|  |  |  |
| --- | --- | --- |
| ITU logo | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATIONSTANDARDIZATION SECTOR**STUDY PERIOD 2017-2020 | TSAG-TD764 |
| **TSAG** |
| **Original: English** |
| **Question(s):** | N/A | Geneva, 10-14 February 2020 |
| **TD** |
| **Source:** | Rapporteur, TSAG RG-StdsStrat |
| **Title:** | Hot Topics Repository |
| **Purpose:** | Information, Discussion  |
| **Contact:** | Rim Belhassine-CherifRapporteur TSAG RG-StdsStrat | Tel: +216 71 139 724 / +216 98 370 064Fax: +216 71 190 592E-mail: Rim.Belhassine-Cherif@tunisietelecom.tn |
|  |  |  |

|  |  |
| --- | --- |
| **Keywords:** | Standardization strategy; Hot Topics; Status; CTO; |
| **Abstract:** | This TD provides the repository for TSAG Hot Topics including their definition, their metadata, their measurement, scope of usage, etc. as well as any update from various input sources |

[Editor’s note: this document is a draft showing as best as possible the final result of the format changes. It is taken at where [TD606R1](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0606/en) is assuming that it would be approved by TSAG and therefore not carrying ALL the revision changes]

This document acts as the repository for TSAG Hot Topics and is a live document.

# Introduction

This document provides the repository for TSAG Hot Topics including

* agreements for changes and additions,
* an index with all hot topics and sub hot topics
* and a breakdown of hot topics including their metadata and any transaction log input coming from study groups.

This document changes the format from the previous tracking methods which ended with TD734 as agreed in the TSAG meeting of February 2020.

# Definitions and Methodological Aspects

[Editor’s note, this section should be developed based on RG-SS contributions and answers to table 1 of [C132](https://www.itu.int/md/T17-TSAG-C-0132/en) as lessons learnt for the future]

# Latest Updates

## Propositions from study groups

Liaison replies to the original LS16 have been received from ITU-T SGs. As of September 18th, 2019, the following SGs have provided their responses to the liaison statement:

* SG2([TD515](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0515/en)), SG3([TD537](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0537/en)), SG5([TD561](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0561/en)), SG9([TD563](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0563/en)), SG12([TD542](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0542/en)), SG13([TD529](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0529/en)), SG15([TD571](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0571/en)), SG16([TD524](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0524/en)), SG17([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)), SG20([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)).
* SG3, SG5, SG9 and SG15 answered with no change proposal to LS16 list.

There are two level of changes proposed and considered

* Changes to the list of Hot Topics and sub Hot Topics itself, or their ITU-T point of contacts
	+ Those changes are discussed and determined in this section of the document
* Changes in the details of each Hot Topics and sub Hot Topics
	+ Those changes are discussed and determined in the next section of the document

## Propositions from CTO and CxO meetings

[Editor’s note: this section to simply point the reference documents and CTO and CxO meetings ]

During the last TSAG meeting in September 2019, RG-StdsStrat reviewed [TSAG-TD606](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0606%21%21MSW-E.docx) which proposed a consolidated list of hot topics based mainly on the analysis of the responses of ITU-T Study Groups to [TSAG LS-16](https://www.itu.int/ifa/t/2017/ls/tsag/sp16-tsag-oLS-00016.doc) on Hot Topics, and a revised version ([TSAG-TD606R1](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0606%21R1%21MSW-E.docx)) was provided following the discussion of this TD.

In the last interim meeting of the RG-StdsStrat, held on 20 January 2020, it was agreed to have the list of hot topics updated from the communiqués of the 11th TSB Director CTO Consultation Meeting (8 September 2019, Budapest, Hungary) and the last TSB Director CxO Consultation Meeting (11 December 2019, Dubai, United Arab Emirates) as in [TSAG-TD582](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0582%21%21MSW-E.docx) and [TSAG-TD661](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/200210/GEN/T17-TSAG-200210-TD-GEN-0661%21%21MSW-E.docx) respectively.

The two communiqués were reviewed and potential additional hot topics were identified

## RG-SS Proposals for TSAG agreements

The following two sections 3.1 and 3.2 regrouped all the input documents that were used to extract potential Topic and Sub Topic candidates for changes (additions or more).

These candidates are in the first column with their source in the second column

Then RG-SS meeting in TSAG proposed a position in the 3rd column

And the result agreement is in the 4 column

Table 1 – RG-SS proposals for TSAG agreements regarding candidate Hot Topics and Sub Hot Topics and results

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic/Sub Topic** | **Source** | **RG-SS Proposal** | **Allocation / Comment** |
| New Hot Topic extracted from 5.00 on NFV | SG12 ([TD542](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0542/en)) | Not added | Proposal from SG12:Remove NFV from the 5G/IMT-2020 item, and create an independent Hot Topic on NFV, citing the references above and listing the Study Groups with active work on this Hot Topic.It may be appropriate to ask if SG13 are willing to be the main point of contact for this new topic. SG12 and others would of course be listed as cooperating study groups. |
| Q5/16 Proposed a new Hot Topic: “Artificial intelligence-enabled multimedia applications” | SG16 ([TD524](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0524/en)) | Not added |  |
| Q22/16 Proposed a a new Hot Topic: “Distributed ledger technologies and e-services”  | SG16 ([TD524](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0524/en)) | Not added |  |
| SG16 proposed a new question 12/16 on “Visual surveillance systems and services”  | SG16-LS122 | Not added |  |
| Change the name of Hot Topics 10.00 to “Security and Trust” | SG17 ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Changed | 10.00 name updated |
| New sub Hot Topic to 10.00: “Technical aspects of Cybersecurity Insurance”  | SG17 ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Added  | Allocated as 10.14 |
| New sub Hot Topic to 10.00: “Edge Cloud Security” | SG17 ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Added | Allocated as 10.15 |
| Update the name of 10.10 with replacing Digital Humanities by “Human Factor” | SG17 ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Updated | 10.10 name updated |
| Update the name of 15.00 to “Quantum based security” | SG17 ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Updated | 15.00 name changed |
| New Hot Topic “Assessment and evaluation of smart city and IoT verticals (e.g. detailed mobility, detailed energy management, detailed water management, etc.)” | SG20 ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Proposed New  | Allocated as16.00 |
| New Hot Topic “Solutions in smart sustainable cities using emerging technologies (e.g. IoT, AI, etc.) | SG20 ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Proposed New | Allocated as 17.00 |
| Smart villages and rural areas | SG20 ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Proposed New | Allocated as 18.00 |
| New Hot Topic “Open-source movement and network ‘sofwarization”  | CJK CTO ([TD489att4-D034](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0489/en)) | Not added |  |
| New Hot Topic “The value of Artificial Intelligence (AI) to the automation of network operation and maintenance, the importance of preparations for the arrival or quantum information technologies” | CJK CTO ([TD489att4-D034](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0489/en)) | Not added |  |
| New Hot Topic “The necessity of investment in all-fibre networks” | CJK CTO ([TD489att4-D034](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0489/en)) | Not added |  |
| New Hot Topic “The increasing relevance of innovation in support to datacentre interconnection” | CJK CTO ([TD489att4-D034](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0489/en)) | Not added |  |
| New sub Hot Topic for 15.00 “Quantum Technologies” | China (P.R) [C0012](https://extranet.itu.int/sites/itu-t/studygroups/2017-2020/tsag/strategy/Shared%20Documents/C0012%20CAICT%20Consideration%20on%20quantum%20information%20technology%20standardization.docx?d=w645a850cbfe74fe7913be3778a662778&Source=https%3A%2F%2Fextranet%2Eitu%2Eint%2Fsites%2Fitu%2Dt%2Fstudygroups%2F2017%2D2020%2Ftsag%2Fstrategy%2FSitePages%2FHome%2Easpx) to TSAG RG-StdsStrat | Not added |  |
| New sub Hot Topic for 5.00 ”End-to-end security and trust in 5G” | CTO ([TD582](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0582%21%21MSW-E.docx)), CxO ([TD661](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/200210/GEN/T17-TSAG-200210-TD-GEN-0661%21%21MSW-E.docx)) | Added | Allocated as 5.15 |
| New Hot Topic “Identify scenarios and best practices for Network infrastructure sharing” | CTO ([TD582](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0582%21%21MSW-E.docx)), CxO ([TD661](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/200210/GEN/T17-TSAG-200210-TD-GEN-0661%21%21MSW-E.docx)) | Added | Allocated as 19.00 |
| New sub Hot Topic “Establish a 5G observatory to gain lessons from various technical developments and implementations of 5G technology, use cases and vertical experiments” | CTO ([TD582](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0582%21%21MSW-E.docx)) | Added | Allocated as 5.16 |
| New sub Hot Topic “Develop guidance for operators on the business rationale for 5G deployment” | CTO ([TD582](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0582%21%21MSW-E.docx)) | Added | Allocated as 5.17 |
| New Hot Topic “Performance, QoS and QoE assessment” | CTO ([TD582](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0582%21%21MSW-E.docx)) | Added | Allocated as 20.00 |
| New sub Hot Topic “Real-time monitoring of network performance” | CTO ([TD582](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0582%21%21MSW-E.docx)) | Added | Allocated as 20.01 |
| New sub Hot Topic “Network performance prediction” | CTO ([TD582](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/190923/GEN/T17-TSAG-190923-TD-GEN-0582%21%21MSW-E.docx)) | Added | Allocated as 20.02 |
| New sub Hot Topic “Standardization of open, interoperable RAN interfaces and RAN functional architecture” | CxO ([TD661](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/200210/GEN/T17-TSAG-200210-TD-GEN-0661%21%21MSW-E.docx)) | Added | Allocated as 5.18 |
| New sub Hot Topic “Real-time network monitoring” | CxO ([TD661](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/200210/GEN/T17-TSAG-200210-TD-GEN-0661%21%21MSW-E.docx)) | Added | Allocated as 3.06 |
| New sub Hot Topic “Automation informed by machine learning for network operation and maintenance” | CxO ([TD661](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/200210/GEN/T17-TSAG-200210-TD-GEN-0661%21%21MSW-E.docx)) | Added | Allocated as 3.07 |
| New sub Hot Topic “Compliance, conformance and quality testing for Intelligent Transport Systems” | CxO ([TD661](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/200210/GEN/T17-TSAG-200210-TD-GEN-0661%21%21MSW-E.docx)) | Added | Allocated as 20.03 |
| New sub Hot Topic “Measurement of user-perceived QoS” | CxO ([TD661](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/200210/GEN/T17-TSAG-200210-TD-GEN-0661%21%21MSW-E.docx)) | Added | Allocated as 20.04 |

# Current summary list of Hot Topics with provisional RG-SS proposals

Table 2 - Current summary list of Hot Topics

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **#** | **Topic/Sub Topic** | **Source** | **ITU-T Topic Point of Contacts** | **Status** | **Temperature** |
| 1.00 | OTT Services and the economic impact, Cross-Industry (TSAG [TD101](https://www.itu.int/md/T17-TSAG-170501-TD-GEN-0101/en)) | CTO | **SG3 SG2 SG9 SG16 SG17** | No Change |  |
| 1.01 | The interplay of OTT service providers and operators particularly in developing countries |  |  |  |  |
| 1.02 | The economic impact of OTT services and operators |  |  |  |  |
| 1.03 | International standards frameworks, best practices and guidelines on OTT services |  |  |  |  |
| 2.00 | VoLTE/ViLTE interconnection and adoption of ENUM for IMS interconnection (TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en)) | CxO | **SG11** in cooperation with SG2 | No Change |  |
| 3.00 | Intelligence for network automation, augmentation and amplification (TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en)) | CxO | **SG13 SG9 SG20** | Updated |  |
| 3.01 | Identify the standardization needs for intelligence in 5G systems and the telecommunications sector |  |  |  |  |
| 3.03 | Automatic detection and resolution of anomalies and other incidents of inefficiency, as well as predictive maintenance will reduce the operational expenditure of network operators and service providers |  |  |  |  |
| 3.04 | Address the architecture interfaces, functional entities, service scenarios and protocols required for intelligence retrieval and actuation, and the performance benchmarking and certification of AI techniques |  |  |  |  |
| 3.05 | Usage of AI in security management solutions |  |  |  |  |
| 3.06 | Real-time network monitoring | CxO |  | Added |  |
| 3.07  | Automation informed by machine learning for network operation and maintenance | CxO |  | Added |  |
| 4.00 | Open APIs, enabling third parties to access and build on network capabilities to develop innovative, reusable services (TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en)) | CxO | **SG13** **SG11** (Cooperating SG) **SG20** | Updated |  |
| 5.00 | Realizing 5G/IMT-2020 vision (TSAG [TD101](https://www.itu.int/md/T17-TSAG-170501-TD-GEN-0101/en), [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en), [C27R2](https://www.itu.int/md/T17-TSAG-C-0027/en), [C29](https://www.itu.int/md/T17-TSAG-C-0029/en)) | CTO, CxO, Contributions | **SG13** in cooperation with SG2, 5, 11, 12, **15**, 16, 17, 20 | No Change |  |
| 5.01 | Unified access-independent network management |  |  |  |  |
| 5.02 | Standardization roadmap on IMT-2020 |  |  |  |  |
| 5.03 | ICN (Information Centric Networks) |  |  |  |  |
| 5.04 | Open-source software and standards for 5G |  |  |  |  |
| 5.05 | Software-based networking functions to optimize a per-session based performance |  |  |  |  |
| 5.06 | Emerging fronthaul and midhaul technologies to support the 5G deployment |  |  |  |  |
| 5.07 | Large-bandwidth backhaul and fronthaul solutions |  |  |  |  |
| 5.08 | Concrete strategies for the migration from 4G to 5G systems. |  |  |  |  |
| 5.09 | Service-based network architecture |  |  |  |  |
| 5.10 | Open service management APIs for the Internet of Things |  |  |  |  |
| 5.11 | Electromagnetic field (EMF) studies around 5G beam-forming capabilities |  |  |  |  |
| 5.12 | Interoperability of services supporting public safety |  |  |  |  |
| 5.13 | Control and management protocols for IMT-2020 |  |  |  |  |
| 5.14 | Virtualized deployment of recommended methods for network performance, quality of service (QoS) and quality of experience assessment |  |  |  |  |
| 5.15 | End-to-end security and trust in 5G | CTO CxO |  | Added |  |
| 5.16 | Establish a 5G observatory to gain lessons from various technical developments and implementations of 5G technology, use cases and vertical experiments | CTO |  | Added |  |
| 5.17 | Develop guidance for operators on the business rationale for 5G deployment | CTO |  | Added |  |
| 5.18 | Standardization of open, interoperable RAN interfaces and RAN functional architecture” | CxO |  | Added |  |
| 6.00 | Gigabit-speed broadband access services and networks (TSAG [TD101](https://www.itu.int/md/T17-TSAG-170501-TD-GEN-0101/en)) | CTO | **SG15** SG9 | No Change |  |
| 6.01 | Support the delivery of high definition video services  |  |  |  |  |
| 6.02 | Broadband access networks; G.fast, G.hn, VDSL2, NG-PON2 |  |  |  |  |
| 6.03 | True fixed-mobile convergence, hybrid fixed wireless |  |  |  |  |
| 7.00 | Data Center Interconnection for OTT and vertical industries (TSAG [C37](https://www.itu.int/md/T17-TSAG-C-0037/en)) | Contribution | **SG15 SG11** (Cooperating SG) SG9 | No Change |  |
| 7.01 | OTT’s business and services models in relation to telecom services |  |  |  |  |
| 7.02 | Requirements from OTT for DCI/metro network technologies (such as short distance, large bandwidth, low-cost optical (WDM) technology, fixed network), and standards |  |  |  |  |
| 8.00 | Augmented reality & virtual reality, video services (TSAG [C6](https://www.itu.int/md/T17-TSAG-C-0006/en), [TD101](https://www.itu.int/md/T17-TSAG-170501-TD-GEN-0101/en)) | Contribution, CTO | **SG16 SG12[[1]](#footnote-1) SG11** (Cooperating SG) | Updated |  |
| 8.01 | Applications with high network requirements in throughput and latency  |  |  |  |  |
| 8.02 | A range of innovative technologies in transport, IP and access networking, media coding and cloud and edge computing |  |  |  |  |
| 8.03 | NG video codec standardization on 5G and vertical industries |  |  |  |  |
| 8.04 | Future Content Delivery Network (CDN) technologies standards. |  |  |  |  |
| 8.05 | Immersive live experience (ILE) |  |  |  |  |
| 8.06 | Digital signage |  |  |  |  |
| 9.00 | Accessibility by design mainstreaming the consideration of needs of persons with disabilities and other persons with specific needs to build inclusive ICT solutions (TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en)) | CxO | **SG16 SG2 SG20** | Updated |  |
| 10.00 | Security and Trust (TSAG [TD101](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0101/en), [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en)) | CTO, CxO | **SG2 SG17** | Updated  |  |
| 10.01 | Principles of transparency and technological integrity |  |  |  |  |
| 10.02 | Mitigation of the risks posed by IoT botnets |  |  |  |  |
| 10.03 | Assessment of the impact of quantum computing |  |  |  |  |
| 10.04 | Potential of blockchain and its implications for security |  |  |  |  |
| 10.05 | Data-centric security |  |  |  |  |
| 10.06 | Security and privacy by design, considering security and privacy from the outset of ICT services’s development through the proactive monitoring and protection of live services |  |  |  |  |
| 10.07 | Security, privacy and trust in the presence of AI and ML |  |  |  |  |
| 10.08 | Application security and quantum-safe cryptography through an incubation process |  |  |  |  |
| 10.09 | Identity and authorization, providing for the reliable identification essential to secure, efficient service provision |  |  |  |  |
| 10.10 | Security and privacy of human factor (intersection of computer science and the humanities) |  |  | Updated |  |
| 10.11 | Security of Robotics/IoT |  |  |  |  |
| 10.12 | Security of Robotics/IoT |  |  |  |  |
| 10.13 | Cybersecurity Services |  |  |  |  |
| 10.14 | Technical aspects of Cybersecurity Insurance |  |  | Proposed New |  |
| 10.15 | Edge Cloud Security |  |  | Proposed New |  |
| 11.00 | Analytics, supporting the development of evidence-based, data driven services (TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en)) | CxO | **SG20 SG17** | No Change |  |
| 11.01 | Data processing and management for IoT and SC&C |  |  |  |  |
| 11.02 | Common things description methodology |  |  |  |  |
| 11.03 | Interoperability framework and functional architecture for IoT and SC&C |  |  |  |  |
| 11.04 | Industry dependent data models and formats to support development of data driven IoT and SC&C services |  |  |  |  |
| 11.05 | Features, requirements, framework and functional architecture of IoT device, gateway, platform, network |  |  |  |  |
| 11.06 | Edge Computing to support evidence-based, data driven IoT and SC&C services |  |  |  |  |
| 11.07 | Distributed ledger technologies for IoT and SC&C |  |  |  |  |
| 11.08 | IoT identification to support evidence-based data driven IoT and SC&C services |  |  |  |  |
| 11.09 | AI enabled IoT and SC&C |  |  |  |  |
| 11.10 | Data driven IoT verticals |  |  |  |  |
| 11.11 | Data Security |  |  |  |  |
| 12.00 | Intelligent network management towards future networks (TSAG [TD344](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0344/en)) | SG2 | **SG2** | No Change |  |
| 12.01 | Smart operation, management and maintenance. |  |  |  |  |
| 12.02 | Telecom anti-fraud management |  |  |  |  |
| 12.03 | REST-based network management framework |  |  |  |  |
| 13.00 | Environmental efficiency of emerging technologies (TSAG [TD374](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0374/en)) | SG5 | **SG5** | No Change |  |
| 13.01 | Assessment of the environmental impacts of deploying and implementing AI, Blockchain, and other emerging technologies |  |  |  |  |
| 14.00 | Digital health (TSAG [TD347](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0347/en)) | SG16 | **SG16 SG20** | Updated |  |
| 15.00 | Quantum based Security[[2]](#footnote-2) (TSAG [TD362](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0362/en)) | SG17 | **SG17 SG13** | Updated |  |
| 16.00 | Assessment and evaluation of smart city and IoT verticals (e.g. detailed mobility, detailed energy management, detailed water management, etc.) (TSAG [TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | SG20 | **SG20** | Added |  |
| 17.00 | Solutions in smart sustainable cities using emerging technologies (e.g. IoT, AI, etc.) (TSAG [TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | SG20 | **SG20** | Added |  |
| 18.00 | Smart villages and rural areas (TSAG [TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | SG20 | **SG20** | Added |  |
| 19.00 | Identify scenarios and best practices for Network infrastructure sharing (TSAG [TD582](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0582/en), [TD661](https://www.itu.int/md/T17-TSAG-200210-TD-GEN-0661/en)) | CTO, CxO | **SG2, SG3, SG13, SG15** | Added |  |
| 20.00 | Performance, QoS and QoE assessment | CTO | **SG12, SG16, FG-AI4AD** | Added |  |
| 20.01 | Real-time monitoring of network performance | CTO | **SG12, SG16, FG-AI4AD** | Added |  |
| 20.02 | Network performance prediction | CTO | **SG12, SG16, FG-AI4AD** | Added |  |
| 20.03 | Compliance, conformance and quality testing for Intelligent Transport Systems | CxO | **SG12, SG16, FG-AI4AD** | Added |  |
| 20.04 | Measurement of user-perceived QoS | CxO | **SG12, SG16, FG-AI4AD** | Added |  |

# Hot Topics Detailed Updated List

[Editor’s notes: we have not updated the full list here. Our intention is simply to show with a few Hot Topics how the final format would look like. If TSAG approves this new format we will complete and transact all the changes recorded in TD606R1 here with no new content of course]

|  |  |  |
| --- | --- | --- |
| **1.00** | **OTT Services and the economic impact, Cross-Industry**  | **SG3 SG2 SG9 SG16 SG17** |
| **Description**Sub Hot Topics |
| 1.01 | The interplay of OTT service providers and operators particularly in developing countries |
| 1.02 | The economic impact of OTT services and operators |
| 1.03 | International standards frameworks, best practices and guidelines on OTT services |
| **Source Type** | CTO | **Date of Entry** |  |
| **Source References** | TSAG [TD101](https://www.itu.int/md/T17-TSAG-170501-TD-GEN-0101/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018, September 2019 |
| SG2 ([TD344](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0344/en)) ([TD515](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0515/en)) | New Work Items  | New work items on OTT are under development in SG2New work item in regards to the use of E.164 Numbers as identification for OTT. SG2 will be working on a technical report to study the current use of telephone numbers, as well as a supplement to provide guidance ([SG2-TD 683-R2](https://www.itu.int/md/T17-SG02-190219-TD-GEN-0683/en) and [SG2-TD 687-R2](https://www.itu.int/md/T17-SG02-190219-TD-GEN-0687)). |
| SG3 ([TD330](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0330/en)) | Work Program | 1. [D7\_R\_OTTBypass](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14531) (Regional Recommendation on OTT bypass including national and regional collaboration between Member States and operators to deal with the OTT bypass issue)
2. [D.50Supp\_OTT](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=13500) (OTTs in the context of IIC);
3. [D.ConsumerOTT](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14123) (Customer redress mechanism and consumer protection);
4. [D.262 (ex D.OTT)](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=13503) (Collaborative Framework for OTTs);
5. [D.OTTBypass](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=13522) (OTT Bypass);
6. [D.OTTMNO](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=13521) (Guidelines on OTT-MNO Partnerships).
 |
| SG9 ([TD404](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0404/en)) |  | Regarding OTT services, SG9 has started a new work item on draft Recommendation J.cable-ott “System architecture and interfaces between a cable television operator and an OTT service provider”. |
| SG16 ([TD347](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0347/en)) | Work Program | SG16 is working on technical aspects of provisioning of OTT service over IPTV |
| SG17 ([TD362](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0362/en)) ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Work Program | X,1147 (X.srfb), X.1450 (X.hakm), X.sfop |
|  | Correspondence Group | SG17 Correspondence Group on transformation of security studies identified the OTTs as part of the Digital Service Providers (DSPs) ecosystem. |

|  |  |  |
| --- | --- | --- |
| **2.00** | **VoLTE/ViLTE interconnection and adoption of ENUM for IMS interconnection** | **SG11** in cooperation with SG2 |
| **Description** |
| **Source Type** | CxO | **Date of Entry** |  |
| **Source References** | TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018 |
| SG11 ([TD349](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0349/en)) | Achievements | [Q.3640](https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=13482): Framework of interconnection of VoLTE/ViLTE-based networks[Q.3953](https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=13490): VoLTE/ViLTE interconnection testing for interworking and roaming scenariosQ.Suppl69: Framework for interconnection between VoLTE-based network and other networks supporting emergency telecommunications service (ETS) |
|  | Work Program | Q.DEN\_IMS: Signalling architecture of distributed ENUM networking for IMS |
|  | Workshop | [ITU Regional Workshop](https://www.itu.int/en/ITU-D/Regional-Presence/CIS/Pages/EVENTS/2018/10_Samarkand/10_Samarkand.aspx) on deployment of VoLTE/ViLTE networks based on IMS. From standardization to implementation (Samarkand, Uzbekistan, 2-3 October 2018) |
|  | Others | [ITU Regional Forum](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20180604/Pages/default.aspx) on “Internet of Things, Telecommunication Networks and Big Data as basic infrastructure for Digital Economy” (St. Petersburg, Russia, 4-6 June 2018) |
| SG17 ([TD362](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0362/en)) | Achievements | Q2/17 developed X.1041 (X.voltesec-1): Security Framework for voice-over-long-term-evolution (VoLTE) Network Operation. |

|  |  |  |
| --- | --- | --- |
| **3.00** | Intelligence for network automation, augmentation and amplification | **SG13 SG9 SG20** |
| **Description**Sub Hot Topics |
| 3.01 | Identify the standardization needs for intelligence in 5G systems and the telecommunications sector |
| 3.03 | Automatic detection and resolution of anomalies and other incidents of inefficiency, as well as predictive maintenance will reduce the operational expenditure of network operators and service providers |
| 3.04 | Address the architecture interfaces, functional entities, service scenarios and protocols required for intelligence retrieval and actuation, and the performance benchmarking and certification of AI techniques |
| 3.05 | Usage of AI in security management solutions |
| 3.06 | Real-time network monitoring |
| 3.07  | Automation informed by machine learning for network operation and maintenance |
| **Source Type** | CxO | **Date of Entry** |  |
| **Source References** | TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018, September 2019 |
| SG9 ([TD404](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0404/en)) | New Work Items | Regarding intelligence for network automation, augmentation and amplification, SG9 has started a new work item on draft Recommendation J.pcnp-fmw “Premium Cable network platform with embedded intelligent analyzer and controller for enabling advanced multimedia services”. |
| SG13 ([TD356](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0356/en)) ([TD529](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0529/en)) | Work Program | Y.sfes: Smart Farming Education Service based on u-learning environmentY.qos-ml-arc: Architecture of machine learning based QoS assurance for IMT-2020 networkY.MecTA-ML: Mechanism of traffic awareness for application-descriptor-agnostic traffic based on machine learningY.MLaaS-reqts: Cloud computing - Functional requirements for machine learning as a serviceY.IMT2020-ML-arc: Architectural framework for machine learning in future networks including IMT-2020 |
| SG17 ([TD362](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0362/en)) | ITU-T Coordination | Network automation, augmentation and amplification with the promise of a “Zero Touch” will include Security at its design level. SG17 identified this gap as well as others and is putting 5G Security at the core of its Q6/17 as lead question SG17 and SG13 should collaborate here. |
| SG5 ([TD374](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0374/en)) | Work Program | ITU-T SG5 draft L.DCIM “Specifications for datacentre infrastructure management system based on big data and artificial intelligence technology”. |
| TSAG Meeting Date: September 2019 |
| SG20 ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Work Program | Y.4116: “Requirements of transportation safety service including use cases and service scenarios”.Y.IoT-AV-Reqts: “Requirements and capability framework of IoT infrastructure to support network-assisted autonomous vehicles”. |

|  |  |  |
| --- | --- | --- |
| **4.00** | **Open APIs, enabling third parties to access and build on network capabilities to develop innovative, reusable services** | **SG13** **SG11** (Cooperating SG) **SG20** |
| **Description** |
| **Source Type** | CxO | **Date of Entry** |  |
| **Source References** | TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018 |
| SG13 (TD356) | Work Program | Y.PTDN-T-interface: T interface in Public packet Telecommunication Data Network (PTDN) |
| SG11 (TD349) | Work Program | Work item in Q6/11 - Q.CE-APIMP: Protocol for managing capability exposure APIs in IMT-2020 network |
| SG17 (TD362) | Others | Open APIs cannot be delivered without Security (by design) which is what Q7/17 covers. SG17 and SG13 should collaborate here. |
| TSAG Meeting Date: September 2019 |
| SG20 ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Work Program | Y.IoT-NCM-reqts: Requirements and capabilities of network connectivity management in the Internet of things. |

|  |  |  |
| --- | --- | --- |
| **5.00** | **Realizing 5G/IMT-2020 vision** | **SG13** in cooperation with SG2, 5, 11, 12, **15**, 16, 17, 20 |
| **Description** |
| 5.01 | Unified access-independent network management |
| 5.02 | Standardization roadmap on IMT-2020 |
| 5.03 | ICN (Information Centric Networks) |
| 5.04 | Open-source software and standards for 5G |
| 5.05 | Software-based networking functions to optimize a per-session based performance |
| 5.06 | Emerging fronthaul and midhaul technologies to support the 5G deployment |
| 5.07 | Large-bandwidth backhaul and fronthaul solutions |
| 5.08 | Concrete strategies for the migration from 4G to 5G systems. |
| 5.09 | Service-based network architecture |
| 5.10 | Open service management APIs for the Internet of Things |
| 5.11 | Electromagnetic field (EMF) studies around 5G beam-forming capabilities |
| 5.12 | Interoperability of services supporting public safety |
| 5.13 | Control and management protocols for IMT-2020 |
| 5.14 | Virtualized deployment of recommended methods for network performance, quality of service (QoS) and quality of experience assessment |
| 5.15 | End-to-end security and trust in 5G |
| 5.16 | Establish a 5G observatory to gain lessons from various technical developments and implementations of 5G technology, use cases and vertical experiments |
| 5.17 | Develop guidance for operators on the business rationale for 5G deployment |
| 5.18 | Standardization of open, interoperable RAN interfaces and RAN functional architecture” |
| **Source Type** | CTO, CxO, Contributions | **Date of Entry** | DD/MM/YYYY |
| **Source References** | TSAG [TD101](https://www.itu.int/md/T17-TSAG-170501-TD-GEN-0101/en), [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en), [C27R2](https://www.itu.int/md/T17-TSAG-C-0027/en), [C29](https://www.itu.int/md/T17-TSAG-C-0029/en) | **Date of Update** | DD/MM/YYYY |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: Devember 2018, September 2019 |
| SG5 (TD374) | Work Program | ITU-T SG5 has established the vision on “Setting the Environmental Requirements for 5G”. During its September 2018 meeting, ITU-T SG5 has agreed on the Supplement K.Suppl.16 (ex. K.Supp-5G\_EMF\_Compliance) on Electromagnetic field (EMF) compliance assessments for 5G wireless networks.Additionally, SG5 is working on the following work items:* ITU-T L.5g\_powering on “Sustainable power feeding solutions for 5G network”
* ITU-T L.EE\_5G on “Energy efficiency Metrics and measurement methodology for 5G solutions”
* ITU-T L.ENV-KPI-5G-ARCH on “Environmental KPIs/metrics for 5G architectures”
 |
| SG13 (TD356) ([TD529](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0529/en)) | Work Program | Y.NGNe-O-arch: Functional architecture of orchestration in NGNeY.IMT2020-qos-fa: QoS functional architecture for IMT-2020 networks[Y.IMT2020-qos-req](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14740); QoS requirements for IMT-2020 networkY.qos-ml-arc: Architecture of machine learning based QoS assurance for IMT-2020 networkY.IMT-2020.qos-mon: IMT-2020 network QoS monitoring architectural frameworkY.IMT2020-CEF: Network capability exposure function in IMT-2020 networksY.3MO: Requirements and Architectural Framework of Multi-layer, Multi-Domain, Multi-Technology OrchestrationY.IMT2020-ADPP: Advanced Data Plane Programmability for IMT-2020Y.NetSoft-SSSDN: High level architectural model of network slice support for IMT-2020 - Part: SDNY.NSOM: Network slicing orchestration and managementY.FMC-ARCH: Functional architecture for supporting fixed mobile convergence in IMT-2020 networksY.FMC-CE: Capability exposure enhancement for supporting FMC in IMT-2020 networkY.FMC-EC: Unified edge computing for supporting fixed mobile convergence in IMT-2020 networksY.FMC-MM: Mobility management for fixed mobile convergence in IMT-2020 networksY.FMC-ReqMO: IMT-2020 FMC functional requirements for management and orchestrationY.FMC-SM: Session management for fixed mobile convergence in IMT-2020 networksY.FMC-SS: Service scheduling for supporting FMC in IMT-2020 network |
| SG11 (TD349) | Achievements | Q.5001: Signalling requirements and architecture of intelligent edge computing |
| SG11 (TD349) | Work Program | Related current work items of Q6/11:* Q.NS-LCMP: Protocol for network slice lifecycle management
* Q.CE-APIMP, Protocol for managing capability exposure APIs in IMT-2020 network
* Q.D2D-EECP: Energy efficient D2D communication protocol for IMT 2020 network
* Q.IMT2020-PFW: Protocol Framework for IMT-2020

Related current work items of Q7/11:Q.QMP-TCA QoS management protocol for time constraint applications over SDN |
| SG12 (TD337) | Work Program | Draft new Recommendation Y.cvms, “Considerations for Realizing Virtual Measurement Systems”, in Question 8/12 |
| SG17 (TD362) ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Others | SG17 support to this Hot Topic and the update covering the last two SG17 meetings to date consists of- Q2 and 6/17 have supporting mandates with substantial work programs especially on SDN/NFV and 5G and Q8/17 dealing with Cloud Computing has connected work under development |
|  | Work Program | Since last TSAG meeting SG17 can update this Hot Topic with:- Approved new draft Recommendations: X.1042 (X.sdnsec-1) and X.1043 (X.sdnsec-3)- New Work Items established: X.5Gsec-guide, X.sr\_cphr, X.nsom-sec, X.5Gsec-netec- There are currently a growing number of 9 work items in the work programs of SG17. |
| SG15 (TD385) | Work Program | Work items of ITU-T SG15 in cooperation with SG13* Transport network to support IMT-2020/5G,
* Optical access transport systems to serve the 5G fronthaul application,
* incl. Fronthaul, midhaul and backhaul network considerations for IMT-2020/5G.
 |
| TSAG Meeting Date: September 2019 |
| SG20 ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Work Program | Draft new Recommendation ITU-T Y.UAV.arch “Functional architecture for unmanned aerial vehicles and unmanned aerial vehicle controllers using IMT-2020 networks” |

|  |  |  |
| --- | --- | --- |
| **6.00** | **Gigabit-speed broadband access services and networks** | **SG15** SG9 |
| **Description** |
| 6.01 | Support the delivery of high definition video services  |
| 6.02 | Broadband access networks; G.fast, G.hn, VDSL2, NG-PON2 |
| 6.03 | True fixed-mobile convergence, hybrid fixed wireless |
| **Source Type** | CTO | **Date of Entry** |  |
| **Source References** | TSAG [TD101](https://www.itu.int/md/T17-TSAG-170501-TD-GEN-0101/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018, September 2019 |
| SG17 (TD362) ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Others | SG17 may support the new FG-NET2030 through Q2/17, Q6/17, Q8/17 , and consider in its current transformation of security studies. |
| SG15 (TD385) | Work Program | Work items of ITU-T SG15 WP1* Optical systems for fibre access networks: XG(S)-PON, NG-PON2, Higher-Speed PON and MW-PON (Multi-wavelength PON),
* Broadband access over metallic conductors: VDSL2, G.fast and G.mgfast (Multi-Gigabit fast),
* Broadband in-premises networking: G.hn and G.hn2 (unified high-speed wire-line based home networking transceivers), indoor optical camera communication transceivers (G.occ), and high speed indoor visible light communication transceiver (G.vlc).
 |
| SG9 (TD404) | New work Items | SG9 started two new work items to standardize the 5th Generation DOCSIS which is capable of gigabit broadband access over cable networks (DOCSIS 3.1 full duplex |

|  |  |  |
| --- | --- | --- |
| **7.0** | **Data Center Interconnection for OTT and vertical industries** | **SG15 SG11** (Cooperating SG) SG9 |
| **Description** |
| 7.01 | OTT’s business and services models in relation to telecom services |
| 7.02 | Requirements from OTT for DCI/metro network technologies (such as short distance, large bandwidth, low-cost optical (WDM) technology, fixed network), and standards |
| **Source Type** | Contribution | **Date of Entry** |  |
| **Source References** | TSAG [C37](https://www.itu.int/md/T17-TSAG-C-0037/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018, September 2019 |
| SG11 (TD349) | Work Program | Work item in Q4/11Q.SD-DCI: Signalling requirements and information model of SD-DCI service |
| SG17 (TD362) ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Work Program | work items: Q6/17 and Q7/17 |
|  | Workshops | 5G Security |
|  | Others | The underlying AI/ML topic necessary here is not listed. |
| SG15 (TD385) | Work Program | Work items of ITU-T SG15: ITU-T SG15 provides the network infrastructure for DCI and does not consider the applications using the infrastructure. |
| SG9 (TD404) | New Work Item | Regarding OTT services, SG9 has started a new work item on draft Recommendation J.cable-ott “System architecture and interfaces between a cable television operator and an OTT service provider”. |

|  |  |  |
| --- | --- | --- |
| **8.00** | **Augmented reality & virtual reality, video services** | **SG16 SG12[[3]](#footnote-3) SG11** (Cooperating SG) |
| **Description** |
| 8.01 | Applications with high network requirements in throughput and latency  |
| 8.02 | A range of innovative technologies in transport, IP and access networking, media coding and cloud and edge computing |
| 8.03 | NG video codec standardization on 5G and vertical industries |
| 8.04 | Future Content Delivery Network (CDN) technologies standards. |
| 8.05 | Immersive live experience (ILE) |
| 8.06 | Digital signage |
|  |  |
| **Source Type** | Contribution, CTO | **Date of Entry** |  |
| **Source References** | TSAG [C6](https://www.itu.int/md/T17-TSAG-C-0006/en), [TD101](https://www.itu.int/md/T17-TSAG-170501-TD-GEN-0101/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018 |
| SG16 (TD347) | Work Program | 1. New Recs. H.430-series on immersive live experience
2. Activities: Three Mini-workshops on ILE were held on Sep 2016 and Jan, Oct 2017.
3. Related SDOs: MPEG, DVB, EBU, 3GPP, VRIF
4. H.780 “Digital signage: Service requirements and IPTV-based architecture”
5. H.DS-FIS “Digital signage: Framework for interactive services”
 |
| SG11 (TD349) | Work Program | Work items in Q8/111. [X.609.3 (ex X.mp2p-mssr)](https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=13345) Managed P2P communications: Multimedia streaming signalling requirements
2. [X.609.4 (ex X.mp2p-mspp)](https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=13493) Managed P2P communications: Multimedia streaming peer protocol
3. [X.609.5 (ex X.mp2p-msomp)](https://www.itu.int/ITU-T/recommendations/rec.aspx?rec=13494) Managed P2P communications: Multimedia streaming overlay management protocol
4. X.mp2p-cdsr: Managed P2P communications: Content distribution signalling requirements
5. X.mp2p-cdpp: Managed P2P communications: Content distribution peer protocol
 |
| SG9 (TD404) | Work Program | Regarding augmented reality & virtual reality, video services, SG9 consented J.302amd-1 “System specifications of augmented reality smart television service Amd #1”, and has started to develop a new technical paper TP.b-catv “Broadband CATV system using server-side reception and processing” for enabling advanced video services (e.g. 360 degree video) through existing broadband CATV system. |
| TSAG Meeting Date: September 2019 |
| SG20 ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Work Program | Y.IoT-AR: Framework for AR and VR based control in IoT: Q4/20Y.Supp.42: Use cases of user-centric work space service: Q2/20Y.UCS-Reqts: Requirements and capabilities of user-centric work space service: Q2/20 |

|  |  |  |
| --- | --- | --- |
| **9.00** | **Accessibility by design mainstreaming the consideration of needs of persons with disabilities and other persons with specific needs to build inclusive ICT solutions** | **SG20** |
| **Description** |
| **Source Type** | CxO | **Date of Entry** |  |
| **Source References** | TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018, September 2019 |
| SG2 (TD344) ([TD515](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0515/en)) | Others | a global resource for services to promote accessibility. |
|  | New Work Item | New work item was created for a recommendation that specifies a country code that is available for use by entities who wish to offer international telecommunication services for persons with disabilities and persons with specific needs (ITU-T E.disab, [SG2-C140](https://www.itu.int/md/T17-SG02-C-0140/en)). |
| SG16 (TD347) | Achievements | H.702 "Accessibility profiles for IPTV systems"F.791 "Accessibility terms and definitions"F.921 "Audio-based indoor and outdoor network navigation system for persons with vision impairment"F.930 "Multimedia telecommunication relay services". |
| TSAG Meeting Date: September 2019 |
| SG20 ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Achievements | Y.4204 “Accessibility requirements for the Internet of things applications and services”: Q2/20 |
|  | Work Program | Y.ACC-PTS “Accessibility requirements for smart public transportation services”: Q2/20 |

|  |  |  |
| --- | --- | --- |
| **10.00** | **Security and Trust** | **SG2 SG17** |
| **Description** |
| 10.01 | Principles of transparency and technological integrity |
| 10.02 | Mitigation of the risks posed by IoT botnets |
| 10.03 | Assessment of the impact of quantum computing |
| 10.04 | Potential of blockchain and its implications for security |
| 10.05 | Data-centric security |
| 10.06 | Security and privacy by design, considering security and privacy from the outset of ICT services’s development through the proactive monitoring and protection of live services |
| 10.07 | Security, privacy and trust in the presence of AI and ML |
| 10.08 | Application security and quantum-safe cryptography through an incubation process |
| 10.09 | Identity and authorization, providing for the reliable identification essential to secure, efficient service provision |
| 10.10 | Security and privacy of human factor (intersection of computer science and the humanities) |
| 10.11 | Security of Robotics/IoT |
| 10.12 | Security of Robotics/IoT |
| 10.13 | Cybersecurity Services |
| 10.14 | Technical aspects of Cybersecurity Insurance |
| 10.15 | Edge Cloud Security |
| **Source Type** | CTO, CxO | **Date of Entry** |  |
| **Source References** | TSAG [TD101](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0101/en), [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: DD/MM/YYYY |
| SG2 (TD?) | New Work Item | New work item on "spoofing" in regards to E.156 and E.157. Unwanted calling appears to be on the rise around the world. The unwanted calls often use non-existent telephone numbers, or use a number that is not the number of the originator. This work will provide information on nuisance calling, spoofing, etc. and initiatives to address those concerns. ( [SG2-TD 665](https://www.itu.int/md/T17-SG02-190219-TD-GEN-0665/en)). |
| SG17 (TD362) ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Others | For what concerns the list of sub Hot Topics:* Workshops: Workshop on AI/ML and Security
* AI/ML is now part of question text of Q2, 4, 5 and 6/17
* New Work Items: TR.cs-ml on AI/ML

Regarding more generally this hot topic* Emerging new topics are establishing and develop and through the incubation mechanism pilot in particular about Quantum based security (see Hot Topic 15), but as well several new aspects of Security Architecture (Schemas for Integrated Cyber Defence, etc.)
* Through these observations, SG17 would like TSAG to consider potential changes on Hot Topic 10 sub items as Security Architecture topics emerged in Q2 and 4/17 (X.arch-design, TP.sec-arch, TP.ics-schemas, X.rf-csap, X.tf-mpc) but as well a significant development **security for verticals with not only increase of activity for ITS with Q13/17 but the qualification** of its usage by industry. As well finance work items in Q7/17 considerations of Question text changes and in relation to the Workshop listed above

We observe too a densification of work in the area of Managed Security Services and Cyber Defence Centres X.fram-cdc; DLT; Cloud Computing with the key containerisation X.sgcc and various deployment scenarios X.sgdc, etc.;Cybersecurity Insurance aspects initiated with X.ciag * existing partnership with ISO/IEC JTC1/SC27/WG1 on this topic with 27102 “Guidelines for Cyber Insurance” which was published in 2019.
 |
|  | Workshops | ITU Workshop on Fintech SecurityMini-workshop on Cybersecurity Challenges in Automated Driving |

|  |  |  |
| --- | --- | --- |
| **11.00** | **Analytics, supporting the development of evidence-based, data driven services** | **SG20 SG17** |
| **Description** |
| 11.01 | Data processing and management for IoT and SC&C |
| 11.02 | Common things description methodology |
| 11.03 | Interoperability framework and functional architecture for IoT and SC&C |
| 11.04 | Industry dependent data models and formats to support development of data driven IoT and SC&C services |
| 11.05 | Features, requirements, framework and functional architecture of IoT device, gateway, platform, network |
| 11.06 | Edge Computing to support evidence-based, data driven IoT and SC&C services |
| 11.07 | Distributed ledger technologies for IoT and SC&C |
| 11.08 | IoT identification to support evidence-based data driven IoT and SC&C services |
| 11.09 | AI enabled IoT and SC&C |
| 11.10 | Data driven IoT verticals |
| 11.11 | Data Security |
| **Source Type** | CxO,  | **Date of Entry** |  |
| **Source References** | TSAG [TD160](https://www.itu.int/md/T17-TSAG-180226-TD-GEN-0160/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018, September 2019 |
| SG17 (TD362) ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Others | Questions: Q7/17, Q8/17, Q13/17WTSA-16 Res.94 |
|  | Work Program | work items: X.srfb |
| SG20 (TD339) ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Work Program | Y.SC-OpenData (Framework of Open Data in Smart Cities): Q1/20[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): Q2/20[Y.4203](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=13687)  (Requirements of things description in the Internet of Things): Q2/20Y.IoT-EC-reqts (IoT requirements for edge computing): Q2/20Y.4116 (Requirements of transportation safety service including use cases and service scenarios): Q2/20Y.4555 (Service functionalities of self-quantification over Internet of things): Q4/20Y.4457 (Architectural framework for transportation safety services): Q4/20Y.smart-evacuation (Framework of Smart Evacuation during emergencies in Smart Cities and Communities): Q4/20Y.disaster-notification (Framework of the disaster notification of the population in Smart Cities and Communities): Q4/20Y.dev-IoT-arch (Architectural reference models of devices for IoT applications): Q3/20Y.SCCE-arch (Reference architecture of spare computational capability exposure of IoT devices for smart home): Q3/20Y.cnce-IoT-arch (Functional architecture of cellular-radio network capability exposure for smart hospital based on Internet of things):Q3/20Y.dec-IoT-arch (Decentralized IoT communication architecture based on information centric networking and blockchain): Q3/20Y.AERS-msd (Minimum set of data structure for automotive emergency response system): Q3/20Y.AERS-mtp (Minimum set of data structure for automotive emergency response system): Q3/20Y.IoT-rf-dlt (OID-based Resolution framework for transaction of distributed ledger assigned to IoT resources): Q3/20Y.IoT-ics (Requirements and functional architecture of open IoT identity correlation service): Q3/20Y.UIIS (Unified identity/identifier/locator split (UIIS) services and architecture in IoT environment): Q3/20Y.NDA-arch (Functional architecture of network-based driving assistance for autonomous vehicles): Q3/20Y.SSC-AISE-arc (Reference architecture of artificial intelligence service exposure for smart sustainable cities): Q3/20Y.smoke-detection (Requirements and Functional Architecture of Smart Fire Smoke Detection Service): Q4/20Y.STD (Functional Architecture for Management to Smart Tourist Destinations): Q4/20Y.STIS-fm (Function and metadata of Spatiotemporal Information Service for SSC): Q4/20 |
| FG-DPM | FG Activities | Technical Specification D3.2: SensorThings API – Sensing;Technical Specification D3.3: Framework to support data interoperability in IoT environments;Technical Report D3.5: Overview of blockchain for supporting IoT and SC&C in DPM aspects;Technical Specification D3.7: Blockchain-based data management for supporting IoT and SC&C. |

|  |  |  |
| --- | --- | --- |
| **12.00** | **Intelligent network management towards future networks** | **SG2** |
| **Description** |
| 12.01 | Smart operation, management and maintenance. |
| 12.02 | Telecom anti-fraud management |
| 12.03 | REST-based network management framework |
| **Source Type** | SG2 | **Date of Entry** |  |
| **Source References** | TSAG [TD344](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0344/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018, September 2019 |
| SG2 (TD344) ([TD515](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0515/en)) | Work Program | M.somm: Framework of smart operation, management and maintenance.M.tsm: Principles for telecommunications smart maintenance.M.rtsmf: Requirements for telecommunications smart maintenance management functionsM.tsm-gim: Generic information model for telecommunications smart maintenanceM.rdm: Requirements for Data Management in the TMNM.rtafm: Requirements for Telecom anti-Fraud Management in the TMN.X.rest : Guidelines for the definition of REST-based managed objects and management interfaceQ.rest: REST-based management servicesM.rcsnsm: A new work item was created for a Recommendation that specifies the requirements for cloud and SDN-based network synergy management ([SG2-TD-673-R1](https://www.itu.int/md/T17-SG02-190219-TD-GEN-0673)). |

|  |  |  |
| --- | --- | --- |
| **13.00** | **Environmental efficiency of emerging technologies** | **SG5** |
| **Description** |
| 13.01 | Assessment of the environmental impacts of deploying and implementing AI, Blockchain, and other emerging technologies |
| **Source Type** | SG5 | **Date of Entry** |  |
| **Source References** | TSAG [TD374](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0374/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018 |
| SG5 (TD374) | FG Activities | **A proposal for a new Focus Group on Environmental Efficiency for Artificial Intelligence and other emerging technologies** has been presented during the SG5 meeting that took place from 11-21 September 2018. The Final approval of this FG will be decided during the next SG5 meeting planned in May 2019. |

|  |  |  |
| --- | --- | --- |
| **14.00** | **Digital health** | **SG16 SG20** |
| **Description** |
| **Source Type** | SG16 | **Date of Entry** |  |
| **Source References** | TSAG [TD347](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0347/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018, September 2019 |
| SG16 (TD347) ([TD524](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0524/en)) | Achievements | H.870 (ex F.SLD) on safe listening systemsH.810-series on personal connected healthH.860-series on multimedia brain information platform |
|  | Focus Group | Q28/16 and FG AI4H with AI with its applications in certain medical and health domains. |
| TSAG Meeting Date: September 2019 |
| SG20 ([TD533](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0533/en)) | Work Program | Y.IoT-EH-PFE (Performance evaluation frameworks of e-health systems in the IoT): Q7/20 |

|  |  |  |
| --- | --- | --- |
| **15.00** | **Quantum based Security** | **SG17 SG13** |
| **Description**Quantum cryptography and key distributions are essential to the long term resistance of any digital life. It is a major problem to address within a 10 years horizon, yet facing challenges of the high incentives of the Quantum Computing ‘attack’ weaponry to succeed sooner.The impending arrival of quantum computing poses significant risks to security. Quantum-safe cryptography is essential to preparations for that arrival. Public key cryptography is a cornerstone of authentication over public networks. Quantum computing is quick to solve integer-factoring and discrete-logarithm problems, problems relied on by almost all public key cryptography. Recognizing the increasing importance of quantum-safe public key cryptography, SG17 identified the need for ITU standards to provide for interoperable quantum-safe communications, in particular the secure distribution of symmetric encryption keys. |
| **Source Type** | SG17 | **Date of Entry** |  |
| **Source References** | TSAG [TD362](https://www.itu.int/md/T17-TSAG-181210-TD-GEN-0362/en) | **Date of Update** |  |
| **Status** | Active | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: December 2018 |
| SG13 (TD?) | Work Program | Y.QKDN\_FR Framework for Networks to supporting Quantum Key DistributionExperts participated in the ITU Workshop on Quantum in Shanghai |
| TSAG Meeting Date: September 2019 |
| SG17 ([TD596](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0596/en)) | Workshops | Organized a Mini workshop on Secure Quantum Communications |
|  | Others | Temporarily agrees to refer to this field as to “Quantum based security” subject to change in future meetings |
|  | New Work Items | X.sec\_QKDN-km, X.sec-QKDN-ov, X.sec-QKDN-tn |
|  | ITU-T Collaboration | Experts contribute to SG13 work in Q16/13 and in particular to Y.3800 |

|  |  |  |
| --- | --- | --- |
| **19.00** | **Identify scenarios and best practices for Network infrastructure sharing** | **SG2, SG3, SG13, SG15** |
| **Description** |
|  |  |
|  |  |
| **Source Type** | CTO, CxO | **Date of Entry** | 14/02/2020 |
| **Source References** | [TD582](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0582/en), [TD661](https://www.itu.int/md/T17-TSAG-200210-TD-GEN-0661/en) | **Date of Update** |  |
| **Status** | New | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: DD/MM/YYYY |
| SGxx (TDxxxx) | Work Program |  |
| SGxx (TDxxxx) | New Work Items |  |
| SGxx (TDxxxx) | FG Activities |  |
| SGxx (TDxxxx) | Workshop |  |
| SGxx (TDxxxx) | Coordination in ITU-T |  |
| SGxx (TDxxxx) | Coordination outside of ITU-T |  |
| SGxx (TDxxxx) | Other activities |  |
|  |  |  |
|  |  |  |
| TSAG Meeting Date: DD/MM/YYYY |
|  |  |  |
|  |  |  |
|  |  |  |

|  |  |  |
| --- | --- | --- |
| **20.00** | **Performance, QoS and QoE** | **SG12, SG16, FG-AI4AD** |
| **Description** |
| 20.01 | Real-time monitoring of network performance |
| 20.02 | Network performance prediction |
| 20.03 | Compliance, conformance and quality testing for Intelligent Transport Systems |
| 20.04 | Measurement of user-perceived QoS |
| **Source Type** | CTO | **Date of Entry** | 14/02/2020 |
| **Source References** | [TD582](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0582/en) | **Date of Update** |  |
| **Status** | New | **Global Measurement** |  |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: DD/MM/YYYY |
| SGxx (TDxxxx) | Work Program |  |
| SGxx (TDxxxx) | New Work Items |  |
| SGxx (TDxxxx) | FG Activities |  |
| SGxx (TDxxxx) | Workshop |  |
| SGxx (TDxxxx) | Coordination in ITU-T |  |
| SGxx (TDxxxx) | Coordination outside of ITU-T |  |
| SGxx (TDxxxx) | Other activities |  |
|  |  |  |
|  |  |  |
| TSAG Meeting Date: DD/MM/YYYY |
|  |  |  |
|  |  |  |
|  |  |  |

Annex – Template Tables for Detailed Hot Topics Description and Transactions

This section provides the templates tables for detailed hot topics descriptions and transactions

|  |  |  |
| --- | --- | --- |
| **<xx.xx>** | **Name** | **ITU-T Topic Point of Contacts** |
| **Description** |
| Sub Hot Topic | Name |
| Sub Hot Topic | Name |
| **Source Type** | CTO, CxO, SF, FG, Contribution | **Date of Entry** | DD/MM/YYYY |
| **Source References** | TDxxxx, Cxxxx | **Date of Update** | DD/MM/YYYY |
| **Status** | New, Active, Deprecated, Archived, Removed | **Global Measurement** | Hot, Medium, Cold, Dormant, To be purged |
| **Comments** |

|  |
| --- |
| **Transaction Update Table** |
| TSAG Meeting Date: DD/MM/YYYY |
| SGxx (TDxxxx) | Work Program |  |
| SGxx (TDxxxx) | New Work Items |  |
| SGxx (TDxxxx) | FG Activities |  |
| SGxx (TDxxxx) | Workshop |  |
| SGxx (TDxxxx) | Coordination in ITU-T |  |
| SGxx (TDxxxx) | Coordination outside of ITU-T |  |
| SGxx (TDxxxx) | Other activities |  |
|  |  |  |
|  |  |  |
| TSAG Meeting Date: DD/MM/YYYY |
|  |  |  |
|  |  |  |
|  |  |  |

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. It is necessary to include SG12 as a cooperating group for AR/VR and Video topic [↑](#footnote-ref-1)
2. The long text in the initial TD606R1 is pushed in the detailed description of this Hot Topics [↑](#footnote-ref-2)
3. It is necessary to include SG12 as a cooperating group for AR/VR and Video topic [↑](#footnote-ref-3)