)	Public relations management

† NTT Access Network Service Systems Laboratories
Chiba-shi, 261-0023 Japan
E-mail: nakanisi@ansl.ntt.co.jp

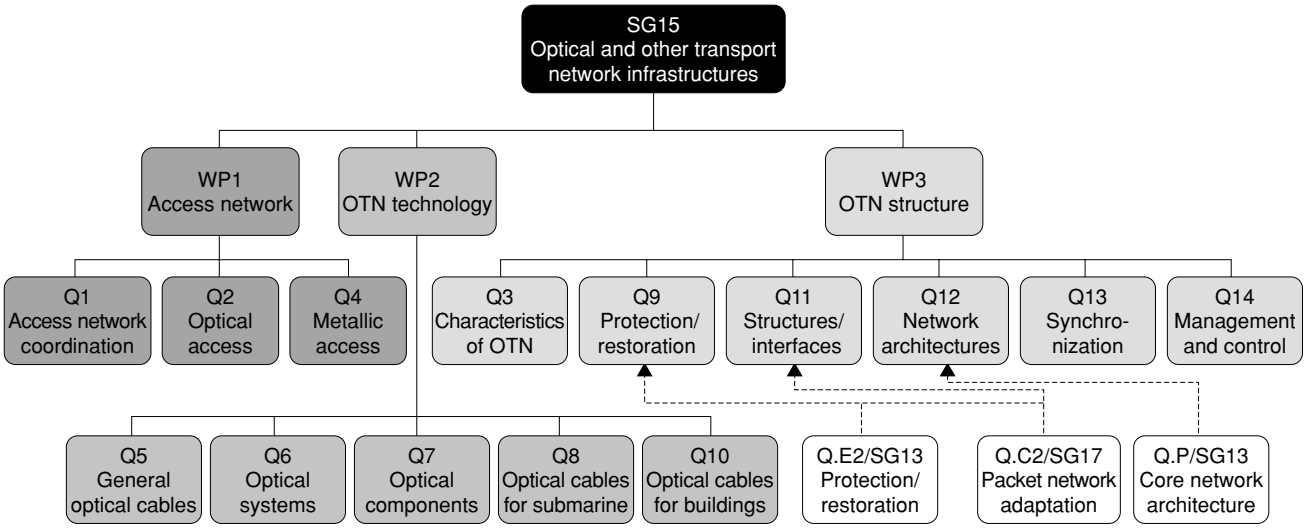

Fig. 1. Organization of SG15 for study period 2005–2008.

Table 2. List of Questions and rapporteurs (Study Period 2005–2008)

Q.	Title	Rapporteur
	WP1: Optical and metallic access network	
1	Coordination of access network transport standards	John Jay (Corning, USA)
2	Optical systems for fiber access networks	Dave Faulkner (BT, UK)
4	Transceivers for customer access and in-premises phone line networking systems on metallic pairs	Richard Stuart (Infineon, USA)
	WP2: Optical transport network technology	
5	Characteristics and test methods of optical fibers and cables	Tom Hanson (Corning, USA)
6	Characteristics of optical systems for terrestrial transport networks	Jerry Shrimpton (Ciena, USA)
7	Characteristics of optical components and subsystems	James Matthews (Corning, USA)
8	Characteristics of optical fiber submarine cable systems	Masaharu Ohashi (NTT, Japan)
10	Optical fibers and cables for the access network to and in buildings and homes	Pieter Matthijsse (Draka, Netherlands)
	WP3: Optical transport network structure	
3	General characteristics of optical transport networks	Hiroshi Ohta (NTT, Japan)
9	Transport equipment and network protection/restoration	Ghani Abbas (Marconi, UK)
11	Signal structures, interfaces, and interworking for transport networks	Mark L. Jones (Sprint, USA)
12	Transport network architectures	Malcolm Betts (Nortel, Canada)
13	Network synchronization and time distribution performance	Jean L. Ferrant (Alcatel, France)
14	Management and control of transport systems and equipment	Hing-Kam Lam (Lucent, USA)

their numbers. The structure of SG15 is shown in **Fig. 1** and a list of Questions and rapporteurs is shown in **Table 2**. The activity plans for the Questions are described below, categorized by WP.

2.1 WP1: Access network

WP1 consists of three Questions: Q.1, Q.2, and Q.4.

Q.1 covers the coordination of access network standards. This topic moved from the previous WP5 to WP1 to join Q.2 and Q.4, which were in WP1 before. Q.1 has created and is updating standardization and work plans for access networks through the exchange of opinions with other standardization bodies, such as IEEE, ITU-R (ITU Radio-communication Sector), and other ITU-T SGs. The activities of Q.1 show that ITU-T is providing the core work for international standardization activities for access networks.

Q.2 is examining Recommendations for optical access systems, such as B-PON (broadband passive optical network) and G-PON (gigabit PON). It com-

pleted Recommendations for B-PON as the G.983 series and those for G-PON as the G.984 series in the previous period. These Recommendations are contributing to the global spread of broadband optical access systems. In the new period, Q.2 aims at the further spread of broadband optical access systems through verification of inter-operability for PON equipment and plans to create documents showing how to verify it. It intends to create requirements for the application of WDM (wavelength division multiplexing) technologies in access networks as new Recommendations that support the new generation of optical access systems. Moreover, Q.2 also plans to actively participate in workshops to advertise the usefulness of inter-operability verification and the new generation of optical access systems.

Q.4 is examining Recommendations for metallic access systems, such as ADSL (asymmetric digital subscriber line) and VDSL (very-high-speed DSL). It has made ADSL and VDSL into the leading methods for broadband access systems by completing ADSL Recommendations as G.992 series and VDSL Recommendation as G.993.1 in the previous period. Q.4 focused on ADSL specifications with higher speed and longer reach in the previous period. In the new period, it intends to create some DSL specifications that yield even higher speeds and longer reach than the existing ones. One example of such new specifications is VDSL2, which carries DSL signals using a higher frequency than the existing VDSL. Another example is G.bond[*1], which carries any DSL signal across multiple metallic lines. Q.4 also plans to upgrade the specifications of Home PNA (Phoneline Networking Alliance) in the new period.

2.2 WP2: optical transport network (OTN) technology

The questions in WP2 are the same as those of the old WP4; only the question numbers have been changed. The organization of WP2 can be roughly divided into two groups. One group, consisting of Q.5, Q.8, and Q.10, examines Recommendations related to optical cables. The other group, consisting of Q.6 and Q.7, examines Recommendations related to optical systems.

The first group performs several roles as follows. Q.5 treats general-purpose optical cables such as 1.3-μm zero-distribution fiber (G.652). Q.8 treats optical cables for submarine systems described by the G.97x series. Q.10 treats optical cables for premises networks. Q.5 and Q.8 maintain existing Recommendations and methods for examining existing optical cables. Q.10 focuses on creating specifications for new optical cables. Q.5 and Q.8 offer wider coverage. For example, Q.5 studies optical cables with non-zero dispersion for wideband optical transport (G.656) for WDM systems and will create a Recommendation associated with a particular optical system. As another example, Q.8 is discussing some transmission system specifications such as regulations for highly efficient forward error correction. Although Q.10 is still searching for its target, the appeal of small-bend-radius optimized single-mode fiber has been raised.

The second group has several roles. Q.6 is in charge of an optical transmission interface and Q.7 is responsible for optical transmission devices. Q.6 and Q.7 originally considered the core network mainly, but they are also studying the specifications of metro networks, which are located between core and access networks and are discussing regulations related to the entire optical network including the access network, as end-to-end services are becoming more important. For this reason, they are emphasizing multi-vendor compatibility, which is important in access networks, as well as single-vendor compatibility, which is assumed in core networks.

WDM-related technologies are being intensely discussed in Q.6, which is actively assessing compatibility for the metro network in order to propose a "black link"[*2], which should be seen as an intermediate form between a black box and a white box, in CWDM (coarse WDM) application Recommendation G.695 for metro networks. Q.6 is also examining the same Recommendation for DWDM (dense WDM) technology, G.dapp.

2.3 WP3: OTN structure

WP3 has extended its range of activities by incorporating some Questions related to packet transmission technologies from SG13 and SG17. WP3 has the same organization as in the previous period with the addition of Q.19 (old WP5) as Q.3 since the incorporated Questions have been unified into the Questions of SG15. Thus, WP3 now consists of 6 Questions: Q.3, Q.9, Q.11, Q.12, Q.13, and Q.14.

WP3 has been eagerly discussing Ethernet services over OTN at recent meetings. It is now focused on

*1 G.bond: Technology for broadening DSL signal bandwidth by dividing and transmitting a DSL signal across multiple metallic cables. ITU-T Recommendations G.998 series.

*2 Black link: Approach for single channel connection, which defines I/O interfaces of WDM filters (white box) and closes inside specifications of WDM filters (black box). The name comes from closing a link between the opposing WDM filters.

ASON (automatically switched optical network), which is the next-generation optical network technology designed to perform dynamic bandwidth management for optical signals in addition to the conventional fixed bandwidth management, since SDH/OTN, which was a main issue, has been almost completed (SDH: synchronous digital hierarchy). WP3 creates and maintains Recommendations in cooperation with other standardization bodies for related technologies, such as IEEE for Ethernet and IETF (Internet Engineering Task Force) for ASON.

Q.3 is coordinating OTN-related standardization activities including optical Ethernet and is examining the Recommendations for OTN-related terms. The coordination is important because optical Ethernet should become the essential infrastructure of NGN (Next Generation Network) and its standardization must be carried out in cooperation with the IEEE 802 committee.

Q.9 is studying protection and restoration technologies. It is discussing Ethernet, MPLS (multiprotocol label switching), and ATM (asynchronous transfer mode) taken over from SG13 and issues related to packet transfer protocol taken over from SG17 in addition to the conventional protection and restoration issues. Through the Ethernet relationship, Q.9 is examining the equipment architecture Recommendation G.8021 and protection Recommendation Y.17ethps.

Q.11 has completed OTN frame structure regulations and issued Recommendation G.709. It is also maintaining the Recommendations for next-generation SDH technologies such as GFP (generic framing procedure) and LCAS (link capacity adjustment scheme), which have already been approved as Recommendations and is creating Ethernet-technology-related Recommendations such as G.8011, which specifies the service framework for Ethernet services.

Q.12 is discussing and defining fundamental network architectures so that other Questions can study them in detail. Since the old Q.10/13 was unified into Q.12, it is also standardizing the general network architecture, which is independent of implementation technologies. In particular, for MPLS, Q.12 is proceeding to create Recommendation G.8110 as a new specification that is categorized as a network architecture Recommendation for neither conventional connection type networks nor connectionless type networks. Moreover, Q.12 intends to maintain ASON architecture Recommendation G.8080.

Q.13 is switching its focus from conventional time synchronous technologies to transmission technology for time synchronization signaling by packet frames (TDM over packet). It is discussing and creating Recommendations for TDM-over-packet technologies to meet the expected increase in IP signal traffic, such as Ethernet and MPLS.

Q.14 is discussing and examining Recommendations for network management and control technologies. For ASON, it has switched its focus from signaling on the control plane to relationships on the management plane handling transmission equipment and networks. It has completed a Recommendation for ASON management framework on the control plane (G.7718) and is discussing the framework in detail so as to create related Recommendations. Moreover, Q.14 plans to create Recommendations for ASON routing as G.7715 series.

References

[1] http://www.itu.int/ITU-T/studygroups/com15/structure.html
[2] Y. Hiramatsu and H. Iwata, “Results of ITU-T WTSA-04,” NTT Technical Review, Vol. 3, No. 4, pp. 44-48, 2005.

Yoichi Maeda
Senior Manager, Optical Access Systems Project, NTT Access Network Service Systems Laboratories.

He received the B.E. and M.E. degrees in electronic engineering from Shizuoka University, Shizuoka in 1976 and 1978, respectively. Since joining Nippon Telegraph and Telephone Public Corporation (now NTT) in 1980, he has been engaged in R&D of access network transport systems for broadband communications, including synchronous digital hierarchy, asynchronous transfer mode, and Internet protocol. From 1988 to 1989, he was an Exchange Research Engineer at British Telecom Research Laboratories, United Kingdom. He currently leads the Global Strategy and the Full Service Access Groups in the Optical Access Systems Project of NTT Access Network Service Systems Laboratories, Chiba, Japan. Since 1989, he has been an active participant in ITU-T Study Groups 13 and 15, and he served as vice-chairman of ITU-T SG13, chairman of WP3 of ITU-T SG13, and chairman of OAN WG (Optical Access Network Working Group) of FSAN (Full Service Access Network) from 2001 to 2004. He is serving as chairman of ITU-T SG15 for the 2005–2008 study period. He has written several publications on B-ISDN standards, including *Introduction to ATM Networks and B-ISDN* (Wiley, New York, 1997). He is a member of the Institution of Electronics, Information and Communication Engineers (IEICE) of Japan. He is a feature editor on standards of IEEE Communications Magazine.

Kenji Nakanishi
Senior Research Engineer, Optical Access Systems Project, NTT Access Network Service Systems Laboratories.

He received the B.E. and M.E. degrees in physical engineering from Kyoto University, Kyoto in 1983 and 1985, respectively. He joined NTT in 1985. He studied coherent optical transmission systems including multi-valued FSK modulation and demodulation and dense WDM systems from 1985 to 1992. From 1992 to 1995, he worked in the Intellectual Property Center. From 1995, he was engaged in R&D of passive optical networks (PONs). Since 1997, he has been engaged in standardization of optical broadband access networks including PON. Since 1999, he has been an active participant in ITU-T Study Groups 4 and 15 and was chairman of OAM WG (Operation And Management Working Group) of FSAN from 1999 to 2001. He is a member of IEICE.

Makoto Murakami
Senior Research Engineer, NTT Network Service Systems Laboratories.

He received the M.E. degree in electrical engineering from the University of Tokyo, Tokyo in 1988. He joined NTT the same year and engaged in R&D of long-haul optically amplified transmission systems and submarine cable systems. From 2001 to 2003, he worked on the construction of international submarine cable network systems at NTT Communications. Currently, he is involved in R&D of optical network systems at NTT Network Service Systems Laboratories. He is a member of IEICE.

Hiroshi Ohta
Senior Research Engineer, NTT Network Service Systems Laboratories.

He received the B.E. degree in electrical engineering and the M.E. and Ph.D. degrees in electronics engineering from Kyoto University, Kyoto in 1985, 1987, and 2000, respectively. He joined NTT Electrical Communication Laboratories, Kanagawa, Japan in 1987. From 1987 to 1999 he was engaged in R&D of ATM-based transport systems, especially optical subscriber loops, cell loss analysis, cell loss recovery, OAM functions, and protection switching as well as the development of an ATM cross-connect system. Since 2000, he has been engaged in the development of services for corporate users such as IP-VPN and metro Ethernet services and services for consumers such as content delivery services. Since 1992, he has actively participated in standardization meetings in ITU-T SG13, SG15, IEEE 802, and IETF. He is a rapporteur for Question 3/15 (General characteristics of optical transport networks) of ITU-T SG15. He is a member of the IEEE Communications Society and IEICE.