

I n t e r n a t i o n a l T e l e c o m m u n i c a t i o n U n i o n

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

WORLD TELECOMMUNICATION STANDARDIZATION
ASSEMBLY
Dubai, 20-29 November 2012

Resolution 2 – ITU Telecommunication Standardization Sector study group responsibility and mandates

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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RESOLUTION 2 (Rev. Dubai, 2012)

ITU Telecommunication Standardization Sector study group responsibility and mandates

*(Helsinki, 1993; Geneva, 1996; Montreal, 2000; Florianópolis, 2004;
Johannesburg, 2008; 2009¹; Dubai, 2012)*

The World Telecommunication Standardization Assembly (Dubai, 2012),

recognizing

the resolutions adopted by this assembly, which contain many instructions and implications for the work of the relevant study groups,

considering

a) that the mandate for each study group needs to be clearly defined in order to avoid duplication of effort between study groups and to ensure the coherence of the overall work programme of the ITU Telecommunication Standardization Sector (ITU-T);

b) that ITU-T has to evolve in order to stay relevant to the changing telecommunication environment and to its membership interests;

c) that collocation of study group, working party or rapporteur group meetings could also be a means to avoid duplication of work and to improve efficiency of work; in practice, collocation enables:

- attendees' participation in the work of more than one study group;
- reduction in the need for exchange of liaison statements between the study groups concerned;
- saving costs for ITU and for ITU members and other experts;

d) that the World Telecommunication Standardization Assembly (WTSA), through Resolution 22, assigns authority to the Telecommunication Standardization Advisory Group (TSAG) in the interval between WTSAs to restructure and establish ITU-T study groups in response to changes in the telecommunication marketplace,

noting

that the study group structure, responsibilities and mandates agreed at WTSA may be modified in the interval between WTSAs, and that the current study group structure, responsibility and mandates may be found on the ITU-T website or obtained from the Telecommunication Standardization Bureau (TSB),

resolves

1 that the mandate of each study group, which it shall use as the basis for organizing its study programme, shall consist of:

- a general area of responsibility, as set out in Annex A, within which the study group may amend existing Recommendations, in collaboration with other groups, as appropriate;

¹ Changes to the ITU-T Study Group 5 mandate agreed by TSAG on 30 April 2009.

– a set of Questions related to particular areas of study, which are compatible with the general area of responsibility and which should be results-oriented (refer to Section 7 of Resolution 1 (Rev. Dubai, 2012) of this assembly);

2 to encourage the study groups to consider collocation (e.g. of study group plenaries, working parties or rapporteur meetings) as a means to improve cooperation in some areas of work; the study groups involved will need to identify the areas in which they need to cooperate, based on their mandates, and keep TSAG and TSB informed,

instructs the Telecommunication Standardization Bureau

to support and facilitate the operational aspects of such collocation.

ANNEX A (to Resolution 2)

PART 1 – GENERAL AREAS OF STUDY

ITU-T Study Group 2

Operational aspects of service provision and telecommunication management

ITU-T Study Group 2 is responsible for studies relating to:

- principles of service provision, definition and operational requirements of service emulation;
- numbering, naming, addressing and identification requirements and resource assignment, including criteria and procedures for reservation, assignment and reclamation;
- routing and interworking requirements;
- human factors;
- operational and management aspects of networks, including network traffic management, designations and transport-related operations procedures;
- operational aspects of interworking between traditional telecommunication networks and evolving networks;
- evaluation of feedback from operators, manufacturing companies and users on different aspects of network operation;
- management of telecommunication services, networks and equipment via management systems, including support for next-generation networks (NGN) and the application and evolution of the telecommunication management network (TMN) framework;
- ensuring the consistency of the format and structure of IdM identifiers; and
- specifying interfaces to management systems to support the communication of identity information within or between organizational domains.

ITU-T Study Group 3

Tariff and accounting principles including related telecommunication economic and policy issues

ITU-T Study Group 3 is responsible, *inter alia*, for studies relating to tariff and accounting matters (including costing methodologies) for international telecommunication services and the study of related telecommunication economic, accounting and policy issues. To this end, Study Group 3 shall in particular foster collaboration among its participants with a view to the establishment of rates at levels as low as possible consistent with an efficient service and taking into account the necessity for maintaining independent financial administration of telecommunications on a sound basis.

ITU-T Study Group 5

Environment and climate change

ITU-T Study Group 5 is responsible for studying ICT environmental aspects of electromagnetic phenomena and climate change.

It is responsible for studies relating to protection of telecommunication networks and equipment from interference and lightning.

Study Group 5 is also responsible for studies related to electromagnetic compatibility (EMC), to safety and to health effects connected with electromagnetic fields produced by telecommunication installations and devices, including cellular phones.

It is responsible for studies on the existing copper network outside plant and related indoor installations.

It is responsible for studies on methodologies for assessing the environmental impact of ICT, publishing guidelines for using ICTs in an eco-friendly way, tackling e-waste issues, and energy efficiency of the power feeding system.

It is responsible for studies on how to use ICT to help countries and the ICT sector adapt to the effects of environmental challenges, including climate change.

Study Group 5 also identifies the needs for more consistent and standardized eco-friendly practices for the ICT sector (e.g. labelling, procurement practices, eco-rating schemes for mobile phones).

ITU-T Study Group 9

Television and sound transmission and integrated broadband cable networks

ITU-T Study Group 9 is responsible for studies relating to:

- use of telecommunication systems for contribution, primary distribution and secondary distribution of television, sound programmes and related data services including interactive services and applications, extendable to advanced capabilities such as ultra-high definition television, 3D television, etc.;

- use of cable and hybrid networks, primarily designed for television and sound programme delivery to the home, as integrated broadband networks to also carry voice or other time-critical services, video-on-demand, interactive services, etc. to customer premises equipment (CPE) in the home or enterprise.

ITU-T Study Group 11

Signalling requirements, protocols and test specifications

ITU-T Study Group 11 is responsible for studies relating to signalling requirements and protocols, including those for IP-based network technologies, next-generation networks (NGN), machine-to-machine (M2M) communication, Internet of things (IoT), future networks (FN), cloud computing, mobility, some multimedia-related signalling aspects, ad hoc networks (sensor networks, radio-frequency identification (RFID), etc.), quality of service (QoS), and inter-network signalling for legacy networks (e.g. ATM, N-ISDN and PSTN). In addition, it is responsible for studies relating to reference signalling architectures and test specifications for NGN and emerging network technologies (e.g. IoT, etc.).

ITU-T Study Group 12

Performance, quality of service and quality of experience

ITU-T Study Group 12 is responsible for Recommendations on performance, quality of service (QoS) and quality of experience (QoE) for the full spectrum of terminals, networks and services, ranging from speech over fixed circuit-based networks to multimedia applications over networks that are mobile and packet based. Included in this scope are the operational aspects of performance, QoS and QoE; the end-to-end quality aspects of interoperability; and the development of multimedia quality assessment methodologies, both subjective and objective.

ITU-T Study Group 13

Future networks, including cloud-computing, mobile and next-generation networks

ITU-T Study Group 13 is responsible for studies relating to the requirements, architectures, capabilities and mechanisms of future networks (FN), including studies relating to service awareness, data awareness, environmental awareness and socio-economic awareness with respect to FN. It is responsible for studies relating to cloud-computing technologies such as virtualization, resource management, reliability and security. It is responsible for studies relating to network aspects of Internet of things (IoT) and network aspects of mobile telecommunication networks, including International Mobile Telecommunications (IMT) and IMT-Advanced, wireless Internet, mobility management, mobile multimedia network functions, internetworking and enhancements to existing ITU-T Recommendations on IMT. Study Group 13 is also responsible for studies relating to next-generation network (NGN)/Internet Protocol television (IPTV) enhancements, including requirements, capabilities, architectures and implementation scenarios, deployment models, and coordination across study groups.

ITU-T Study Group 15

Networks, technologies and infrastructures for transport, access and home

ITU-T Study Group 15 is responsible for the development of standards on optical transport network, access network, home network and power utility network infrastructures, systems, equipment, optical fibres and cables, and their related installation, maintenance, management, test, instrumentation and measurement techniques, and control plane technologies to enable the evolution toward intelligent transport networks, including the support of smart-grid applications. This encompasses the development of related standards for the customer premises, access, metropolitan and long-haul sections of communication networks, as well as for power utility networks and infrastructures from transmission to load.

ITU-T Study Group 16

Multimedia coding, systems and applications

ITU-T Study Group 16 is responsible for studies relating to ubiquitous applications, multimedia capabilities for services and applications for existing and future networks, including next-generation networks (NGN) and beyond. This encompasses accessibility, multimedia architectures, terminals, protocols, signal processing, media coding and systems (e.g. network signal processing equipment, multipoint conference units, gateways and gatekeepers).

ITU-T Study Group 17

Security

ITU-T Study Group 17 is responsible for building confidence and security in the use of information and communication technologies (ICT). This includes studies relating to cybersecurity, security management, countering spam and identity management. It also includes security architecture and framework, protection of personally identifiable information, and security of applications and services for the Internet of things, smart grid, smartphone, Internet Protocol television (IPTV), web services, social network, cloud computing, mobile financial system and telebiometrics. Study Group 17 is also responsible for the application of open system communications, including directory and object identifiers, and for technical languages, the method for their usage and other issues related to the software aspects of telecommunication systems, and for conformance testing to improve the quality of Recommendations.

PART 2 – LEAD ITU-T STUDY GROUPS IN SPECIFIC AREAS OF STUDY

- SG2 Lead study group for service definition, numbering and routing
 Lead study group on telecommunications for disaster relief/early warning, network resilience and recovery
 Lead study group on telecommunication management

- SG5 Lead study group on electromagnetic compatibility and electromagnetic effects
 Lead study group on ICTs and climate change

- SG9 Lead study group on integrated broadband cable and television networks

- SG11 Lead study group on signalling and protocols
 Lead study group on machine-to-machine (M2M) signalling and protocol
 Lead study group on test specifications, conformance and interoperability testing

- SG12 Lead study group on quality of service and quality of experience
 Lead study group on driver distraction and voice aspects of car communications

- SG13 Lead study group on future networks (FN)
 Lead study group on mobility management and next-generation networks (NGN)
 Lead study group on cloud computing

- SG15 Lead study group on access network transport
 Lead study group on optical technology
 Lead study group on optical transport networks
 Lead study group on smart grid

- SG16 Lead study group on multimedia coding, systems and applications
 Lead study group on ubiquitous and Internet of things (IoT) applications
 Lead study group on telecommunication/ICT accessibility for persons with disabilities
 Lead study group on intelligent transport system (ITS) communications
 Lead study group on Internet Protocol television (IPTV)

- SG17 Lead study group on security
 Lead study group on identity management (IdM)
 Lead study group on languages and description techniques

ANNEX B (to Resolution 2)

Points of guidance to ITU-T study groups for development of the post-2012 work programme

B.1 This annex provides points of guidance to study groups for the development of post-2012 study Questions in accordance with their proposed structure and general areas of responsibility. The points of guidance are intended to clarify, where appropriate, interaction between study groups in certain areas of common responsibility, and are not intended to provide a comprehensive list of such responsibilities.

B.2 This annex will be reviewed by TSAG as necessary to facilitate interaction between study groups, to minimize duplication of effort and to harmonize the overall ITU-T work programme.

ITU-T Study Group 2

ITU-T Study Group 2 is the lead study group for service definition (including all types of mobile services) and for numbering and routing. It is responsible for creating principles of service and operational requirements, including billing and operational quality of service/network performance. Service principles and operational requirements must be developed for current and evolving technologies.

Study Group 2 is to define and describe services from a user's point of view to facilitate global interconnection and interoperation and, to the extent practicable, ensure compatibility with the International Telecommunication Regulations and related intergovernmental agreements.

Study Group 2 should continue to study service policy aspects, including those that may arise in the operation and provision of transborder, global and/or regional services, taking due account of national sovereignty.

Study Group 2 is responsible for studying, developing and recommending general principles of numbering and routing for all types of network.

The chairman of Study Group 2 (or, if necessary, the chairman's delegated representative), in consultation with Study Group 2 participants, should provide technical advice to the Director of TSB concerning general principles for numbering and routing and the effect on allocation of international codes.

Study Group 2 should provide the Director of TSB with advice on technical, functional and operational aspects in the assignment, reassignment and/or reclamation of international numbering and addressing resources in accordance with the relevant ITU-T E- and F-series Recommendations, taking into account the results of any ongoing studies.

Study Group 2 should recommend measures to be taken to assure operational performance of all networks (including network management) in order to meet the in-service network performance and quality of service.

As the lead study group on telecommunication management, Study Group 2 is also responsible for the development and maintenance of a consistent ITU-T work plan, prepared with the cooperation of relevant ITU-T study groups, on activities associated with telecommunication management and with operations, administration and management (OAM). In particular, this work plan will focus on activities involving two types of interfaces:

- for fault, configuration, accounting, performance and security management (FCAPS) interfaces between network elements and management systems, and between management systems; and
- for transmission interfaces between network elements.

In support of market-acceptable FCAPS interface solutions, Study Group 2 studies will identify service provider and network operator requirements and priorities for telecommunication management, continue the evolution of the telecommunication management framework currently based on telecommunication management network (TMN) and next-generation network (NGN) concepts, and address the management of NGN as well as the mixed circuit-switched and packet-switched network environment present during the transition to NGN.

Study Group 2 FCAPS interface solutions will specify reusable management information definitions via protocol-neutral techniques, continue management information modelling for the major telecommunication technologies, such as optical and IP-based networking, and extend management technology choices consistent with market needs, industry recognized value, and major, emerging technical directions.

To support the generation of such interface solutions, Study Group 2 will strengthen the collaborative relationships with standards development organizations (SDOs), forums, consortia and other experts as appropriate.

Additional studies will also cover network and service operational requirements and procedures, including support for network traffic management, support for the Service and Network Operations (SNO) group, and designations for interconnections among network operators.

Study Group 2 will hold meetings back-to-back with those of Study Group 3.

ITU-T Study Group 3

All study groups shall notify ITU-T Study Group 3 at the earliest opportunity of any development that may have an impact on tariff and accounting principles, including the related telecommunication economic and policy issues.

Study Group 3 will hold meetings back-to-back with those of Study Group 2.

ITU-T Study Group 5

ITU-T Study Group 5 will develop Recommendations, handbooks and other publications related to:

- protection of telecommunication networks and equipment from interference and lightning;
- electromagnetic compatibility (EMC); and
- safety and health effects connected with electromagnetic fields produced by telecommunication installations and devices.

Study Group 5 will also develop documents related to:

- study of methodologies for assessing the environmental impact of ICT, both in terms of its own emissions and the savings created through ICT applications in other industry sectors;
- creation of a framework for energy efficiency in the ICT field, taking account of WTSA Resolution 73 (Rev. Dubai, 2012);
- study of methodologies for power feeding that effectively reduce power consumption and resource usage;
- study of methodologies, such as recycling, that reduce environmental effects of ICT facilities and equipment;
- studies on how to use ICT to help countries and the ICT sector adapt to the effects of environmental challenges, including climate change.

Study Group 5 will also take care of the aspects related to the deployment of new services on existing copper networks, such as the co-existence of different services from different providers in the same cable and the positioning of components (e.g. xDSL filters) inside the central office main distribution frame, including also the need to provide performance requirements of new copper-pair cables designed to support a higher bandwidth.

This activity is strictly related to the continuation of studies on the local loop unbundling (LLU), with the scope to provide all the correct technical solutions needed to assure network integrity and interoperability, the easy use of equipment and access security in a context where operators can interact without affecting the quality of service defined by regulatory and administrative issues.

The meetings of Study Group 5 and its working parties/Questions should as far as practicable be collocated with other study groups/working parties/Questions involved in study of environment and climate change.

ITU-T Study Group 9

Within its general area of responsibility, ITU-T Study Group 9 will develop and maintain Recommendations on:

- the use of IP or other appropriate protocols and middleware to provide time-critical services, services on demand or interactive services over cable or hybrid networks, in cooperation with other study groups where necessary;
- procedures for the operation of television and sound-programme networks;
- television and sound-programme systems for contribution and distribution networks;
- transmission systems for television, sound programmes and interactive services, including Internet applications on networks intended primarily for television;
- the delivery of broadband audiovisual services over home networks.

Study Group 9 is responsible for coordination with ITU-R on broadcasting matters.

When meeting in Geneva, Study Group 9 will hold collocated meetings with Study Group 16, except when Study Group 9 holds collocated meetings with Study Group 12. The work of Study Group 9 on quality assessment will be coordinated with Study Group 12.

Joint rapporteur group activities of different study groups (under a global standards initiative (GSI) or other arrangements) shall be seen as complying with the WTSA expectations for collocation.

ITU-T Study Group 11

ITU-T Study Group 11 is responsible for studies relating to signalling requirements and protocols, including those for IP-based network technologies, next-generation networks (NGN), machine-to-machine (M2M) communication, Internet of things (IoT), future networks (FN), cloud computing, mobility, some multimedia-related signalling aspects, ad hoc networks (sensor networks, radio-frequency identification (RFID), etc.), quality of service (QoS), and inter-network signalling for legacy networks (e.g. ATM, N-ISDN and PSTN). In addition, it is responsible for studies relating to reference signalling architectures and test specifications for NGN and emerging network technologies (e.g. IoT, etc.).

In addition, Study Group 11 will develop Recommendations on the following subjects:

- network signalling and control functional architectures in emerging telecommunication environments (e.g. M2M, IoT, FN, cloud computing, etc.);

- application control and signalling requirements and protocols;
- session control and signalling requirements and protocols;
- bearer control and signalling requirements and protocols;
- resource control and signalling requirements and protocols;
- signalling and control requirements and protocols to support attachment in emerging telecommunication environments;
- reference signalling architectures;
- test specifications for emerging network technologies to assure interoperability;
- conformance, interoperability testing and service and network measurement benchmarking.

Study Group 11 is to lend assistance in the preparation of a handbook on the deployment of packet-based networks.

Study Group 11 is to reuse, where appropriate, protocols that are being developed by other SDOs, in order to maximize standards investments.

The development of requirements and protocols will be as follows:

- Study and develop signalling requirements.
- Study existing protocols to determine if they meet the requirements, and work with the relevant organizations for necessary enhancements or extensions.
- Develop protocols to meet requirements beyond the capabilities of existing protocols.
- Develop protocols to meet the requirements of new services and technologies.
- Develop protocol profiles for existing protocols.
- Develop specifications for interworking between any new signalling protocols and existing ones.

Study Group 11 is to work on enhancements to existing Recommendations on access and inter-network signalling protocols of BICC, ATM, N-ISDN and PSTN, i.e. Signalling System No. 7, DSS1 and DSS2, etc. The objective is to satisfy business needs of member organizations that wish to offer new features and services on top of networks based on existing Recommendations.

When meeting in Geneva, Study Group 11 will hold collocated meetings with Study Group 13.

Joint rapporteur group activities of different study groups (under a global standards initiative (GSI) or other arrangements) shall be seen as complying with the WTSA expectations for collocation.

ITU-T Study Group 12

A particular focus of ITU-T Study Group 12 is on the end-to-end quality (as perceived by the customer) delivered using a path that, with increasing frequency, involves complex interactions between terminals and network technologies (e.g. mobile terminals, multiplexers, gateway and network signal processing equipment, and IP-based networks).

As the lead study group for quality of service (QoS) and quality of experience (QoE), Study Group 12 coordinates QoS and QoE activities not only within ITU-T, but also with other SDOs and forums, and develops frameworks to improve collaboration.

Study Group 12 is the parent group for the Quality of Service Development Group (QSDG); and the Regional Group of Study Group 12 on QoS for the Africa region (SG12 RG-AFR).

Examples of the work Study Group 12 plans to undertake:

- end-to-end QoS planning, focusing on all-packet networks, but also considering hybrid IP/digital circuit-based paths;
- QoS operational aspects and related interworking guidance and resource management to support QoS;
- technology-specific (e.g. IP, Ethernet, MPLS) performance guidance;
- application-specific (e.g. smart grid, IoT, M2M, HN) performance guidance;
- definition of QoE requirements and performance targets, and associated evaluation methodologies, for multimedia services;
- subjective quality assessment methodologies for new technologies (e.g. telepresence);
- quality modelling (psychophysical models, parametric models, intrusive and non-intrusive methods, opinion models) for multimedia and speech (including wideband, superwideband and fullband);
- speech quality in motor vehicle environments, and aspects of driver distraction;
- speech terminal characteristics and electro-acoustic measurement methods (including wideband, superwideband and fullband).

The work of Study Group 9 on quality assessment will be coordinated with Study Group 12.

ITU-T Study Group 13

The key areas of competence of ITU-T Study Group 13 include:

- Future network (FN) aspects: Study of requirements, functional architectures and their capabilities, mechanisms and deployment models of FN, taking into account service awareness, data awareness, environmental awareness and socio-economic awareness. This study includes the development of relevant technologies such as virtualization, software-defined networking, reliability, quality of service (QoS) and security.
- Cloud-computing aspects: Study of the requirements, functional architectures and their capabilities, mechanisms and deployment models of cloud computing, covering inter- and intra-cloud computing. This study includes the development of technologies supporting “XaaS (X as a service)” such as virtualization, resource and service management, reliability and security.
- Mobile aspects: Studies relating to network aspects of mobile telecommunication networks, including International Mobile Telecommunications (IMT) and IMT-Advanced, wireless Internet, mobility management, mobile multimedia functions, internetworking, interoperability and

enhancements to existing ITU-T Recommendations on IMT. This study will incorporate harmonization with relevant standards that are developed in mobile-related standards development organizations.

- Next-generation network (NGN) evolution aspects: Based on emerging services/applications and related use cases, study of enhancements to NGN in terms of requirements for supporting capabilities, functional architecture and deployment models.
- Internet of things (IoT) aspects: Studies relating to network aspects of IoT. This will include studies to support IoT using various networks such as FN, mobile networks and NGN. This study will incorporate cloud computing in support of IoT.
- Content distribution network aspects: Study of the requirements, functions and mechanisms to support the distribution of content requested by end users. This will include capabilities to support content discovery/metadata, and content distribution. This study will incorporate broadcasting and other technologies of FN, including cloud-computing and mobile communication networks as well as NGN.
- Ad hoc network aspects: Study of the requirements, functions and mechanisms needed to support configuration of ad hoc networks used for identifying service discovery and activation, and context description/distribution, including peer-to-peer networking.
- Common functional aspects: Study of functions and relevant capabilities applicable to FN, including an identity and access management approach that supports value-added identity services, the secure exchange of identity information and the application of bridging/interoperability between a diverse set of identity information formats. Also to be studied are any identity management threats within the future networks and the mechanisms to counter them. In addition, Study Group 13 will study the protection of personally identifiable information (PII) in FN to ensure that only authorized PII is disseminated within FN.

This study will also cover regulatory implications, including telecommunications for disaster relief, emergency communications and lower energy consumption networks.

In order to assist countries with economies in transition, developing countries and especially the least developed countries in the application of IMT and related wireless technologies, consultations should be held with representatives of the ITU Telecommunication Development Sector with a view to identifying how this might best be done through an appropriate activity conducted in conjunction with ITU-D.

Study Group 13 shall maintain strong cooperative relations with external standards-development organizations (SDOs) and 3GPPs and develop a complementary programme. It shall proactively promote communications with external organizations to allow for normative referencing in ITU-T Recommendations of mobile-network specifications developed by those organizations.

When meeting in Geneva, Study Group 13 will hold collocated meetings with Study Group 11.

Joint rapporteur group activities of different study groups (under a global standards initiative (GSI) or other arrangements) shall be seen as complying with the WTSA expectations for collocation.

ITU-T Study Group 15

ITU-T Study Group 15 is the focal point in ITU-T for the development of standards on optical transport network and access network infrastructures, home networking, smart-grid transceiver technology, systems, equipment, optical fibres and cables, and their related installation, maintenance, test, instrumentation and measurement techniques, and control plane technologies to enable the evolution toward intelligent transport networks. This encompasses the development of related standards for the customer premises, access, metropolitan and long-haul sections of communication networks.

Within this framework, the study group will also handle the reliability and security aspects of the entire range of fibre and cable performance, field deployment and the integrity of installations. The activity on the construction of infrastructure will perform the investigation and standardization of new techniques to allow faster, more cost-effective and safer cable installation, also taking into account social issues such as the reduction of excavation, the problems caused to traffic and the generation of noise. Maintenance and physical infrastructure management will be also addressed, taking into account the advantages of emerging technologies, such as RFID and ubiquitous sensor networks.

Particular emphasis is given to global standards providing for a high-capacity (terabit) optical transport network (OTN) infrastructure, and for high-speed (multi-Mbit/s and Gbit/s) network access and home networking. This also includes related work on modelling for network, system and equipment management, transport network architectures and layer interworking. Special consideration is being given to the changing telecommunication environment towards IP-type networks as part of the evolving next-generation network (NGN).

Access network technologies addressed by the study group include passive optical network (PON), point-to-point optical, and copper-based digital subscriber line technologies, including ADSL, VDSL, HDSL and SHDSL. Home networking technologies include wired broadband, wired narrowband and wireless narrowband. Both access and home networking for smart-grid applications are supported.

Network, system and equipment features covered include routing, switching, interfaces, multiplexers, cross-connect, add/drop multiplexers, amplifiers, transceivers, repeaters, regenerators, multilayer network protection switching and restoration, operations, administration and maintenance (OAM), network synchronization, transport equipment management and control plane capabilities to enable evolution toward intelligent transport networks (e.g. automatically switched optical networks (ASON)). Many of these topics are addressed for various transport media and technologies, such as metallic and terrestrial/submarine optical fibre cables, dense and coarse wavelength division multiplexing (DWDM and CWDM) optical systems, OTN, Ethernet and other packet-based data services, synchronous digital hierarchy (SDH), asynchronous transfer mode (ATM) and plesiochronous digital hierarchy (PDH).

In its work, Study Group 15 will take into account related activities in other ITU study groups, standards-development organizations (SDOs), forums and consortia, and collaborate with them to avoid duplication of effort and identify any gaps in the development of global standards.

ITU-T Study Group 16

ITU-T Study Group 16 will work on the following items:

- development of a framework and roadmaps for the harmonized and coordinated development of multimedia telecommunication standardization over wired and wireless networks to provide guidance across all ITU-T and ITU-R study groups (in particular ITU-T Study Group 9 and ITU-R Study Group 6), and in close cooperation with other regional and international standards-development organizations (SDO) and industry forums; these studies will include mobility, IP and interactive broadcasting aspects; close cooperation between ITU-T and ITU-R is encouraged at all levels;
- development and maintenance of a database of existing and planned multimedia standards;
- development of multimedia end-to-end architectures, including home network environments (HNE) and vehicle gateway for intelligent transport system (ITS);
- operation of multimedia systems and applications, including interoperability, scalability and interworking over different networks;
- high-layer protocols and middleware for multimedia systems and applications, including Internet Protocol television (IPTV), ubiquitous sensor network (USN) and ID-triggered multimedia/multimode applications and services for next-generation networks (NGN) and beyond;
- media coding and signal processing;
- multimedia and multimode terminals;
- signal processing network equipment and terminals, gateway implementations, and characteristics;
- quality of service (QoS) and end-to-end performance in multimedia systems;
- security of multimedia systems and services;
- accessibility to multimedia systems and services for persons with disabilities;
- ubiquitous and Internet of things (IoT) applications;
- studies on appropriate character sets, especially for non-Latin scripts and languages.

When meeting in Geneva, Study Group 16 will hold collocated meetings with Study Group 9, except when Study Group 9 holds collocated meetings with Study Group 12.

Joint rapporteur group activities of different study groups (under a global standards initiative (GSI) or other arrangements) shall be seen as complying with the WTSA expectations for collocation.

ITU-T Study Group 17

ITU-T Study Group 17 is responsible for building confidence and security in the use of information and communication technologies (ICT). This includes studies relating to security, including cybersecurity, countering spam and identity management. It also includes security architecture and framework, security management, protection of personally identifiable information (PII), and security of applications and services for the Internet of things (IoT), smart grid, smartphone, Internet Protocol television (IPTV), web services, social network, cloud computing, mobile financial system and telebiometrics. Study Group 17 is also responsible for the application of open system communications, including directory and object identifiers, and for technical languages, the method for their usage and other issues related to the software aspects of telecommunication systems, and for conformance testing to improve quality of Recommendations.

In the area of security, Study Group 17 is responsible for developing the core Recommendations on ICT security, such as security architecture and frameworks; the fundamentals related to cybersecurity, including threats, vulnerabilities and risks, incident handling/response and digital forensics; security management, including management of PII; countering spam by technical means. In addition, Study Group 17 provides overall coordination of security work in ITU-T.

In addition, Study Group 17 is responsible for developing the core Recommendations on security aspects of applications and services in the areas of IPTV, smart grid, IoT, social network, cloud computing, smartphone, mobile financial system and telebiometrics.

Study Group 17 is also responsible for developing the core Recommendations on a generic identity management model that is independent of network technologies and supports the secure exchange of identity information between entities. This work also includes studying the process for discovery of authoritative sources of identity information; generic mechanisms for the bridging/interoperability of a diverse set of identity information formats; identity management threats, the mechanisms to counter them, the protection of PII and the development of mechanisms to ensure that access to PII is only authorized when appropriate.

In the area of open system communication, Study Group 17 is responsible for Recommendations in the following areas:

- directory services and systems, including public key infrastructure (PKI) (ITU-T F.500- and ITU-T X.500-series);
- object identifiers (OIDs) and associated registration authorities (ITU-T X.660/ITU-T X.670-series);
- open systems interconnection (OSI), including Abstract Syntax Notation One (ASN.1) (ITU-T F.400-, ITU-T X.200-, ITU-T X.400-, ITU-T X.600-, ITU-T X.800-series); and
- open distributed processing (ODP) (ITU-T X.900-series).

In the area of languages, Study Group 17 is responsible for studies on modelling, specification and description techniques. This work, which includes languages such as ASN.1, SDL, MSC and URN, will be developed in line with the requirements of and in cooperation with the relevant study groups such as Study Group 2, Study Group 9, Study Group 11, Study Group 13, Study Group 15 and Study Group 16.

ANNEX C
(to Resolution 2)

**List of Recommendations under the responsibility of the respective
ITU-T study groups and TSAG in the 2013-2016 study period**

ITU-T Study Group 2

ITU-T E-series, except those in conjunction with Study Group 17 or under the responsibility of Study Group 12

ITU-T F-series, except those under the responsibility of Study Groups 13, 16 and 17

Recommendations of the ITU-T I.220-, ITU-T I.230-, ITU-T I.240-, ITU-T I.250-series and ITU-T I.750-series

ITU-T G.850-series

ITU-T M-series

ITU-T O.220-series

ITU-T Q.513, ITU-T Q.800 – ITU-T Q.849, ITU-T Q.940-series

Maintenance of the ITU-T S-series

ITU-T V.51/ITU-T M.729

ITU-T X.160-, ITU-T X.170-, ITU-T X.700-series

ITU-T Z.300-series

ITU-T Study Group 3

ITU-T D-series

ITU-T Study Group 5

ITU-T K-series

ITU-T L.1 – ITU-T L.9, ITU-T L.18 – ITU-T L.24, ITU-T L.32, ITU-T L.33, ITU-T L.71, ITU-T L.75, ITU-T L.76, ITU-T L.1000-series

ITU-T Study Group 9

ITU-T J-series

ITU-T N-series

ITU-T P.900-series

ITU-T Study Group 11

ITU-T Q-series, except those under the responsibility of Study Groups 2, 13, 15 and 16

Maintenance of the ITU-T U-series

ITU-T X.600 – ITU-T X.609

ITU-T Z.160 – ITU-T Z.170-series

ITU-T Study Group 12

ITU-T E.420 – ITU-T E.479, ITU-T E.800 – ITU-T E.859

ITU-T G.100-series, except ITU-T G.160-, ITU-T G.180- and ITU-T G.190-series

ITU-T G.1000-series

ITU-T I.350-series (including ITU-T Y.1501/ITU-T G.820/ITU-T I.351), ITU-T I.371, ITU-T I.378, ITU-T I.381

ITU-T P-series, except ITU-T P.900-series

ITU-T Y.1220-, ITU-T Y.1530-, ITU-T Y.1540-, ITU-T Y.1560-series

ITU-T Study Group 13

ITU-T F.600-series

ITU-T G.801, ITU-T G.802, ITU-T G.860-series

ITU-T I-series, except those under the responsibility of Study Groups 2, 12 and 15, and those having double/triple numbering in other series

ITU-T Q.933, ITU-T Q.933*bis*, ITU-T Q.10xx-series and ITU-T Q.1700-series

ITU-T X.1 – ITU-T X.25, ITU-T X.28 – ITU-T X.49, ITU-T X.60 – ITU-T X.84, ITU-T X.90 – ITU-T X.159, ITU-T X.180 – ITU-T X.199, ITU-T X.272, ITU-T X.300-series

ITU-T Y-series, except those under the responsibility of Study Groups 12, 15 and 16

ITU-T Study Group 15

ITU-T G-series, except those under the responsibility of Study Groups 2, 12, 13 and 16

ITU-T I.326, ITU-T I.414, ITU-T I.430-series, ITU-T I.600-series and ITU-T I.700-series, except ITU-T I.750-series

ITU-T L-series, except those under the responsibility of Study Group 5

ITU-T O-series (including ITU-T O.41/ITU-T P.53), except those under the responsibility of Study Group 2

ITU-T Q.49/ITU-T O.22 and ITU-T Q.500-series, except ITU-T Q.513 (see Study Group 2)

Maintenance of the ITU-T R-series

ITU-T X.50-series, ITU-T X.85/ITU-T Y.1321, ITU-T X.86/ITU-T Y.1323, ITU-T X.87/ITU-T Y.1324

ITU-T V.38, ITU-T V.55/ITU-T O.71, ITU-T V.300

ITU-T Y.1300 – ITU-T Y.1309, ITU-T Y.1320 – ITU-T Y.1399, ITU-T Y.1501, and ITU-T Y.1700-series

ITU-T Study Group 16

ITU-T F.700-series

ITU-T G.160-series, ITU-T G.190-series, ITU-T G.710 – ITU-T G.729 (except ITU-T G.712), ITU-T G.760-series (including ITU-T G.769/ITU-T Y.1242), ITU-T G.776.1, ITU-T G.799.1/ITU-T Y.1451.1, ITU-T G.799.2, ITU-T G.799.3

ITU-T H-series

ITU-T T-series

ITU-T Q.50-series, ITU-T Q.115-series

ITU-T V-series, except those under the responsibility of Study Groups 2 and 15

ITU-T X.26/ITU-T V.10 and ITU-T X.27/ITU-T V.11

ITU-T Study Group 17

ITU-T E.104, ITU-T E.115, ITU-T E.409 (in conjunction with Study Group 2)

ITU-T F.400-series; ITU-T F.500 – ITU-T F.549

ITU-T X-series, except those under the responsibility of Study Groups 2, 11, 13, 15, and 16

ITU-T Z-series, except ITU-T Z.160 – ITU-T Z.170 series and ITU-T Z.300-series

TSAG

ITU-T A-series Recommendations