**Appendix 1 ‒ ITU-D Questions vis-à-vis ITU-T work items**

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| **ITU-D SG1**  [Question 1/1](https://www.itu.int/md/D14-WTDC17-C-0115/): Strategies and policies for the deployment of broadband in developing countries | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG2](https://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/default.aspx) | [Q1/2](http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q1.aspx): Application of numbering, naming, addressing and identification plans for fixed and mobile telecommunications services | [E.A-ENUM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13948) Principles and procedures for the administration of E.164 country codes for registration into the Domain Name System; |
| [Q5/2](http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q5.aspx): Requirements, priorities and planning for telecommunication management and operation, administration and maintenance (OAM) Recommendations | [M.rtsmf](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14848) Requirements for telecommunications smart maintenance management function;  [M.rmacbe](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15023) Requirements for management of applications over cloud and broadband ecosystems |
| [Q6/2](http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q6.aspx): Management architecture and security | [M.3040 (ex M.tsm)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14471) Principles for on-site telecommunication smart maintenance;  [M.somm (ex M.inomsa)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14196) Functional architecture of smart operation, management and maintenance |
| [SG3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/default.aspx) | [Q1/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q1.aspx): Development of charging and accounting/settlement mechanisms for international telecommunications services using the next-generation networks (NGNs), future networks, and any possible future development, including adaptation of existing D-series Recommendations to the evolving user needs | [D.Framework](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13509) Framework for ICT service delivery with the guaranteed QoS and requested bitrate on fixed & mobile data networks, for development of efficient economic mechanisms and models of interaction in the "operator-provider-user" chain |
| [Q3/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q3.aspx): Study of economic and policy factors relevant to the efficient provision of international telecommunication services | [D.Classification](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13520) Classification of telecommunications services in data networks;  [D.GVR](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13505) Towards better governance of telecommunication regulation;  [D.IoTpolicy](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14122) Guidelines on Tariff and regulatory aspects of Internet of Things (IoT);  [D.Licensing](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13518) Mechanisms for pricing of licenses for mobile/broadband/fixed;  [D.SpectrumShare](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13519) Shared use of spectrum and infrastructure;  [Study\_EPQoS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14611) Study of economic and policy factors relevant to the efficient provision of international telecommunication services |
| [Q6/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q6.aspx) : International Internet connectivity including relevant aspects of Internet protocol (IP) peering, regional traffic exchange points, cost of provision of services and impact of transition from Internet protocol version 4 (IPv4) to Internet protocol version 6 (IPv6) | [D. BGPE](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14114) Proposed new recommendation on International Internet Connectivity;  [D.CompIIC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14115) Draft Recommendation ITU-T D.XX on Framework for the Competitive Provision of International Internet Connectivity (IIC);  [STUDY\_IIC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13499) International Internet Connectivity, including IP peering, Regional Traffic Exchange Points, and cost of provision of services;  [STUDY\_IPV6](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13498) Economic impact of transition from IPv4 to IPv6 |
| [Q10/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q10.aspx): Definition of relevant markets, competition policy and identification of operators with significant market power (SMP) as it relates to the economic aspects of the international telecommunication services and networks | [D.CrossBorderSMP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13523) Quantifying cross-border market power |
| [Q13/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q13.aspx) : Study of Tariff, Charging Issues of Settlements Agreement of Trans-multi-country Terrestrial Telecommunication Cables | [D. ModelTTC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14609) Model of trans-multi-country terrestrial cable resource sharing |
| [SG5](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/default.aspx) | [Q6/5](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/q6.aspx): Achieving energy efficiency and smart energy | [L.5G\_powering](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14152) Sustainable power feeding solutions for 5G network;  [L.EE\_5G](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13933) Energy efficiency Metrics and measurement methodology for 5G base station;  [L.EE\_slicing](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14534) Energy efficiency and Slicing of IMT2020/5G;  [L.ENV-KPI-5G-ARCH](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14533) Environmental KPIs/metrics for 5G architectures;  [L.SE\_BS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14154) Smart energy solution for telecom base stations;  [LSTR.5GEE](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14151) Study on methods and metrics to evaluate energy efficiency for future 5G systems (Completed in 2017);  [Suppl. RBSbest prac](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13916) Supplement to L.RBS Radio base station site best practices |
| [SG9](https://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/default.aspx) | [Q1/9](https://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q1.aspx): Transmission and delivery control of television and sound programme signal for contribution, primary distribution and secondary distribution | [J.5GDOCSIS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14918) Fifth-generation transmission systems for interactive cable television services - IP cable modems |
| [Q5/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q5.aspx): Software components application programming interfaces (APIs), frameworks and overall software architecture for advanced content distribution services within the scope of Study Group 9 | [J.207rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14925) Specification for an integrated broadcast and broadband digital television application control framework;  [J.acf-hrm](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13722) Harmonization of Integrated Broadcast-Broadband DTV application control framework |
| [Q8/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q8.aspx): The Internet protocol (IP) enabled multimedia applications and services for cable television networks enabled by converged platforms | [J.qamip-req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14032) Requirements on QAM to IP Conversion for IP Multi-Room/House Services |
| [SG11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/default.aspx) | [Q1/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q1.aspx): Signalling and protocol architectures in emerging telecommunication environments and guidelines for implementations | [Q.DEN\_IMS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14447): Signalling architecture of distributed ENUM networking for IMS;  [Q.3054 (ex Q.VCNSA)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14050) Signalling architecture for virtualization of control network entities;  [Q.NGNe-O-SA](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14903) The signalling architecture of orchestration in NGNe |
| [Q2/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q2.aspx): Signalling requirements and protocols for services and applications in emerging telecommunication environments | [Q.3642 (ex Q.Interop\_IMS\_Rel\_12)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14728) IMS references to Release 12 for communication between IMS and NGN networks to support end-to-end service interoperability;  [Q.Pro-DES](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15045) Protocol at interface between two distributed ENUM servers for IMS;  [Q.VoLTE-SAO-req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14449) Requirements for signalling network analyses and optimization in VoLTE |
| [Q4/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q4.aspx): Protocols for control, management and orchestration of network resources | [Q.SMO](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13823) Signalling requirements of Software-defined Metro Orchestration; [Q.SCC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14273) Signalling requirements and information model of Cooperative Controller;  [Q.SD-DCI](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14613) Signalling requirements and information model of SD-DCI service;  [Q.SD-WAN](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14054) Signalling Requirement for SD-WAN service;  [Q.telemetry-VBNS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15046) Signalling requirements for telemetry of virtual broadband network services |
| [Q5/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q5.aspx): Protocols and procedures supporting services provided by broadband network gateways | [Q.BNG-CFS](https://www.itu.int/md/T17-SG11-180718-TD-GEN-0503) Signalling requirements for control and forwarding plane separation in vBNG;  [Q.BNG-PAC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14731) Procedures for vBNG acceleration with programmable acceleration card |
| [Q6/11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q6.aspx): Protocols supporting control and management technologies for IMT-2020 | [Q.CE-APIMP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14462) Protocol for managing capability exposure APIs in IMT-2020 network;  [Q.5020 (ex Q.NS-LCMP)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14274) Protocol and procedures for network slice lifecycle management;  [Q.D2D-EECP](https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=2623https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14463) Energy efficient D2D communication protocol for IMT 2020 network;  [Q.IMT2020-PFW](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14733) Protocol Framework for IMT-2020 |
| [Q7/11](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4142): Signalling requirements and protocols for network attachment including mobility and resource management for future networks and IMT-2020 | [Q.MEA-SRA](https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=2623https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14275) Signalling requirement and architecture for media service entity attachment;  [Q.QMP-TCA](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14464) QoS management protocol for time constraint applications over SDN |
| [Q8/11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q8.aspx): Protocols supporting distributed content networking and information centric network (ICN) for future networks and IMT-2020, including end-to-end multi-party communications | [X.mp2p-srds](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14901) Managed P2P communications: Content distribution signalling requirements;  [X.mp2p-ldmp](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14902) Managed P2P communications: Content distribution peer protocol;  [X.mp2p-ocmp](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14900) Managed P2P communications: Overlay content management protocol;  [X.609.5 Amd.1](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14735) Managed peer-to-peer communications: Overlay management protocol for content distribution |
| [Q9/11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q9.aspx): Service and networks benchmark testing, remote testing including Internet performance measurements | [Q.3961 (ex Q.TM\_Int\_sp\_test)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13819) Testing methodologies of Internet related performance measurements including e2e bit rate within the fixed and mobile operator's networks |
| [Q10/11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q10.aspx): Testing of emerging IMT-2020 technologies | [Guideline-TEST\_UE/MS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14736) Guideline for general test procedure and specification for measurements of the LTE, 3G/2G user Equipment/mobile stations (UE/MS);  [Q.4061 (ex Q.SDN-CT)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14466) Framework of SDN controller testing;  [Q.SDN-OFT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14737) The compatibility testing of SDN-based equipment using OpenFlow protocol; |
| [Q14/11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q14.aspx): Cloud interoperability testing | [Q.vbng-iop-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14739) Interoperability testing requirements of virtual Broadband Network Gateway |
| [SG12](https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx)  [QSDG](https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/QSDG.aspx) | [Q2/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q2.aspx): Definitions, guides and frameworks related to quality of service/quality of experience (QoS/QoE) | [G.IMT2020](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13799) QoS Framework for IMT 2020;  [HB-Guireg](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14120) Handbook providing guidance to regulators;  [HB-QoS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14119) Handbook on Quality of Service (QoS);  [TR-BAC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14678) TR on Broadband Access Concept; |
| [Q11/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q11.aspx): Performance considerations for interconnected networks | [G.ACP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14041) Guidelines regarding the minimum QoS and QoE threshold to be fulfilled during the use of alternative calling procedures;  [G.1028](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14955) End-to-end QoS for Voice Telephony over 4G mobile networks |
| [Q12/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q12.aspx): Operational aspects of telecommunication network service quality | [E.MTSM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14360) Measurement scenarios, advanced measurement systems and sampling methodologies to monitor the QoS in mobile networks;  [E.QSIMBox](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14355) The effect of SIM-boxing on QoS and QoE;  [E.RQUAL](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14043) Strategies to Establish Quality Measurement Frameworks;  [G.CSFB](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14359) Assessment of the LTE circuit switched fall back - impact on QoE and QoS |
| [Q13/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q13.aspx): QoE, QoS and performance requirements and assessment methods for multimedia) | [G.NCP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14361) QoE-based network capacity planning;  [G.QoE-5G](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14680) QoE factors for new services in 5G networks |
| [Q16/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q16.aspx): Framework for diagnostic functions | [E.FINAD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14037) Framework for Intelligent Network Analytics and Diagnostics |
| [Q17/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q17.aspxhttp:/www.itu.int/en/ITU-T/studygroups/2013-2016/12/Pages/q17.aspx): Performance of packet-based networks and other networking technologies | [Y.1540 Appendix & Annex A](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14397) IP Packet Transfer and Availability Performance Parameters |
| [Q19/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q19.aspx): Objective and subjective methods for evaluating perceptual audiovisual quality in multimedia services | [P.913-rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14938) Methods for the subjective assessment of video quality, audio quality and audiovisual quality of Internet video and distribution quality television in any environment |
| [SG13](https://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/default.aspx) | [Q1/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q1.aspx): Innovative services scenarios, deployment models and migration issues based on Future Networks | [Handbook on IMT-2000 (2nd Edition)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13599) The Handbook of evolving IMT-2000 Systems |
| [Q2/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q2.aspx): Next-generation network (NGN) evolution with innovative technologies including software-defined networking (SDN) and network function virtualization (NFV) | [Technical Report on Network 2030](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14616) Network 2030 - beyond IMT-2020;  [Y.NGNe-BC-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14282) Scenarios and capability requirements of blockchain in next generation network evolution;  [Y.NGNe-O-arch](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14617) Functional architecture of orchestration in NGNe;  [Y.NGN-PLA-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14475) Scenarios and Capability Requirements of Programmable Log Analysis in Next Generation Networks |
| [Q5/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q5.aspx): Applying networks of future and innovation in developing countries | [Supp-Y.IMT2020-Awareness-UC&Migration](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14748) Trustworthy networking deployment architecture, mechanism, and procedure |
| [Q6/13](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4172): Quality of service (QoS) aspects including IMT-2020 networks | [Y.3106 (ex Y.IMT2020-qos-req)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14740) QoS requirements for IMT-2020 network;  [Y.IMT2020-qos-fa](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14618) QoS functional architecture for the IMT-2020 networks;  [Y.IMT-2020.qos-mon](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14091) IMT-2020 network QoS monitoring architectural framework;  [Y.qos-ml-arc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15013) Architecture of machine learning based QoS assurance for the IMT-2020 network |
| [Q7/13](https://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q7.aspx): Big data driven networking (bDDN) and Deep packet inspection (DPI) | [Y.bDDN-FunArch](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14620) Functional architecture of big data driven networking;  [Y.bDDN-req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13637) Requirement of big data-driven networking  [Y.2774 (ex Y.DpiReqFn)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13625) Functional requirements of deep packet inspection for future networks;  [Y.Dpi-ArchFN (ex Y.DpiArchFn)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13624) Functional architecture of deep packet inspection for future networks |
| [Q20/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q20.aspx): IMT-2020: Network requirements and functional architecture | [Y.IMT2020-ESDP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14917) Enhanced SDN Data Plane for IMT-2020;  [Y.IMT2020-CEF](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14065) Network Capability Exposure Function in the IMT-2020 networks |
| [Q21/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q21.aspx): Network softwarization including software-defined networking, network slicing and orchestration | [Y.3152 (ex Y.IMT2020-ADPP)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14476) Advanced Data Plane Programmability for IMT-2020;  [Y.NetSoft-SSMO](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14914) Scalable service management and orchestration framework in IMT-2020;  [Y.NSOM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13639) Network slicing orchestration and management |
| [Q22/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q22.aspx): Upcoming network technologies for IMT-2020 and Future Networks | [Y.3072 (ex Y.ICN-ReqN)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14479) Requirements and Capabilities of Name Mapping and Resolution for Information Centric Networking in IMT-2020;  [Y.ICN-TL](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14915) Requirements and Capabilities of Transport Layer for ICN in IMT-2020 |
| [Q23/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q23.aspx): Fixed-Mobile Convergence including IMT-2020 | [Y.3130 (ex Y.FMC-REQ)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13643) Requirements of IMT-2020 fixed mobile convergence;  [Y.FMC-MM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14284) Mobility management for fixed mobile convergence in IMT-2020 networks;  [Y.FMC-ReqMO](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14285) IMT-2020 FMC functional requirements for management and orchestration;  [Y.Suppl.MM-SDN (ex Y.Sup.MMsdn-usecase)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13653) Supplement on use cases of mobility management over SDN;  [Y.FMC-EC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14742) Unified edge computing for supporting fixed mobile convergence in IMT-2020 networks;  [Y.FMC-ARCH](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14090) Functional architecture for supporting fixed mobile convergence in IMT-2020 networks;  [Y.FMC-SM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14743) Session management for fixed mobile convergence in IMT-2020 networks |
| [SG15](https://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/default.aspx) | [Q2/15](https://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/q2.aspx): Optical systems for fibre access networks | [G.9806](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14546) Higher speed bidirectional single-fibre point to point optical access systems;  [G.hsp.50Gpmd](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14550) Higher Speed Passive Optical Networks: 50G PMD;  [G.hsp.comTC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14549) Higher Speed Passive Optical Networks: Common Transmission Convergence layer;  [G.hsp.req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14548) Higher Speed Passive Optical Networks: Requirements;  [G.hsp.TWDMpmd](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14551) Higher Speed Passive Optical Networks: TWDM PMD; |
| [Q4/15](http://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/q4.aspx): Broadband access over metallic conductors | [G.mgfast-PHY (ex G.mgfast)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14267) Multi-Gigabit fast access to subscriber terminals (MGfast) – PHY;  [G.mgfast-PSD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14552) Multi-Gigabit fast access to subscriber terminals (MGfast) - PSD |
| [Q8/15](http://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/q8.aspx): Characteristics of optical fibre submarine cable systems | [G.971](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14221) General features of optical submarine cable systems |
| [Q11/15](http://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/q11.aspx): Signal structures, interfaces, equipment functions, and interworking for optical transport networks | [G.ctn5g](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14633) Characteristics of transport networks to support IMT-2020/5G;  [GSup.5gotn](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14632) Application of OTN to 5G Transport;  [G.709.25-50](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14974) 25G and 50G OTN interfaces |
| [Q12/15](http://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/q12.aspx): Transport network architectures | [G.7702 Amd.1](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14998) Architecture for SDN control of transport networks |
| [Q13/15](http://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/q13.aspx): Network synchronization and time distribution performance | [G.8260 Amd.3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15053) Definitions and terminology for synchronization in packet networks: Amendment 2;  [G.8261](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14414) Timing and synchronization aspects in packet networks |
| [Q18/15](https://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/q18.aspx): Broadband in-premises networking | [G.hn2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14270) Evolution of unified high-speed wire-line based home networking transceivers |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q11/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q11.aspx): Multimedia systems, terminals, gateways and data conferencing | [H.225.0 V8](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13259) Call signalling protocols and media stream packetization for packet-based multimedia communication systems;  [H.235.10 (ex H.235.DTLS)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13287) H.323 security: Support of DTLS for media streams; |
| [Q13/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q13.aspx): Multimedia application platforms and end systems for IPTV | [H.721 (V3)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13317) IPTV terminal devices: Basic model;  [H.722 (V2)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13328) IPTV terminal device: full-fledged model;  [H.IPTV-AM.2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13235) IPTV application event handling: Audience measurement for IPTV interactive services;  [HSTP.IPTV-GUIDE.1](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13319) IPTV service deployment scenarios in high-speed broadband era |
| [Q21/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q21.aspx): Multimedia framework, applications and services | [F.CDN-P2P](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14761) Requirements for the content delivery networks based on P2P technology |
| [SG17](https://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/default.aspx) | [Q2/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q2.aspx): Security architecture and framework | [X.1043 (ex X.sdnsec-3)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14110) Security framework and requirements for service function chaining based on software-defined networking;  [X.SDSec](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14558) Guideline on Software-defined Security in SDN (Software-defined Networking)/NFV (Network Function Virtualization) Network;  [X.srnv](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14379) Security Requirements of Network Virtualization; |
| [Q6/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q6.aspx): Security aspects of telecommunication services, networks and Internet of Things | [X.5Gsec-t](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14786) Security framework based on trust relationship in 5G ecosystem;  [X.5Gsec-ecs](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15005) Security Framework for 5G Edge Computing Services;  [X.5Gsec-guide](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15006) Security guideline for 5G communication system based on ITU-T X.805 |
| [SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) | [Q2/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q2.aspx): Requirements, capabilities, and use cases across verticals | [Y.IoT-NCM-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14106) Requirements and capabilities of network connectivity management in the Internet of Things |
| [Q3/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q3.aspx): Architectures, management, protocols and Quality of Service | [Y.Sup.IPv6-IoT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13695) IPv6 Potential for the Internet of Things and Smart Cities;  [Y.IPv6RefModel](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13693) Reference model of IPv6 subnet addressing plan for Internet of things deployment; |
| [Q6/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q6.aspx): Security, privacy, trust and identification | [Y.FW.IC.MDSC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14299) Framework of identification and connectivity of moving devices in smart city |
| **ITU-D SG1**  [Question 2/1](https://www.itu.int/md/D14-WTDC17-C-0115/): Strategies, policies, regulations and methods of migration and adoption of digital broadcasting and implementation of new services | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG9](https://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/default.aspx) | [Q1/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q1.aspx): Transmission and delivery control of television and sound programme signal for contribution, primary distribution and secondary distribution | [J.5GDOCSIS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14918) Fifth-generation transmission systems for interactive cable television services - IP cable modems;  [J.MHAv2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14919) Second-generation Modular Headend Architecture in systems for interactive cable television services - IP cable modems |
| [Q2/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q2.aspx): Methods and practices for conditional access, protection against unauthorized copying and against unauthorized redistribution (‘redistribution control” for digital cable television distribution to the home) | [J.oneway-dcas-part1](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14507) Downloadable Conditional Access System for Unidirectional Network; Requirements;  [J.oneway-dcas-part2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14933) Downloadable Conditional Access System for Unidirectional Network; System Architecture;  [J.oneway-dcas-part3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14934) Downloadable Conditional Access System for Unidirectional Network; Terminal System |
| [Q4/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q4.aspx): Guidelines for implementations and deployment of transmission of multichannel digital television signals over optical access networks | [J.dtc-distribution-req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14182) Television Content Distribution Platforms: Requirements for Open Access and Signal Quality;  [Sup-digTV](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13717) Installing a digital TV service for cable networks and relating Recommendations |
| [Q5/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q5.aspx): Software components application programming interfaces (APIs), frameworks and overall software architecture for advanced content distribution services within the scope of Study Group 9 | [J.207rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14925) Specification for an integrated broadcast and broadband digital television application control framework;  [J.acf-hrm](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13722) Harmonization of Integrated Broadcast-Broadband DTV application control framework;  [J.stvos-hal](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14924) he HAL API of smart TV operating system;  [J.stvos-spec-arch](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14508) The Architecture of Smart TV Operating System;  [J.stvos-sec](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14923) The security of smart TV operating system |
| [Q6/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q6.aspx): Functional requirements for residential gateway and set-top box for the reception of advanced content distribution services | [J.298 (ex J.stb-cts)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14185) Requirements and technical specifications of cable TV hybrid set-top box that has the compatibility with terrestrial and satellite TV transport;  [J.pcnp-smgw](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14926) Functional requirements for Smart Home Gateway |
| [Q7/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q7.aspx): Cable television delivery of digital services and applications that use Internet protocol (IP) and/or packet-based data over cable networks | [J.ipvb-req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14929) Requirements of IP Video Broadcast (IPVB) for CATV Networks;  [TP.ipvb-acc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14999) Analysis of the cost and complexity of IPVB technology |
| [Q8/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q8.aspx): The Internet protocol (IP) enabled multimedia applications and services for cable television networks enabled by converged platforms | [J.qamip-req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14032) Requirements on QAM to IP Conversion for IP Multi-Room/House Services |
| [Q9/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q9.aspx): Requirements, methods, and interfaces of the advanced service platforms to enhance the delivery of sound, television, and other multimedia interactive services over cable television network | [J.cable-ott](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14931) System architecture and interfaces between a cable television operator and an OTT service provider;  [TP.b-catv](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14932) Broadband CATV system using server-side reception and processing;  [J.pcnp-fmw](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14930) Premium Cable network platform with embedded intelligent analyzer and controller for enabling advanced multimedia services |
| [SG12](https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx) | [Q2/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q2.aspx): Definitions, guides and frameworks related to QoS/QoE | [P.10/G.100](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14118) Vocabulary for performance, quality of service and quality of experience |
| [Q7/12](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4158): Methods, tools and test plans for the subjective assessment of speech, audio and audiovisual quality interactions | [P.VQD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14952) Dimension-based Subjective Quality Evaluation for Video Content |
| [Q13/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q13.aspx): QoE, QoS and performance requirements and assessment methods for multimedia | [G.IPTV-MP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13806) IPTV monitoring parameters;  [P.360-VR (ex G.VR-360)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14417) Subjective test methodologies for 360 degree video on HMD |
| [Q14/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q14.aspx): Development of models & tools for multimedia quality assessment of packet-based video | [P.NAMS-ph2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14035) Parametric Non-intrusive Bitstream Assessment for High Efficiency Video Coding (HEVC) and 4K Media Streaming Quality over UDP |
| [Q18/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q18.aspx): Measurement and control of the end-to-end QoS for advanced TV technologies, from image acquisition to rendering, in contribution, primary distribution and secondary distribution networks | [J.q-uhd](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13719) Quality measurement methods for UHD services;  [J.vqm-hevc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13718) Objective perceptual video quality measurement methods for H.265 |
| [Q19/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q19.aspx): Objective and subjective methods for evaluating perceptual audiovisual quality in multimedia services | [J.op-tr](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13720) Methods for Optimizing Bitrates and Transmission Resolution by Considering Display Characteristics and Available Bandwidth;  [P.911rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13721) Subjective audiovisual quality assessment methods for multimedia applications;  [J.343-rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13724) Hybrid perceptual/bitstream models for objective video quality measurements;  [P.913-rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14938) Methods for the subjective assessment of video quality, audio quality and audiovisual quality of Internet video and distribution quality television in any environment |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q8/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q8.aspx): Immersive live experience systems and services | [H.ILE-MMT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14190) Service configuration, media transport protocols, signalling information of MMT for Immersive Live Experience systems |
| [Q13/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q13.aspx): Multimedia application platforms and end systems for IPTV | [H.IPTV-AM.2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13235) IPTV application event handling: Audience measurement for IPTV interactive services;  [H.IPTV-PS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14755) Application event handling: Overall aspects of personalized IPTV service;  [HSTP.IPTV-GUIDE.2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14423) IPTV service parameters for new IPTV service providers;  [H.721 (V3)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13317) IPTV terminal devices: Basic model;  [H.722 (V2)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13328) IPTV terminal devices: full-fledged model;  [H.IPTV-MDS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13257) IPTV Multiple Devices Service;  [H.761 (V4)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14049) Nested context language (NCL) and Ginga-NCL;  [HSTP.IPTV-HRM.2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13238) Harmonization of MAFR series with multiple content sources. |
| [Q21/16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q21.aspx): Multimedia framework, applications and services | [F.CDN-Reqs](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14069) Use-cases and requirements for multimedia CDN;  [H.MCDN](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14764) Functional architecture of multimedia content delivery network  [H.OIMSArch](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14699) Architecture for on-demand service based on interactive multimedia streaming |
| [Q26/16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q26.aspx): Accessibility to multimedia systems and services | [H.702](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14772) Accessibility Profiles for IPTV Systems;  [F.703](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13300) Multimedia conversational services;  [HSTP-ACC-UC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13269) Multimedia accessible system use cases |
| [SG17](https://www.itu.int/en/ITU-T/studygroups/2017-2020/17) | [Q6/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q6.aspx): Security aspects of telecommunication services, networks and Internet of Things | [X.1197Amd.1](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15016) Amendment 1 to Recommendation X.1197, Revised guidelines on criteria for selecting cryptographic algorithms for IPTV service and content protection |
| **ITU-D SG1**  [Question 3/1](https://www.itu.int/md/D14-WTDC17-C-0115/): Emerging technologies, including cloud computing: m-services, and OTTs: Challenges and opportunities, economic and policy impact for developing countries | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG2](https://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/default.aspx) | [Q1/2](http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q1.aspx): Application of numbering, naming, addressing and identification plans for fixed and mobile telecommunications services | [TR.OTTnum](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15041) Current use of E.164 numbers as identifiers for OTTs |
| [Q5/2](https://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q5.aspx): Requirements, priorities and planning for telecommunication management and operation, administration and maintenance (OAM) Recommendations | [M.rcsnsm](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15022) Requirements for synergy management of cloud and SDN-based network;  [M.rmacbe](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15023) Requirements for management of applications over cloud and broadband ecosystems; |
| [SG3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/default.aspx)  [FG DFS](https://www.itu.int/en/ITU-T/focusgroups/dfs/Pages/default.aspx) | [Q9/3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q9.aspx)**:** Economic and regulatory impact of the Internet, convergence (services or infrastructure) and new services, such as over the top (OTT), on international telecommunication services and networks | [D.50Supp\_OTT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13500) OTTs in the context of IIC;  [D.262 (ex D.OTT)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13503) Collaborative Framework for OTTs;  [D.OTTBypass](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13522) OTT Bypass;  [D.OTTMNO](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13521) Guidelines on OTT-MNO Partnerships;  [STUDY\_Convergence](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14124) Study on the economic impact of convergence of technology and services and the role of the Regulator |
| [Q12/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q12.aspx): Tariffs, Economic and Policy Issues Pertaining to Mobile Financial Services (MFS) | [D.263 (ex D.MFS)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14132) Competition in Mobile Financial Services;  [D.AgentMFS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14128) Guidelines for Mobile Financial Service Agents;  [D.EMoneyMFS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14130) Guidelines for e-money issuers;  [D.MFSCM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14133) Mobile Financial Services Transaction Cost Model;  [D.MFScoop](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14606) Guidelines for MOU between telecommunications regulators and central banks taking into account the Zambian experience and existing MOU |
| [SG9](https://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/default.aspx) | [Q8/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q8.aspx): The Internet protocol (IP) enabled multimedia applications and services for cable television networks enabled by converged platforms | [J.qamip-req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14032) Requirements on QAM to IP Conversion for IP Multi-Room/House Services |
| [Q9/9](https://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q9.aspx): Requirements, methods, and interfaces of the advanced service platforms to enhance the delivery of sound, television, and other multimedia interactive services over cable television network | [J.cable-ott](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14931) System architecture and interfaces between a cable television operator and an OTT service provide |
| [SG11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/default.aspx) | [Q14/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/14/Pages/q11.aspx): Cloud interoperability testing | [Q.vs-iop-reqts](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14605): Interoperability testing requirements of virtual switch;  [Q.wa-iop](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=13839): Cloud Interoperability testing about Web Application |
| [SG12](https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx) | [Q13/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q13.aspx): QoE, QoS and performance requirements and assessment methods for multimedia | [G.DFS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14364) QoS and QoE Aspects of Digital Financial Services |
| [SG13](https://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/default.aspx) | [Q17/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q17.aspx): Requirements, ecosystem, and general capabilities for cloud computing and big data | [Y.BaaS-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14485) Cloud computing - Functional requirements for blockchain as a service;  [Y.bdi-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14074) Big Data - Overview and functional requirements for data integration;  [Y.bdm-sch](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14075) Big data - Metadata framework and conceptual model;  [Y.cccm-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13641) Cloud Computing - Requirements for Containers and Micro-services;  [Y.ccdc-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13649) Distributed cloud overview and high-level requirements;  [Y.ccpm-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13652) Cloud computing - Functional requirements of physical machine;  [Y.MLaaS-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14484) Cloud computing - Functional requirements for machine learning as a service; |
| [Q18/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q18.aspx): Functional architecture for cloud computing and big data | [Y.dsf-arch](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14623) Cloud computing - Functional architecture for data storage federation |
| [Q19/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q19.aspx): End-to-end Cloud computing management, cloud security and big data governance | [Y.ccm-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14486) Cloud computing maturity requirements and framework;  [Y.cccsdaom-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14746) Cloud computing - Requirements for cloud service development and operation management;  [Y.cslm-metadata](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14077) Metadata framework for cloud service lifecycle management;  [Y.e2efapm](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14745) Cloud Computing - End-to-end fault and performance management framework of virtual network services in inter-cloud |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q6/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q6.aspx): Visual coding | [H.264 (V13)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14870) Advanced video coding for generic audiovisual services;  [H.265 (V6)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14871) High efficiency video coding |
| [Q11/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q11.aspx): Multimedia systems, terminals, gateways and data conferencing | [H.225.0 V8](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13259) Call signalling protocols and media stream packetization for packet-based multimedia communication systems;  [H.235.10 (ex H.235.DTLS)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13287) H.323 security: Support of DTLS for media streams; |
| [Q21/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q21.aspx): Multimedia framework, applications and services | [F.CCVSReqs](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14413) Requirements for cloud computing in visual surveillance;  [F.VSBD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14073) Requirements for big data application in visual surveillance system;  [H.626.2 (ex H.CSVS-Arch)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13306) Architecture for cloud storage in visual surveillance;  [H.VSCC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14070) Architecture for cloud computing in visual surveillance |
| [SG17](https://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/default.aspx) | [Q7/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q7.aspx): Secure application services | [X.sfop](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14389) Security framework of open platform for FinTech services |
| [Q8/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q8.aspx): Cloud computing security | [X.GSBDaaS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13591) Guidelines on security of Big Data as a Service;  [X.sgBDIP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14567) Security Guidelines for Big Data infrastructure and platform;  [X.sgcc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14788) Security guidelines for container in cloud computing environment;  [X.sgdc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15008) Security guidelines for distributed cloud;  [X.sgtBD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14390) Security guidelines of lifecycle management for telecom Big Data;  [X.SRIaaS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13578) Security requirements of public infrastructure as a service (IaaS) in cloud computing;  [X.sr-cphr](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15009) Security requirements of cloud-based platform under low latency and high reliability application scenarios;  [X.SRNaaS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13590) Security requirements of Network as a Service (NaaS) in cloud computing |
| [Q13/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q13.aspx): Security aspects for Intelligent Transport System | [X.edrsec](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14818) Security guidelines for cloud-based event data recorders in automotive environment |
| [Q14/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q14.aspx): Security aspects for Distributed Ledger Technologies | [X.das-mgt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14589) Security framework for data access and sharing management system based on distributed ledger technology;  [X.dlt-sec](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14375) Security considerations for using distributed ledger technology data in identity management;  [X.sa-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14376) Security assurance for distributed ledger technology;  [X.sct-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14373) Security capabilities and threats of distributed ledger technology;  [X.sra-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14371) Security framework for distributed ledger technology;  [X.srip-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14821) Security requirements for intellectual property management based on distributed ledger technology;  [X.ss-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14374) Security services based on distributed ledger technology;  [X.stov](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14377) Security threats to online voting using distributed ledger technology;  [X.str-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14372) Security threats and requirements for digital payment services based on distributed ledger technology;  [X.tf-spd-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14590) Technical framework for secure software programme distribution mechanism based on distributed ledger technology |
| **ITU-D SG1**  [Question 4/1](https://www.itu.int/md/D14-WTDC17-C-0115/): Economic policies and methods of determining the costs of services related to national telecommunication/ICT networks | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/default.aspx) | [Q1/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q1.aspx): Development of charging and accounting/settlement mechanisms for international telecommunications services using the next-generation networks (NGNs), future networks, and any possible future development, including adaptation of existing D-series Recommendations to the evolving user needs | [D.Framework](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13509) Framework for ICT service delivery with the guaranteed QoS and requested bitrate on fixed & mobile data networks, for development of efficient economic mechanisms and models of interaction in the “operator-provider-user” chain |
| [Q2/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q2.aspx): Development of charging and accounting/settlement mechanisms for international telecommunications services, other than those studied in Question 1/3, including adaptation of existing D-series Recommendations to the evolving user needs | [D.Colocation](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14121) Colocation and Access Charges;  [STUDY\_COMMAG](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13495) Study of the use of commercial agreements for international telecommunications services arrangements;  [STUDY\_DR](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13496) Dispute Resolution Processes (previously "Dispute Resolution Related to Charging and Invoicing") |
| [Q3/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q3.aspx): Study of economic and policy factors relevant to the efficient provision of international telecommunication services | [D.datatariff](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14603) Principles for tariff regulation of Data Services;  [D.IoTpolicy](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14122) Guidelines on Tariff and regulatory aspects of Internet of Things (IoT);  [D.Licensing](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13518) Mechanisms for pricing of licenses for mobile/broadband/fixed;  [D.SpectrumShare](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13519) Shared use of spectrum and infrastructure);  [Study\_EPQoS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14611) Study of economic and policy factors relevant to the efficient provision of international telecommunication services |
| [Q4/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q4.aspx): Regional studies for the development of cost models together with related economic and policy issues | [STUDY\_ROAMREG](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14607) Regional Roaming Initiatives |
| [Q6/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q6.aspx) : International Internet connectivity including relevant aspects of Internet protocol (IP) peering, regional traffic exchange points, cost of provision of services and impact of transition from Internet protocol version 4 (IPv4) to Internet protocol version 6 (IPv6) | [D.50 Supp.3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14568) Reducing the cost of the international Internet connectivity of the Central African Backbone (CAB) project, Central African Republic component;  [D.CostModelIIC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13510) Cost model for international internet connectivity;  [STUDY\_IIC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13499) International Internet Connectivity, including IP peering, Regional Traffic Exchange Points, and cost of provision of services |
| [Q7/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q7.aspx): International mobile roaming issues (including charging, accounting and settlement mechanisms and roaming at border areas | [D.IoTRoaming](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13516) Roaming for the Internet of Things (IoT);  [D.M2MRoaming](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13517) Roaming for Machine to Machine Communications (M2M) |
| [Q9/3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q9.aspx)**:** Economic and regulatory impact of the Internet, convergence (services or infrastructure) and new services, such as over the top (OTT), on international telecommunication services and networks | [D.OTTMNO](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13521) Guidelines on OTT-MNO Partnerships |
| [Q10/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q10.aspx): Definition of relevant markets, competition policy and identification of operators with significant market power (SMP) as it relates to the economic aspects of the international telecommunication services and networks | [D.DynamicTariff](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13524) Impact of Dynamic Tariffing on Market Competitiveness |
| [Q12/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q12.aspx): Tariffs, Economic and Policy Issues Pertaining to Mobile Financial Services (MFS) | [D.MFSCM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14133) Mobile Financial Services Transaction Cost Model |
| [Q13/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q13.aspx): Study of Tariff, Charging Issues of Settlements Agreement of Trans-multi-country Terrestrial Telecommunication Cables | [STUDY\_TCST](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14608) Charging and accounting settlements in Trans-multi-country terrestrial cable circuit |
| **ITU-D SG1**  [Question 5/1](https://www.itu.int/md/D14-WTDC17-C-0115/): Telecommunications/ICTs for rural and remote areas | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q21/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q21.aspx): Multimedia framework, applications and services | [HSTP-DIS-UAV](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13303) Use cases and service scenarios of disaster information service using unmanned aerial vehicles |
| [SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) | [Q2/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q2.aspx): Requirements, capabilities, and use cases across verticals | [Y.SRC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13704) Requirements for deployment of smart services in rural communities |
| [Q4/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q4.aspx): e/Smart services, applications and supporting platforms | [Y.4556 (ex Y.SC-Residential)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13669) Requirements and functional architecture of smart residential community;  [Y.smart-evacuation](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14102) [Y.smart-evacuation](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14102) |
| **ITU-D SG1**  [Question 6/1](https://www.itu.int/md/D14-WTDC17-C-0115/): Consumer information, protection and rights: Laws, regulation, economic bases, consumer networks | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG2](https://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/default.aspx) | [Q1/2](http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q1.aspx): Application of numbering, naming, addressing and identification plans for fixed and mobile telecommunications services | [E.156](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13954) Guidelines for ITU-T action on reported misuse of E.164 number resources  [E.sup.spoofing to E.157](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15044) Spoofing |
| [Q2/2](http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q2.aspx): Routing and interworking plan for fixed and mobile networks | [E.164 Supplement 2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13965) Number Portability |
| [Q5/2](https://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q5.aspx): Requirements, priorities and planning for telecommunication management and operation, administration and maintenance (OAM) Recommendations | [M.rtafm](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14195) Requirements for Telecom anti-Fraud Management in the TMN |
| [SG3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/default.aspx) | [Q3/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q3.aspx): Study of economic and policy factors relevant to the efficient provision of international telecommunication services | [Study\_ EPQoS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14611) Study of economic and policy factors relevant to the efficient provision of international telecommunication services |
| [Q9/3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q9.aspx): Economic and regulatory impact of the Internet, convergence (services or infrastructure) and new services, such as over the top (OTT), on international telecommunication services and networks | [D.ConsumerOTT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14123) Customer redress mechanism and consumer protection |
| [Q10/3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q10.aspx): Definition of relevant markets, competition policy and identification of operators with significant market power (SMP) as it relates to the economic aspects of the international telecommunication services and networks | [D.NumberPort](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14125) Recommendation ITU-T "Methodological guide for determining the impact of numerical portability on competition" |
| [Q12/3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q12.aspx): Tariffs, Economic and Policy Issues Pertaining to Mobile Financial Services (MFS) | [D.ConsumerMFS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14129) Consumer Protection in Mobile Financial Services |
| [SG11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/default.aspx) | [Q15/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q15.aspx): Combating counterfeit and stolen ICT equipment | [TR-CF-QoS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15051) Impact of Counterfeit Mobile devices on Quality of Service;  [TR-RLB-IMEI](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15050) Reliability of IMEI identifier |
| [SG12](https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx) and **QSDG** | [Q1/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q1.aspx): SG12 work programme and quality of service/quality of experience (QoS/QoE) coordination in ITU-T | [Reports on coordination activities](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13757) Coordination of QoS/performance studies |
| [Q2/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q2.aspx): Definitions, guides and frameworks related to QoS/QoE | [HB-Guireg](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14120) Handbook providing guidance to regulators;  [G.1000](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13771) Communications Quality of Service: A framework and definitions;  [Suppl.G.NRA](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14957" \o "See more details) NRA and other stakeholders in the QoS matrix;  [TR-QoS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14119) TR (Manual) on Quality of Service (QoS);  [P.10/G.100](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14118) Vocabulary for performance, quality of service and quality of experience |
| [Q7/12](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4158): Methods, tools and test plans for the subjective assessment of speech, audio and audiovisual quality interactions | [P.CLN](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13727) Cultural/language/nationality dependence of subjective quality |
| [Q12/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q12.aspx): Operational aspects of telecommunication network service quality | [E.RQUAL](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14043) Strategies to Establish Quality Measurement Frameworks;  [E.NetPerfRank](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14042) Statistical Framework for QoE Centric Benchmarking Scoring and Ranking;  [E.QoSMgtMod](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14357) QoS Management Model for Bridging the Gaps between QoS and QoE |
| [Q13/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q13.aspx): QoE, QoS and performance requirements and assessment methods for multimedia | [G.1032 (ex G.QoE-gaming)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13777) Influence Factors on Gaming Quality of Experience |
| [SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) | [Q7/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q7.aspx): Evaluation and assessment of Smart Sustainable Cities and Communities | [Y.Sup.digi-inc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14950) Guidelines for digital inclusion in the development of digital urban technology and smart cities |
| **ITU-D SG1**  [Question 7/1](https://www.itu.int/md/D14-WTDC17-C-0115/): Access to telecommunication/ICT services by persons with disabilities and other persons with specific needs | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG12](https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx) | [Q3/12](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4154) Speech transmission and audio characteristics of communication terminals for fixed circuit-switched, mobile and packet-switched Internet protocol (IP) networks | [P.311](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13741) Transmission characteristics for wideband digital handset and headset telephones - Inclusion of extended wideband terminals;  [P.341](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13740) Transmission characteristics for wideband digital loudspeaking and hands-free telephony terminals - Inclusion of extended wideband terminals |
| [Q5/12](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4156): Telephonometric methodologies for handset and headset terminals | [P.57](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13744) Artificial ears |
| [Q6/12](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4157) Analysis methods using complex measurement signals including their application for speech and audio enhancement techniques | [P.50](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13752) Artificial voices;  [P.340](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13753) Transmission characteristics and speech quality parameters of hands-free terminals |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q24/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q24.aspx): Human factors related issues for improvement of the quality of life through international telecommunications | [E.OKID](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13961) On-screen keyboards for ICT devices;  [E.FAST](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13962) User interface for face-to-face speech translation considering human factors;  [F.BaaS.HC.req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15024) Requirements of blockchain as a service (BaaS) for human-care services;  [F.UI-SH](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14769) User interface requirements and framework for e-services based on speech/NLP technology |
| [Q26/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q26.aspx): Accessibility to multimedia systems and services | [F.790](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13301) Telecommunications accessibility guidelines for older persons and persons with disabilities;  [F.ACC-AS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15036) Framework for audio sign for persons with vision impairment;  [F.ACC-ISSVReq](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14771) Requirements of information service systems for visually impaired persons;  [F.CVR-PWN](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14346) Framework of cyber-vulnerability reduction for persons with disabilities and specific needs;  [F.WAAD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14436) Safety requirements for audio augmenting devices;  [FSTP-ACC-AI](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15037) Guideline on the use of AI for ICT accessibility;  [FSTP-ACC-ALD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15038) Overview of assistive listening systems;  [FSTP.Intl-Relay](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14348) International Relay Services;  [H.ACC-GAD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14438) Guidance on audio descriptions (New) (twin text of ISO/IEC TS 20071-21:2015, Information technology - User interface component accessibility - Part 21);  [H.ACC-GAP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14440) Guidance on the audio presentation of text in videos, including captions, subtitles and other on-screen text (New) (twin text of ISO/IEC 20071-25:2017, Information Technology - User interface component accessibility Part 25);  [H.ACC-GVP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14439) Guidance on the Visual presentation of audio information, including captions and subtitles (twin text of ISO/IEC DIS 20071-23, Information technology - User Interface component accessibility Part 23);  [H.ACC-RCAD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13273) Requirements for captioning and audio description for accessibility;  [H.MD-DiDRR](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13320) Profile metadata for persons with specific needs as part of disability-inclusive disaster risk reduction;  [HSTP.ACC-SL](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13272) Production guidelines for sign language service;  [HSTP-ACC-Interop](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13271) Interoperability of digital audiovisual media accessibility;  [HSTP.ACC-AUD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13270) Technical Paper on Methods for improving the intelligibility of audio (or speech);  [HSTP-ACC-UC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13269) Multimedia accessible system use cases;  [HSTP-AEHH](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13331) Audio enhancement for the hard-of-hearing;  [H.702](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14772) Accessibility Profiles for IPTV |
| [Q28/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q28.aspx): Multimedia framework for e-health applications | [FTSP.EH-DEV](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14081) Issues list for enhancing accessibility to e-health services and applications in developing countries |
| [SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) | [Q2/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q2.aspx): Requirements, capabilities, and use cases across verticals | [Y.Accessibility-IoT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13697) Accessibility requirements for the Internet of things applications and services |

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| **ITU-D SG2** [Question 1/2](https://www.itu.int/md/D14-WTDC17-C-0115/): Creating the smart cities and society: Employing ICTs for sustainable social and economic development | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG2](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/default.aspx) | [Q1/2](http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q1.aspx): Application of numbering, naming, addressing and identification plans for fixed and mobile telecommunications services | [E.IoT-NNAI](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13968) Internet of Things Naming Numbering Addressing and Identifiers;  [TR.IoTid](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14543) Technical report on overview of IoT schemes |
| [Q6/2](https://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q6.aspx): Management architecture and security | [M.somm (ex M.inomsa)](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14196): Framework of smart operation, management and maintenance |
| [SG3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/default.aspx) | [Q3/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q3.aspx): Study of economic and policy factors relevant to the efficient provision of international telecommunication services | [D.IoTpolicy](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14122) Guidelines on Tariff and regulatory aspects of Internet of Things (IoT) |
| [Q7/3](http://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q7.aspx): International mobile roaming issues (including charging, accounting and settlement mechanisms and roaming at border areas | [D.IoTRoaming](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13516) Roaming for the Internet of Things (IoT) |
| [SG5](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/default.aspx) | [Q6/5](http://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/q6.aspx): Achieving energy efficiency and smart energy | [L.SM\_EN](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14535) Smart energy for cities and home applications;  [L.SP\_OB](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14869) A methodology for improving, assessing and scoring the sustainability performance of office buildings;  [L.SE\_BS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14154) Smart energy solution for telecom base stations;  [Suppl. EE for Smart Grid](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13879) Analysis of the energy efficiency of telecommunication services used for the needs of smart grid applications |
| [Q7/5](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/q7.aspx): Circular economy including e-waste | [L.CE\_Concepts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13927) Circular Economy; Definitions and concepts for material efficiency for ICT;  [L.CE\_Industry 4.0](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14878) Circular Economy and Industry 4.0; |
| [SG11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/default.aspx) | [Q12/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q12.aspx): Testing of Internet of things, its applications and identification systems | [Q.39\_FW\_Test\_ID\_IoT](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=13837) The framework of testing of identification systems used in IoT;  [Q.FW\_IoT/Test](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=13818) Framework for IoT Testing; |
| [Q5/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q5.aspx): Protocols and procedures supporting services provided by broadband network gateways | [Q.HET-GW](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14732) Signalling protocol for Heterogeneous IoT gateways |
| [SG13](https://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/default.aspx) | [Q1/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q1.aspx): Innovative services scenarios, deployment models and migration issues based on Future Networks | [Y.farms](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13635) Framework and application model for risk mitigation service based on networks;  [Y.sfes](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14288) Smart Farming Education Service based on u-learning environment;  [Y.smpp](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14287) Service model for the pre-production stage on Smart Farming;  [Y.saic](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14747) Service model of the Agriculture Information based Convergence Service |
| [Q16/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q16.aspx): Knowledge-centric trustworthy networking and services | [Y.STR](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14622) Socio-technical recommendations for contributing to socio-economic awareness |
| [SG15](https://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/default.aspx) | [Q18/15](http://www.itu.int/en/ITU-T/studygroups/2017-2020/15/Pages/q18.aspx): Broadband in-premises networking | [GSTP-SGTP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14971) Smart Grid technical paper;  [G.9992 (ex G.occ)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14269) Indoor optical camera communication transceivers - System architecture, physical layer and data link layer specification |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q21/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q21.aspx): Multimedia framework, applications and services | [F.745 Amd.1](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14495) Functional requirements for network-based speech-to-speech translation services: Support of automatic sign language generation;  [F.746.4 (ex F.DICN-Reqs)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13304) Requirements for deployment of information centric networks;  [F.746.5 (ex H.LLS-FW)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13302) Framework for language learning system based on speech/NLP technology;  [F.747.9 (ex F.EMS-Arch)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13276) Requirements and architecture for energy management services;  [F.CCNMMS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13262) Requirements and architecture for CCN-based mobile multimedia services;  [F.NG-CDN](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14433) Service Requirements for the next generation content delivery networks |
| [Q24/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q24.aspx): Human factors related issues for improvement of the quality of life through international telecommunications | [E.FAST](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13962) User interface for face-to-face speech translation considering human factors;  [F.BaaS.HC.req](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15024) Requirements of blockchain as a service (BaaS) for human-care services;  [F.UI-SH](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14769) User interface requirements and framework for e-services based on speech/NLP technology |
| [Q27/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q27.aspx): Vehicle gateway platform for telecommunication/ITS services and applications | [F.AUTO-TAX](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13294) Taxonomy for ICT-enabled motor vehicle automated driving systems;  [HSTP-VG-Gap](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14079) Technical Paper: Gap Analysis of Vehicle Gateways defined by SDOs |
| [SG17](https://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/default.aspx) | [Q6/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q6.aspx): Security aspects of telecommunication services, networks and Internet of Things | [X.amas-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14783) Aggregate message authentication scheme with group authentication capability for IoT environment;  [X.elf-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14782) Standard format of IoT error logs for security incident operations;  [X.ibc-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14387) Security Framework for Use of Identity-Based Cryptography in Support of IoT Services over Telecom Networks;  [X.iotsec-3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14112) Technical framework of PII (Personally Identifiable Information) handling system in IoT environment;  [X.iotsec-4](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14785) Security requirements for IoT devices and gateway;  [X.nb-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14386) Security Requirements and Framework for Narrow Band Internet of Things;  [X.sc-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14784) Security Controls for Internet of Things (IoT) systems;  [X.secup-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14385) Secure Software Update for IoT devices;  [X.sgsec-3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13586) Security guidelines for smart metering service in smart grids;  [X.ssp-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14599) Security Requirements and Framework for IoT Service Platform;[X.strvms](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14601) Security threats and requirements for video management system |
| [Q13/17](http://itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q13.aspx): Security aspects for Intelligent Transport System | [X.itssec-2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13549) Security guidelines for V2X communication systems;  [X.itssec-3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14394) Security requirements for vehicle accessible external devices;  [X.itssec-4](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14395) Methodologies for intrusion detection system on in-vehicle systems;  [X.itssec-5](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14396) Security guidelines for vehicular edge computing;  [X.mdcv](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14586) Security-related misbehaviour detection mechanism based on big data analysis for connected vehicles;  [X.stcv](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14587) Security threats in connected vehicles |
| [SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) | [Q1/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q1.aspx): End to end connectivity, networks, interoperability, infrastructures and Big Data aspects related to IoT and SC&C | [Y.infra](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13673) Overview of city infrastructure;  [Y.isms (ex Y.ism-ssc)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13674) Technical framework for integrated sensing and management system;  [Y.nmm-isms (ex Y.isw-ssc)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13675" \o "See more details) The node metadata model for integrated sensing and management system;  [Y.SC-OpenData](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13670) Framework of Open Data in Smart Cities |
| [Q2/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q2.aspx): Requirements, capabilities, and use cases across verticals | [Supp.-Y.IoT Scenarios for Developing Countries](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13662) Scenarios of Implementing Internet of Things in networks of developing countries;  [Y.Sup-IoT-Eco-Plan](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14647) Framework for Internet of things ecosystem master plan  [Y.IoT-BPM-reqts-caps](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14497) Specific Requirements and Capabilities of the Internet of Things for Business Process Management;  [Y.IoT-EC-reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14499) IoT requirements for edge computing;  [Y.IoT-ITS-framework](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13688) Framework of Cooperative Intelligent Transport Systems based on the Internet of Things;  [Y.IoT-UAS-Reqts](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14303) Use cases, requirements and capabilities of unmanned aircraft systems for Internet of Things;  [Y.SCC-Use-Cases](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14498) Use Cases of Smart Cities and Communities;  [Y.SRC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13704) Requirements for deployment of smart services in rural communities |
| [Q3/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q3.aspx): Architectures, management, protocols and Quality of Service | [Supp-Y.IPv6-IoT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13695) IPv6 Potential for the Internet of Things and Smart Cities;  [Y.IoT-rmc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14126) Reference architecture of accessing IoT resources for management and control;  [Y.SSC-AISE-arc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14503) Reference architecture of artificial intelligence service exposure for smart sustainable cities |
| [Q4/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q4.aspx): e/Smart services, applications and supporting platforms | [Y.4456 (ex Y.SPL)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13705) Requirements and Functional Architecture for Smart Parking Lot in Smart City;  [Y.del-fw](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13676) Framework of delegation service for the IoT devices;  [Y.energy-mMG](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14107) Application model for energy services on multiple microgrids;  [Y.IoT-LISF](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14332) Lightweight intelligent software framework for IoT devices;  [Y.ISG-fr](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13678) Framework of Smart Greenhouse Service;  [Y.smart-evacuation](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14102) Framework of Smart Evacuation during emergencies in Smart Cities and Communities;  [Y.social-device](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13655) Framework of the social device networking;  [Y.STD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13707) Functional Architecture for Management to Smart Tourist Destinations; |
| [Q5/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q5.aspx): Research and emerging technologies, terminology and definitions | [Y.Sup.AI4IoT (ex TR.AI4IoT; Y.AI4SC)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14103) Unlocking Internet of things with artificial intelligence: Where we are and where we could be;  [Y.HEP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13691) Framework for Home Environment Profiles and Levels of IoT Systems; |
| [Q6/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q6.aspx): Security, privacy, trust and identification | [Y.API4IOT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14297) Open data application programming interface (API) for IoT data in smart cities and communities |
| [Q7/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q7.aspx): Evaluation and assessment of Smart Sustainable Cities and Communities | [Y.AFDTS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14302) Assessment Framework for Digital Transformation of Sectors in Smart Cities;  [Y.4904 (ex Y.SSC-MM)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14301) Smart Sustainable Cities Maturity Model  [Y.4903rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14951) Key performance indicators for smart sustainable cities to assess the achievement of sustainable development goals;  [Y.Stra-SSC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14948) Standards mapping assessment for smart sustainable city (SSC) strategy" |
| [JCA-IoT and SC&C](http://www.itu.int/en/ITU-T/jca/iot/Pages/default.aspx) | Joint Coordination Activity on Internet of Things and Smart Cities and Communities (JCA-IoT and SC&C) | [D.2r16](https://www.itu.int/ifa/t/sftp/jcaiot/DELIVERABLES/JCAIoTSSC-D-2r16_IoTandSCC%20roadmap-20170316.doc)- [IoT and SC&C standards roadmap](https://www.itu.int/net4/itu-t/roadmap" \l "?topic=0.78&workgroup=1&searchValue=&page=1&sort=Revelance" \t "_blank) |
| **ITU-D SG2**  [Question 2/2](https://www.itu.int/md/D14-WTDC17-C-0115/): Telecommunications/ICTs for eHealth | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q28/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q28.aspx): Multimedia framework for e-health applications | [F.MCDC (ex H.OPVQ)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13295) Framework for in-flight and post-flight precautionary continuous monitoring for communicable disease control;  [F.Med-UHD (ex HSTP.IPTV-MEH)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13241) Framework for telemedicine systems using ultra-high definition imaging;  [F.Med-VHN](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14349) Framework of Telemedicine Service based on Virtual Hospital Network;  [F.Test-SLD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15039) Guidelines for safe listening devices/systems;  [FSTP.UHD-Colour](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14907) Requirements on colorimetry for telemedicine systems using ultra-high definition imaging;  [FTSP.EH-DEV](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14081) Issues list for enhancing accessibility to e-health services and applications in developing countries  [FTSP.EH-DEV](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14081) Issues list for enhancing accessibility to e-health services and applications in developing countries;  [H.HL-SM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13313) Structure model for data exchange between heterogeneous health lifelog services;  [HSTP.MBI-UC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13321) Use-cases of e-health applications and services using brain data |
| [SG17](https://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/default.aspx) | [Q7/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q7.aspx): Evaluation and assessment of Smart Sustainable Cities and Communities | [Y.IoT-EH-PFE](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13679) Performance evaluation frameworks of e-health systems in the IoT; |
| **ITU-D SG2** [Question 3/2](https://www.itu.int/md/D14-WTDC17-C-0115/): Securing information and communication networks: Best practices for developing a culture of cybersecurity | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG9](https://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/default.aspx) | [Q2/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q2.aspx): Methods and practices for conditional access, protection against unauthorized copying and against unauthorized redistribution ("redistribution control" for digital cable television distribution to the home) | [J.oneway-dcas-part1](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14507) Downloadable Conditional Access System for Unidirectional Network; Requirements;  [J.oneway-dcas-part2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14933) Downloadable Conditional Access System for Unidirectional Network; System Architecture;  [J.oneway-dcas-part3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14934) Downloadable Conditional Access System for Unidirectional Network; Terminal System |
| [Q5/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q5.aspx): Software components application programming interfaces (APIs), frameworks and overall software architecture for advanced content distribution services within the scope of Study Group 9 | [J.stvos-sec](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14923) The security of smart TV operating system |
| [SG11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/default.aspx) | [Q2/11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q2.aspx): Signalling requirements and protocols for services and applications in emerging telecommunication environments | [Q.SR-Trust](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14448) Signalling requirements and architecture for interconnection between trustable network entities |
| [SG13](https://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/default.aspx) | [Q16/13](http://www.itu.int/en/ITU-T/studygroups/2017-2020/13/Pages/q16.aspx): Knowledge-centric trustworthy networking and services | [Y.trust-index](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14279) Trust index for ICT infrastructures and services;  [Y.SNS-trust](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14751) Framework for Evaluation of Trust and Quality of Media in Social Networking Services;  [Y.trust-arch](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14749) Functional architecture for trust enabled service provisioning;  [Y.trust-pdm](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14752) Framework for Trust based Personal Data Management Platform |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q26/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q26.aspx): Accessibility to multimedia systems and services | [F.CVR-PWN](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14346) Framework of cyber-vulnerability reduction for persons with disabilities and specific needs |
| [SG17](https://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/default.aspx) | [Q1/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q1.aspx): Telecommunication/ICT security coordination | [Security Roadmap](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14368) ICT security standards roadmap;  [Security Compendium](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14369) Security compendium;  [Security Manual](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14367) Security in Telecommunications and Information Technology, 7th edition;  [XSTR-SUSS (ex X.TRsuss-rev)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14370) Technical Report on Successful use of security standards |
| [Q2/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q2.aspx): Security architecture and framework | [X.1043 (ex X.sdnsec-3)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14110) Security guideline of Service Function Chain based on software defined network;  [X.SDSec](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14558) Guideline on Software-defined Security in SDN (Software-defined Networking)/NFV (Network Fuction Virtualization) Network;  [X.srnv](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14379) Security Requirements of Network Virtualization;  [X.ssc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14378) Security Service Chain Architecture; |
| [Q3/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q3.aspx): Telecommunication information security management | [X.1052-rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14380) Organization information security management guideline;  [X.1054-rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14381) Information technology - Security techniques - Governance of information security;  [X.framcdc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14559) Framework for the creation and operation of a Cyber Defence Center;  [X.ciag](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15000) Cyber insurance acquisition guideline for Information and Communication Technologies (ICT) services provider; |
| [Q4/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q4.aspx): Cybersecurity | [X.fgati](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14561) Framework and Guidelines for Applying Threat Intelligence in Telecom Network Operation;  [X.gcpie](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14560) Guidelines for Collection and Preservation of Cyber Security Incident Evidence;  [X.ucstix](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14109) Use Cases for Structured Threat Information Expression (STIX™);  [X.rdmase](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15003) Requirements and Guidelines for Dynamic Malware Analysis in a Sandbox Environment |
| [Q5/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q5.aspx): Countering spam by technical means | [X.gcims](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14384) Guidelines for countering instant messaging spam;  [X.tecwes](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14563) Technologies in countering website spoofing for telecommunication organizations;  [X.tfcas](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14111) Technical framework for countering advertising spam in user generated information;  [X.tfcmms](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14781) Technical framework for countering Multimedia Messaging Service spam;  [X.tsfpp](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14565) Technical security framework for the protection of users' personal information while countering mobile messaging spam |
| [Q6/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q6.aspx): Security aspects of telecommunication services, networks and Internet of Things | [X.5Gsec-q](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14600) Security guidelines for applying quantum-safe algorithms in 5G systems;  [X.5Gsec-t](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14786) Security framework based on trust relationship in 5G ecosystem;  [X.ibc-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14387) Security Framework for Use of Identity-Based Cryptography in Support of IoT Services over Telecom Networks;  [X.iotsec-3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14112) Technical framework of PII (Personally Identifiable Information) handling system in IoT environment;  [X.nb-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14386) Security Requirements and Framework for Narrow Band Internet of Things;  [X.secup-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14385) Secure Software Update for IoT devices;  [X.sgsec-3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13586) Security guidelines for smart metering service in smart grids;  [X.ssp-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14599) Security Requirements and Framework for IoT Service Platform;  [X.amas-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14783) Aggregate message authentication scheme with group authentication capability for IoT environment;  [X.elf-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14782) Standard format of IoT error logs for security incident operations;  [X.iotsec-4](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14785) Security requirements for IoT devices and gateway;  [X.sc-iot](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14784) Security Controls for Internet of Things (IoT) systems;  [X.strvms](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14601) Security threats and requirements for video management system |
| [Q7/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q7.aspx): Secure application services | [X.sfop](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14389) Security framework of open platform for FinTech services;  [X.sgos](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14566) Security guidelines of Web-based online customer service;  [X.tfss](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14388) Technical Framework for Security Services Provided by Operators |
| [Q8/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q8.aspx): Cloud computing security | [X.GSBDaaS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13591) Guidelines on security of Big Data as a Service;  [X.sgBDIP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14567) Security Guidelines for Big Data infrastructure and platform;  [X.sgcc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14788) Security guidelines for container in cloud computing environment;  [X.sgdc](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15008) Security guidelines for distributed cloud;  [X.sgtBD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14390) Security guidelines of lifecycle management for telecom Big Data;  [X.SRIaaS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13578) Security requirements of public infrastructure as a service (IaaS) in cloud computing;  [X.sr-cphr](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15009) Security requirements of cloud-based platform under low latency and high reliability application scenarios;  [X.SRNaaS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13590) Security requirements of Network as a Service (NaaS) in cloud computing |
| [Q9/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q9.aspx): Telebiometrics | [X.tab](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13592) Telebiometric authentication using bio-signals;  [X.tas](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14602) Telebiometric authentication using speaker recognition |
| [Q10/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q10): Identity management architecture and mechanisms | [X.eaasd](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13593) Framework of enhanced authentication in telebiometric environments using anti-spoofing detection mechanisms |
| [Q11/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q11.aspx): Generic technologies (Directory, public key infrastructure (PKI), privilege management infrastructure (PMI), Abstract Syntax Notation One (ASN.1), object identifiers (OIDs)) to support secure applications | [X.500-series-rev](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14272) Edition 9 of the X.500 Series; |
| [Q13/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q13.aspx): Security aspects for Intelligent Transport System | [X.itssec-2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13549) Security guidelines for V2X communication systems;  [X.itssec-3](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14394) Security requirements for vehicle accessible external devices;  [X.itssec-4](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14395) Methodologies for intrusion detection system on in-vehicle systems;  [X.itssec-5](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14396) Security guidelines for vehicular edge computing;  [X.mdcv](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14586) Security-related misbehaviour detection mechanism based on big data analysis for connected vehicles;  [X.stcv](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14587) Security threats in connected vehicles |
| [Q14/17](http://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/q14.aspx): Security aspects for Distributed Ledger Technologies | [X.das-mgt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14589) Security framework for data access and sharing management system based on distributed ledger technology;  [X.dlt-sec](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14375) Security considerations for using distributed ledger technology data in identity management;  [X.sa-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14376) Security assurance for distributed ledger technology;  [X.sct-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14373) Security capabilities and threats of distributed ledger technology;  [X.sra-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14371) Security framework for distributed ledger technology;  [X.srip-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14821) Security requirements for intellectual property management based on distributed ledger technology;  [X.ss-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14374) Security services based on distributed ledger technology;  [X.stov](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14377) Security threats to online voting using distributed ledger technology;  [X.str-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14372) Security threats and requirements for digital payment services based on distributed ledger technology;  [X.tf-spd-dlt](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14590) Technical framework for secure software programme distribution mechanism based on distributed ledger technology |
| [SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) | [Q3/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q3.aspx): Architectures, management, protocols and Quality of Service | [Y.oneM2M.SEC.SOL](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14318) oneM2M Security Solutions |
| [Q6/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q6.aspx): Security, privacy, trust and identification | [Y.IoT-IoD-PT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13690) Identity of IoT devices, which is based on secure procedures and ensures privacy and trust of the used IoT systems;  [Y.LPWA](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14298) Security, interoperability and identification aspects for Low Power Wide Area (LPWA) systems; |
| **ITU-D SG2**  [Question 4/2](https://www.itu.int/md/D14-WTDC17-C-0115/): Assistance to developing countries for implementing conformance and interoperability (C&I) programmes and combating counterfeit ICT equipment and theft of mobile devices | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG2](https://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/default.aspx) | [Q1/2](http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q1.aspx): Application of numbering, naming, addressing and identification plans for fixed and mobile telecommunications services | [E.A-N/GoC](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13949) Administrative procedures for ENUM for E.164 country codes and associated ICs for networks and GICs for groups of countries;  [E.156](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13954) Guidelines for ITU-T action on reported misuse of E.164 number resources |
| [SG3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/default.aspx) | [Q12/3](https://www.itu.int/en/ITU-T/studygroups/2017-2020/03/Pages/q12.aspx): Tariffs, Economic and Policy Issues Pertaining to Mobile Financial Services (MFS) | [D.InteropCompetition](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14131) Interoperability for Competition in Mobile Financial Services |
| [SG5](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/default.aspx) | [Q7/5](http://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/q7.aspx): Circular economy including e-waste | [L.Counterfeit](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14877) Adequate Assessment and Sensitisation on Counterfeit ICT Products and their Environmental Impact |
| [SG9](https://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/default.aspx) | [Q6/9](http://www.itu.int/en/ITU-T/studygroups/2017-2020/09/Pages/q6.aspx): Functional requirements for residential gateway and set-top box for the reception of advanced content distribution services | [J.acs-stb](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14927) Functional Requirements for interface between Auto Configuration Server (ACS) and STB |
| [SG11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/default.aspx) | [Q9/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q9.aspx): Service and networks benchmark testing, remote testing including Internet related performance measurements | [Q.3961 (ex Q.TM\_Int\_sp\_test)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13819) Testing methodologies of Internet related performance measurements including e2e bit rate within the fixed and mobile operator's networks;  [Q.SP-RT-NP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14465) Signalling procedures for controlling probes used for remote testing of network parameters |
| [Q10/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q10.aspx): Testing of emerging IMT-2020 technologies | [Q.4061 (ex Q.SDN-CT)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14466) Framework of SDN controller testing;  [Q.SDN-OFT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14737) The compatibility testing of SDN-based equipment using OpenFlow protocol;  [Guideline-TEST\_UE/MS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14736) Guideline for general test procedure and specification for measurements of the LTE, 3G/2G user Equipment/mobile stations (UE/MS) for over-the-air performance testing;  [Q.TP\_AR](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14738) Testing procedures of Augmented Reality applications |
| [Q11/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q11.aspx): Protocols and networks test specifications; frameworks and methodologies | [Q.4013.1 v.1\_SI\_IBCF\_TS\_Part1](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13849) Testing of the IBCF requirements; (3GPP Release 12); Part 1: Protocol Implementation Conformance Statement (PICS);  [Q.4013.2 v.1\_SI\_IBCF\_TS\_Part2](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13850) Core Network and Interoperability Testing (INT); Testing of the IBCF requirements; (3GPP Release 10); Part 2: Test Suite Structure and Test Purposes (TSS&TP);  [Q.4014.1](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15031) PSTN/ISDN terminal equipment using IP Multimedia core network subsystem; Conformance testing; Part 1: PICS;  [Q.4014.2 v.1\_SI\_IAD\_TS\_Part2 (ex Q.39\_SI\_IAD\_TS\_Part2 v.1 [3GPP Release 10])](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13831) PSTN/ISDN terminal equipment using IP Multimedia core network subsystem; Conformance testing; Part 2: TSS&TP;  [Q.TI-TEST](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14467) Framework of model network for Tactile Internet testing |
| [Q12/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q12.aspx): Testing of Internet of things, its applications and identification systems | [Q.39\_FW\_Test\_ID\_IoT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13837) The framework of testing of identification systems used in IoT;  [Q.FW\_IoT/Test](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13818) Framework for IoT Testing; |
| [Q13/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q13.aspx): Monitoring parameters for protocols used in emerging networks, including cloud computing and software-defined networking/network function virtualization (SDN/NFV) | [Q.SQM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14468) Signalling requirements and architecture for the Internet service quality monitoring system;  [Q.BNGP](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14469) Set of parameters of vBNG for monitoring;  [Q.PWS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15049) Parameters for evaluating bottleneck of web- browsing service |
| [Q14/11](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q14.aspx): Cloud interoperability testing | [Q.wa-iop](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13839) Cloud Interoperability testing about Web Application;  [Q.vs-iop-reqts](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14605) Interoperability testing requirements of virtual switch |
| [Q15/11:](http://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q15.aspx) Combating counterfeit and stolen ICT equipment | [Q.FW\_CSM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14058) Framework for Combating the use of Stolen Mobile ICT Devices;  [TR-BP\_CF](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13827) Technical Report - Guidelines on Best Practice and Solutions for Combating Counterfeit ICT Devices;  [TR-CF-QoS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15051) Impact of Counterfeit Mobile devices on Quality of Service |
| [SG12](https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx) | [Q1/12](http://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/q1.aspx): SG12 work programme and quality of service/quality of experience (QoS/QoE) coordination in ITU-T | [Reports on coordination activities](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13757) Coordination of QoS/performance studies |
| [Q3/12](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4154) Speech transmission and audio characteristics of communication terminals for fixed circuit-switched, mobile and packet-switched Internet protocol (IP) networks | [P.DHIP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13789) Technical requirements and test methods for the digital wired or wireless headset interface of mobile terminals |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q13/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q13.aspx): Multimedia application platforms and end systems for IPTV | [HSTP.CONF-H764](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13250) Conformance testing specification for H.764 |
| [Q26/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q26.aspx): Accessibility to multimedia systems and services | [HSTP.CONF-H702](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13322) Conformance testing specification for ITU-T H.702;  [HSTP-ACC-Interop](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13271) Interoperability of digital audiovisual media accessibility |
| [Q28/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q28.aspx): Multimedia framework for e-health applications | [H.812.5](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14441) Interoperability design guidelines for personal connected health systems: Services interface: FHIR observation upload;  [HSTP-CONF-H870](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14906) Testing of personal audio systems for compliance with ITU-T H.870;  [HSTP-H810-CAS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14711) Conformance of ITU-T H.810 personal health system: Conformity Assessment Scheme |
| [SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) | [Q6/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q6.aspx): Security, privacy, trust and identification | [Y.IoT-DA-Counterfeit](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13702) Information Management Digital Architecture to combat counterfeiting in IoT;  [Y.4459 (ex Y.IoT-Interop)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13703) An architecture for IoT interoperability;  [Y.IoT-IoD-PT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13690) Identity of IoT devices based on secure procedures to enhance trust of IoT systems |
| **ITU-D SG2**  [Question 5/2](https://www.itu.int/md/D14-WTDC17-C-0115/): Utilizing telecommunications/ICTs for disaster risk reduction and management | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG2](https://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/default.aspx) | [Q3/2](http://www.itu.int/en/ITU-T/studygroups/2017-2020/02/Pages/q3.aspx): Service and operational aspects of telecommunications, including service definition | [E.102 (ex E.TD-DR)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13959) Terms and definitions for disaster relief systems, network resilience and recovery;  [TR.CLE](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=15021) Identify call location for emergency service |
| [SG5](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/default.aspx) | [Q6/5](http://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/q6.aspx): Achieving energy efficiency and smart energy | [L.SES](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13931) Use of ICT sites to support environmental sensing |
| [SG11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/default.aspx) | [Q3/11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q3.aspx): Signalling requirements and protocols for emergency telecommunications | [Q.ETN-DS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14450) Signalling architecture of the fast deployment emergency telecommunication network to be used in a natural disaster;  [Q.suppl.Multi\_Device\_ETS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14451) Signalling requirements for VoLTE-based network and GSM/UMTS network supporting Multi-device emergency telecommunications service;  [Q.Suppl.NGN\_pri\_interconnection](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14053) Signalling requirements for interconnection between NGN and GSM/UMTS networks supporting priority calls |
| [SG12](https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx) | [Q4/12](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4155) Objective methods for speech and audio evaluation in vehicles | [P.1140](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14344) Speech Quality Requirements for Emergency Calls |
| [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) | [Q8/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q8.aspx): Immersive live experience systems and services | [H.ILE-MMT](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14190) Service configuration, media transport protocols, signalling information of MMT for Immersive Live Experience systems |
| [Q14/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q14.aspx): Digital signage systems and services | [H.DS-CASF](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13266) Digital signage: Common alerting service framework;  [H.785.0](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13311) Digital signage: Requirements for disaster information services |
| [Q26/16](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q26.aspx): Accessibility to multimedia systems and services | [H.MD-DiDRR](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13320) Profile metadata for persons with specific needs as part of disability-inclusive disaster risk reduction |
| [SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) | [Q3/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q3.aspx): Architectures, management, protocols and Quality of Service | [Y.AERS-msd](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14502) Minimum set of data structure for automotive emergency response system;  [Y.AERS-mtp](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14501) Minimum set of data transfer protocol for automotive emergency response system; |
| [Q4/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q4.aspx): e/Smart services, applications and supporting platforms | [Y.disaster\_notification](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14331) Framework of the disaster notification of the population in Smart Cities and Communities;  [Y.smart-evacuation](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14102) Framework of Smart Evacuation during emergencies in Smart Cities and Communities; |
| **ITU-D SG2**  [Question 6/2](https://www.itu.int/md/D14-WTDC17-C-0115/): ICTs and the environment | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG5](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/default.aspx) | [Q6/5](http://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/q6.aspx): Achieving energy efficiency and smart energy | [L.SES](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13931) Use of ICT sites to support environmental sensing;  [Suppl. Green ICT SLQ](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13914) Green ICT standards landscape questionnaires;  [Suppl.BP\_EF](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14155) A Guideline on best practices and environment friendly policies for effective ICT deployment methods |
| [Q7/5](http://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/q7.aspx): Circular economy including e-waste | [L.ARCH\_EoL\_CE](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14540) Environmental Impact of architecture solutions with regards to End of Life and Circular Economy (CE);  [L.AUVE](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14537) Effects of ICT enabled autonomy on vehicles longevity and waste creation;  [L.CE\_Concepts (ex L.CE)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13927" \o "See more details) Circular Economy; Definitions and concepts for material efficiency for ICT;  [L.CE\_Industry 4.0](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14878) Circular Economy and Industry 4.0;  [L.1015 (ex L.CEM)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14160) Criteria for evaluation of the environmental impact of mobile phones;  [L.Counterfeit](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14877) Adequate Assessment and Sensitisation on Counterfeit ICT Products and their Environmental Impact  [L.ER](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14459) Guidelines and Accreditation for e- Waste Recyclers;  [L.methodology\_arch](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14539) Methodology to assess the environmental impact of the different proposed architectures;  [L.SEEQ](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14538) Effect for global ICT of the potential of selling Services instead of Equipment on the waste creation and environmental impacts;  [L.SM\_B](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14875) Sustainable management of batteries resulting from ICT equipment |
| [Q8/5](https://www.itu.int/ITU-T/workprog/wp_block.aspx?isn=4123): Guides and terminology on environment and climate change | [Terminology Handbook](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13864) Extension of the Terminology Handbook to cover relevant L-series terminologies;  [Terminology Handbook - web version](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13862) Web version of the Terminology Handbook;  [Mitigation Handbook - Additional case studies](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13853) Additional case studies to be added |
| [Q9/5](http://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/q9.aspx): Climate change and assessment of information and communication technology (ICT) in the framework of the Sustainable Development Goals (SDGs) | [L.AI-Env\_effects](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14879) AI environmental effect on Networks goods and services;  [L.Carbon-Neutrality](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14883) Carbon neutrality for organizations in the ICT sector;  [L.Criticality-index](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14882) Rare metals criticality index;  [L.MAAP](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14163) Methodology for assessing the aggregated positive sector-level impacts of ICT in other sectors;  [L.microgrid\_assesement](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14161) Impact assessment of energy services on multiple microgrids;  [L.TCFD](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14880) Application of the activities of the Task Force on Climate-related Financial Disclosures in the ICT sector |
| [SG11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/default.aspx) | [Q3/11](https://www.itu.int/en/ITU-T/studygroups/2017-2020/11/Pages/q3.aspx): Signalling requirements and protocols for emergency telecommunications | [Q.suppl.ETS\_Multi\_Access](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14904) Signalling requirements for IMS emergency telecommunications service in support of multiple accesses;  [Q.ETN-DS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14450) Signalling architecture of the fast deployment emergency telecommunication network to be used in a natural disaster;  [Q.suppl.Multi\_Device\_ETS](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14451) Signalling requirements for VoLTE-based network and GSM/UMTS network supporting Multi-device emergency telecommunications service |
| [SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) | [Q2/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q2.aspx): Requirements, capabilities, and use cases across verticals | [Y.SEM](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13706) Requirements and capability framework of Smart Environmental Monitoring |
| [Q4/20](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q4.aspx): e/Smart services, applications and supporting platforms | [Y.ISG-fr](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13678) [Y.ISG-fr](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13678) Framework of Smart Greenhouse Service |
| **ITU-D SG2**  [Question 7/2](https://www.itu.int/md/D14-WTDC17-C-0115/): Strategies and policies concerning human exposure to electromagnetic fields | | |
| **ITU-T SG** | **ITU-T Question** | **Work items** |
| [SG5](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/default.aspx) | [Q3/5](http://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/q3.aspx): Human exposure to electromagnetic fields (EMFs) from information and communication technologies (ICTs) | [K.peak](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14666) Comparison between peak and real exposure in the long term considerations;  [K.reflection](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14667) Impact of the metallic structures for the EMF exposure level;  [K.Small](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14668) Small base stations - impact on the overall exposure level;  [K.workers (ex K.dosimeter)](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14665) Assessment and management of compliance with RF EMF exposure limits for workers at radiocommunication sites;  [KSTR.EMF\_assess](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=14862) Case studies of RF-EMF assessments |

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