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| ITU logo | INTERNATIONAL TELECOMMUNICATION UNION  **TELECOMMUNICATION STANDARDIZATION SECTOR**  STUDY PERIOD 2017-2020 | | | TSAG – R 8 – E |
| **November 2019** |
| **Original: English** |
| **Question(s):** | | | N/A | Geneva, 23-27 September 2019 |
| **TELECOMMUNICATION STANDARDIZATION ADVISORY GROUP**  **REPORT 8** | | | | |
| **Source:** | | | Telecommunication Standardization Advisory Group | |
| **Title:** | | | Report of the fourth TSAG meeting (Geneva, 23-27 September 2019) | |
| **Purpose:** | | | Admin | |
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| **Keywords:** | TSAG; report; |
| **Abstract:** | The report of the fourth meeting of the ITU-T Telecommunication Standardization Advisory Group (Geneva, 23-27 September 2019) in the 2017-2020 study period. |

NOTE 1 – All documents submitted and discussed or noted at this TSAG meeting are referenced in the agenda [TSAG-TD449](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0449)-R1 and [TSAG-TD450](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0450)-R1. This report contains the conclusions and actions decided at this TSAG meeting.

NOTE 2 – Unless otherwise noted, all Contributions and TDs referenced in this report are of the TSAG series of documents.

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# Opening of the meeting, TSAG Chairman

The TSAG Chairman, Mr Bruce Gracie (Ericsson Canada), welcomed the TSAG participants to the fourth meeting of the Telecommunication Standardization Advisory Group (TSAG) for the 2017-2020 study period, which was held at the ITU premises in Geneva, 23-27 September 2019.

* 1. Real-time captioning[[1]](#footnote-2), interpretation in six languages, remote participation, and webcasting[[2]](#footnote-3) were provided at this TSAG meeting including its six Rapporteur Group meetings.
  2. Mr Gracie welcomed the TSB Director, Mr Chaesub Lee; the other elected officials were apologized and could not attend.
  3. The following TSAG Vice-Chairmen attended the meeting: Ms Rim Belhassine-Cherif (Tunisia), Ms Weiling Xu (China, P.R.), Mr Reiner Liebler (Germany), Mr Vladimir Minkin (Russian Federation), Mr Matano Ndaro (Kenya), and Mr Omar Tayseer Al-Odat (Jordan). Mr Victor Manuel Martinez Vanegas (Mexico) participated remotely, and Ms Monique Morrow (United States) was not able to attend and sent her regrets.

# Opening remarks by the TSB Director

The TSB Director welcomed all delegates to this fourth meeting of TSAG in this 2017-2020 study period (his speech is contained in [TD502](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0502)).

# TSAG Chairman's comments and observations

* 1. The TSAG Chairman informed the meeting that many TAP comments and contributions were received upon TSB Circular 138 on draft revised Recommendations ITU-T A.1, A.5, A.13, and A.25. [TD505](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0505) showed that the required 70% quorum was reached for all four texts.  
     Thus, one objective of this meeting for TSAG was to consider in detail the TAP comments from Member States and related contributions towards finding full consensus and for considering TAP approval at the closing plenary session. [TD576](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0576) extracts the relevant provisions for TAP consultation and TAP approval from Resolution 1 (revised, Hammamet, 2016). The Rapporteur Groups on Working Methods and Strengthening Collaboration will be carrying out the deliberations on the four texts. He referred to [TD458](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0458) which reports on the meetings of the TSB Director's IPR-AHG related to intellectual property rights associated to the A-series Recommendations.

Other objectives of this TSAG meeting were to consider the proposals for two new ITU-T Focus Groups (on quantum information technology for networks, and on AI and Data Commons), on proposals in the Rapporteur Group on Standardization Strategy on the role of industry in the work of ITU-T, and future structure of ITU-T to be addressed by the Rapporteur Group on Work Program, and preparations for WTSA-20.

* 1. The current TSAG meeting was organized such that documents were presented only once, either in Plenary or in one of the Rapporteur Groups, of which six had already been activated.

# Approval of the agenda, document allocation and time management plan

* 1. The TSAG Chairman presented the draft agenda, document allocation and work plan ([TD449-R1](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0449)). TD449-R1 was adopted. TSAG accepted the time management plan in [TD448-R5](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0448), which was further revised into TD448-R12, and the overview of the agendas and reports in [TD447](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0447).
  2. [TD450-R1](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0450) contains the agenda for the closing TSAG plenary on 27 September 2019, which was adopted.
  3. [TD638](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0638) lists all the contributions submitted and considered during this TSAG meeting.

# Reports by the TSB Director

* 1. The TSB Director presented the activity report ([TD466](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0466), slide set in Addendum 1) highlighting the key results achieved in ITU-T standardization from December 2018 to August 2019. TSAG noted the TSB Director's report.
  2. It was requested to have hyperlinks in future TSB Director's reports.
  3. TSB presented the updated WTSA-16 Action Plan ([TD467](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0467)), which is a monitoring and reporting tool to keep track of the implementation of WTSA-16 Resolutions and Opinion. The updates cover the period from December 2018 to August 2019. TSAG took note of the document.
  4. TSAG took note of [TD468](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0468), which provides the initial draft PP-18 action plan for ITU-T, covering the period from December 2018 to August 2019.
  5. TSAG took note of the draft four-year rolling operational plan for the telecommunication standardization sector for 2020-2023 in [TD469](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0469), which Council 2019 had approved in Council Resolution 1395.

# Organization of the work of TSAG for the 2017-2020 study period

* 1. The TSAG Rapporteur Groups on Regional Groups (RG-CPTRG), on Review of WTSA Resolutions (RG-ResReview), on Strengthening Collaboration (RG-SC), on Standardization Strategy (RG-StdsStrat), on Work Programme (RG-WP), and on Working Methods (RG-WM) met during this TSAG meeting. The TSAG Rapporteur Group on Strategic and Operational Plan (RG-SOP) did not meet during this TSAG meeting.

# Outcome of TAP consultation

* 1. TSB Circular 138 on TAP consultation for draft revised Recommendations ITU-T A.1, A.5, A.13, and A.25 was issued on 20 December 2018. The meeting took note that by the deadline of 11 September 2019 and as shown in [TD505](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0505), 19 Member States provided their replies to this TAP consultation. In result, 70% or more of the replies from Member States supported consideration for approval of these draft new Recommendations at the TSAG meeting and the conditions for assigning TSAG the authority to consider approval of the draft revised Recommendations ITU-T A.1, A.5, A.13, and A.25 were met. Thus, with this authorization given by Member States, TSAG may proceed with approval process, and Member States also recognized that TSAG may make the necessary technical and editorial changes in accordance with Resolution 1 (rev. Hammamet, 2016) clause 9.5.2.
  2. In addition, a number of TAP comments from Canada ([TD584](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0584)), China (P.R.) ([TD583](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0583)), Russian Federation ([TD580](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0580)), Saudi Arabia ([TD567](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0567)), United Arab Emirates ([TD575](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0575)), Tunisia ([TD588](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0588)) and related proposed amendments from Canada ([C091](https://www.itu.int/md/T17-TSAG-C-0091)), Orange ([C064](https://www.itu.int/md/T17-TSAG-C-0064), [C065](https://www.itu.int/md/T17-TSAG-C-0065)), Korea (Rep. of) ([C069](https://www.itu.int/md/T17-TSAG-C-0069), and [C070](https://www.itu.int/md/T17-TSAG-C-0070)), United States ([C068](ttps://www.itu.int/md/T17-TSAG-C-0068)) to the four draft texts, and they were deferred to the respective Rapporteur Groups on Working Methods and Strengthening Collaboration for starting the comment resolution process and for carrying out deliberations towards developing final texts for approval.
  3. The meeting took note of [TD576](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0576), which extracts the relevant provisions for TAP consultation and TAP approval from Resolution 1 (revised, Hammamet, 2016).

# Focus Groups

## 8.1 Proposed new ITU-T Focus Group on Quantum Information Technology for Networks (FG-QIT4N)

* + 1. TSAG took note of liaison responses to [TSAG-LS19](http://ifa.itu.int/t/2017/ls/tsag/sp16-tsag-oLS-00019.zip) from ITU-T SG3 ([TD538](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0538)), SG5 ([TD560](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0560)), SG13 ([TD532](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0532)), SG15 ([TD572](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0572)), SG16 ([TD526](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0526)), SG17 ([TD594](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0594)), and SG20 ([TD553](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0553)) on a proposed ITU-T Focus Group on Quantum Information Technology for Networks (FG-QIT4N).
    2. China (P.R.) presented [C097](https://www.itu.int/md/T17-TSAG-C-0097) "Proposal to set up a new ITU-T Focus Group on Quantum Information Technology for Networks (FG-QIT4N)" (Beijing University of Posts and Telecommunications (China), CAS Quantum Network Co. Ltd. (China), China Information Communication Technologies Group, China Mobile Communications Corporation, China Telecommunications Corporation, China Unicom, Huawei Technologies Co., Ltd. (China), KT Corporation (Korea (Rep. of)), QuantumCTek Co., Ltd. (China), ZTE Corporation (China)), which re-proposes to set up a new ITU-T Focus Group on Quantum Information Technology for Networks (FG-QIT4N).
    3. TSAG took into account [TD579](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0579) "Quantum Work Consolidation" (ITU-T SG13 and SG17 Chairmen), which suggests an approach where the Focus Group would serve as the consolidation platform of global QIT standardization efforts.
    4. TSAG took into account the information in [TD493-R1](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0493) provided by the ITU-T liaison officer to ISO/IEC JTC 1, Mr Shigeru Miyake, who informed TSAG about JTC 1's Resolution 17 – Reconstitution of the JTC 1 Advisory Group (AG) on Quantum Computing.
    5. Mr Ajit Jillavenkatesa, ITU-T representative to IEC SMB/ISO TMB/ITU-T TSAG Standardization Programme Coordination Group (SPCG), on behalf of the SPCG Chair, presented [TD605](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0605) "IEC/ISO/ITU SPCG recommendation on TSAG-C97 Proposal to set up a new ITU-T Focus Group on Quantum Information Technology for Networks (FG-QIT4N)".
    6. A very lively debate occurred and many diverging views were raised on whether to have Focus Group, and/or a Joint Coordination Activity (JCA), the scope and terms of reference (ToR), the needs etc.
    7. TSAG agreed to create an ad-hoc group on quantum (AHG-quantum) with Mr Arnaud Taddei, Symantec, as Chairman, and asked the AHG-quantum to discuss C097 in further detail and to propose a way forward for consideration at the TSAG closing plenary.
    8. Mr Taddei, AHG-quantum Chairman, presented in [TD635](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0635) the report of AHG-quantum. He reported from three AHGs sessions that took place that there was significant support for the creation of a Focus Group, albeit there was some opposition, and support for creating a Focus Group with a JCA on it.
    9. Canada (supported by United Kingdom) reminded the meeting about an option that was discussed in the AHG to have study groups together with a JCA on top; and this should be reflected in the meeting report.
    10. The United Kingdom saw a need to find a potential mitigation policy how to resurrect terminology if this Focus Group was to be accepted, and this should be stated in the meeting report, such as stating a caveat in the terms of reference that the Focus Group not study terms that are already underway in the study groups.
    11. Mr Taddei, AHG-quantum Chairman, presented AHG report in [TD635](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0635) and revised ToR of FG-QIT4N as shown in [TD632-R3](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0623), as the outcome of the AHG, which achieved consensus.
    12. TSAG agreed the creation of the ITU-T Focus Group on "Quantum Information Technology for Networks" (FG-QIT4N) with terms of reference as in [Annex C](#_Annex_C_Terms_1), with TSAG as parent. FG-QIT4N will report to the second TSAG meeting in 2020. TSAG also asked the Chairmen of SG13 and SG17 to update [TD579](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0579) on "Quantum Work Consolidation" accordingly.
    13. TSAG expressed it greatest appreciation to Mr Taddei for his outstanding leadership and efforts for finding consensus.
    14. China proposed Prof. Qiang Zhang, University of Science and Technology of China (USTC), as chairman of the Focus Group.
    15. Further proposals for leadership positions of FG-QIT4N included: a FG co-Chairman from the United States, a FG co-Chairman from the Russian Federation, a FG Vice Chairman from SG17 and one from SG13, a FG Vice Chairman from ID Quantique. The meeting deferred the nomination of the FG-QIT4N co/vice chairmen to FG-QIT4N.

## Proposed new ITU-T Focus Group on AI and Data Commons (FG-Commons)

* + 1. Mr Amir Banifatemi, XPRIZE Foundation Inc. presented [C063](https://www.itu.int/md/T17-TSAG-C-0063)-R2 "Proposal to set up a new ITU-T Focus Group on AI and Data Commons" (XPRIZE Foundation Inc., MILA - Institut québécois d'intelligence artificielle, Korea Advanced Institute of Science and Technology (KAIST), ADA Innovation Lab Limited), which proposes the creation of an ITU-T Focus Group on AI and Data Commons (FG-Commons), to gather momentum and perform the pre-standardization efforts and novelties collection that will form the basis for the future international standardization activities in this field.
    2. [C075](https://www.itu.int/md/T17-TSAG-C-0075) from Tarbiat Modares University supports the proposal in C063.
    3. Mr Ajit Jillavenkatesa, ITU-T representative to IEC SMB/ISO TMB/ITU-T TSAG Standardization Programme Coordination Group (SPCG), on behalf of the SPCG Chair, presented [TD604](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0604) "IEC/ISO/ITU SPCG recommendation on TSAG-C63 Proposal to set up a new ITU-T Focus Group on AI and Data Commons".
    4. ISO/IEC JTC 1 pointed out that the work of ISO/IEC JTC 1/SC42 on AI is not mentioned and saw potential overlap concerning the definition of AI and existing technologies, and asked ITU-T to take existing work into account to avoid overlap.
    5. Several views were voiced concerning the need to have this Focus Group, its terms of references and scope:
       1. Egypt supported the Focus Group, but saw a need to have an AHG to review the ToR.
       2. The United States did not support this FG as the objectives were too generic, and did not see how the scope addresses ICT, or is in the scope of ITU.
       3. The United Kingdom did not support this Focus Group as a gap analysis was not available, and that ISO/IEC JTC 1/SC42, ETSI, and three ITU-T FGs are already working in this field.
       4. The European Commission saw a need to focus on AI which is in scope of ITU; but saw overlap with IEEE and ETSI activities, and the need to re-discuss the ToR.
       5. Canada questioned if the Focus Group is the right vehicle as no ITU-T study group is working on this topic.
       6. Saudi Arabia and Mexico supported the Focus Group. Tunisie Telecom supported the Focus Group but saw a need to discuss the ToR.
       7. France did not support the Focus Group as there was no agreement on AI at the Plenipotentiary Conference in 2018.
       8. Germany saw already three ITU-T Focus Groups underway addressing AI, but they were not mentioned, and asked if they be integrated. Germany wondered if this Focus Group is in scope of ITU-T.
       9. China (P.R.) asked what the unique problem of this Focus Group is, and wanted to narrow the scope of the Focus Group. The results of FG-DPM are relevant, Question 5/16 is on AI.
       10. The former Chairman of ITU-T FG-DPM saw a need to continue the FG-DPM activities.
    6. The meeting agreed to create an AHG on Commons, chaired by Mr Ahmed Said, Egypt, and to revisit the ToR and to consider if a Focus Group is needed.
    7. The TSB Director expressed certain discomfort on the SPCG recommendation/SC42 attachment and he explained his difficulties to inspect the ISO/IEC JTC 1/SC42 documents on the claimed overlap without having access, and suggested to share them to the FG for verification. His analysis revealed that most of the documents address big data and IoT but not anything on Data Commons. He expressed concerns that while ITU-T started activities on big data and IoT already long time ago, the current SC42 documents do not reference the ITU-T standards or terminology. He saw a need to improve collaboration such as to being able to verify any overlaps.
    8. Mr Said, Chairman AHG on Commons, presented in [TD636](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0636) the report of the three AHG sessions on FG-Commons. He reported that many members supported the creation of a FG-Commons although there were some voices that asked the proposal to be resubmitted to the next TSAG meeting.
    9. The United States clearly recognized the importance of AI and the impact that it will have but was still struggling to understand how this proposal with an unbounded scope of work relating to data is consistent with the scope of ITU-T, and that it should be more focused on the telecom ICT sector or addressing the application of data commons to connectivity, and preferred not to have the Focus Group at this point in time. The United Kingdom and Australia also felt the scope still being too broad and could not support creation of this Focus Group.
    10. Canada had difficulties to understand the scope of this Focus Group, and feared that the Focus Group could not accomplish much with that broad scope. Canada suggested having some kind of a global initiative instead, similar to FIGI, which could provide coordination. Canada did not oppose creating this Focus Group but preferred to defer the matter to the next TSAG meeting and to take time to consult with its Academia member on the scope of the Focus Group, which could be refined for the next TSAG meeting.
    11. Saudi Arabia recognized the importance of data and supported the creation of the Focus Group.
    12. The TSB Director saw many members supporting this Focus Group and seeing broad consensus on the importance of the subject. However, in finding middle ground, it is necessary to seek some clarity on the ToR and to get a better understanding, while TSB wants to help the communities not lose momentum, and thus the matter of this Focus Group be best deferred until the next TSAG meeting.
    13. XPRIZE and the United States supported the idea of Canada to have a global initiative in the short-term in order to maintain the momentum, and to re-visit the refined scope of the Focus Group at the next TSAG meeting.
    14. The meeting agreed to record that a possible way forward would be in the form of a global initiative, so as to not lose momentum in an area where there was general agreement. TSAG did not consider such a global initiative to be within its mandate.

## ITU-T Focus Group on Application of Distributed Ledger Technology (FG-DLT)

* + 1. Mr Wei Kai, acting Chairman of ITU-T Focus Group on Application of Distributed Ledger Technology (FG-DLT), presented in [TD475](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0475) the final report of FG-DLT to TSAG providing the outcomes of FG-DLT and a proposal for the efficient transfer of the eight deliverables and the further steps of DLT standardization in ITU-T. TSAG took note of the final report.
    2. TSAG thanked Mr Kai for his diligent work and successful completion of this Focus Group.
    3. TSAG took note of the received liaison statements from SG16 ([TD527](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0527)) and its activities on DLT and e-services under Q22/16, and from SG17 ([TD586](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0586)) on a newly established work item on DLT terms and definitions in Q14/17. The SG2 Chairman expressed SG2's interest to receive the FG-DLT deliverables to investigate on any naming, numbering and identification requirements or any operational management requirements.
    4. TSAG agreed to send a liaison statement (in [TSAG-LS24](https://www.itu.int/ifa/t/2017/ls/tsag/sp16-tsag-oLS-00024.docx)) with the outlined distribution of the eight FG-DLT deliverables to all ITU-T study groups.

## ITU-T Focus Group on Digital Currency including Digital Fiat Currency (FG-DFC)

* + 1. Mr David Wen, Chairman of ITU-T Focus Group on Digital Currency including Digital Fiat Currency (FG-DFC), presented (in [TD476](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0476)) the final report of FG-DFC and its seven Technical Reports as deliverables along with a suggested allocation of the deliverables to ITU-T study groups. TSAG took note of the final report.
    2. The United States expressed concerns that the FG-DFC deliverables far exceed the ITU's core mandate. The digital currency check list for central banks and the report, the regulatory challenges and risk for central bank digital currency are explicitly directed towards central banks - an audience clearly outside the International Telecommunication Union. For this reason, the United States did not support the transfer of these deliverables to Study Group 3 for continuation of work. More time should be given to consider those deliverables and to review them, and transfer of the FG-DFC deliverables to the study groups should be postponed to the next TSAG meeting.
    3. TSAG agreed that a liaison statement should be sent to the relevant study groups on the FG-DFC deliverables, the liaison should be for information only for ITU-T SG3.

## New ITU-T Focus Group on Environmental Efficiency for Artificial Intelligence and other Emerging Technologies (FG-AI4EE)

* + 1. TSAG took note of a liaison statement from ITU-T SG5 (in [TD566](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0566)) on the establishment of new ITU-T Focus Group on Environmental Efficiency for Artificial Intelligence and other Emerging Technologies (FG-AI4EE).
    2. Two Member States found the title of this Focus Group to be too broad, in particular on other emerging technologies. TSAG, in consultation with the TSB Director, advised SG5 to consider a better focussed title for this Focus Group.

# Joint Coordination Activity on Accessibility and Human factors (JCA-AHF)

* 1. The JCA-AHF Chairman, Ms Andrea Saks (USA), presented the progress report of JCA-AHF in [TD487](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0487), which summarized the outcome of the JCA-AHF meeting, Geneva, 11 June 2019. Ms Saks highlighted a pilot project on audio-based navigation system at ITU. TSAG took note of the progress report.

# WTSA-20 preparations

* 1. TSAG took note of liaison statements from ITU-T SG5 ([TD558](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0558)), SG13 ([TD574](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0574)), and SG15 ([TD599](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0599)), SG17 ([TD585](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0585)), and SG20 ([TD550](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0550)), informing TSAG on their status for preparations of WTSA-20. TSAG also took note of [TD607](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0607) from TSB on "Guide for the drafting/translation/ editing of Resolutions, Recommendations, Decisions and Opinions for WTSA-20".
  2. Mr Bilel Jamoussi, TSB, presented [TD616](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0616) "WTSA-20 Member State Consultation", which reminded Member States participating in TSAG of the 30 September 2019 deadline regarding their concurrence with the dates and venue of WTSA-20, i.e. 17 to 27 November, 2020 and Hyderabad India, respectively, as well as the GSS on 16 November 2020, and invited to use the format in attachment 1 to Circular 33 to reply to the consultation.
  3. TSAG urged the Member States not yet having responded to reply to the consultation.
  4. Ms Kristina Barbov, United Kingdom, presented [C066](https://www.itu.int/md/T17-TSAG-C-0066) "National Multistakeholder Approaches at the ITU", which considers the opportunities and benefits of the approach where ITU Member States are opening up their national delegations to include stakeholders from industry, academia and civil society; the contribution describes the experience of the UK.
  5. Other Administrations are practicing similar ITU preparatory processes involving multi-stakeholders.
  6. TSAG took note of C066, and encouraged other Administrations to consult off-line with the United Kingdom for further discussion.
  7. TSAG RG-ResReview discussed several contributions proposing streamlining of WTSA Resolutions; please see section 16.2.

# Languages

* 1. The Central African Republic presented [C062](https://www.itu.int/md/T17-TSAG-C-0062) "Six official languages of the Union on an equal footing in the work of ITU-T", which addresses the effective use of the six official languages of the Union on an equal footing in ITU-T work in order to effectively bridge the standardization gap between developing and developed countries, and seeking further information to Member States on the neural machine translation system.
  2. Mr Anibal Cabrera Montoya, TSB, presented [TD597](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0597) "Status report of machine translation in TSB" which also addresses the issues raised in C062.
  3. The meeting took note of [[TD496](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0496)](https://www.itu.int/dms_pub/itu-t/md/17/tsag/td/181210/GEN/T17-TSAG-181210-TD-GEN-0360!!PDF-E.pdf) "Status report of SCV activities" (Chairman, Standardization Committee for Vocabulary), took note of C062 and TD597, and was aware of the ongoing activities on the six UN languages within CWG-Languages.

# Bridging the Standardization Gap

* 1. Mr Charles Chike Asadu, University of Nigeria, Nsukka, remotely presented [C047](https://www.itu.int/md/T17-TSAG-C-0047) "Implementation of WTSA-16 Resolution 44 and RESOLUTION 123 (Rev. DUBAI, 2018)". He raised the problem faced by some developing countries that find it difficult to understand Resolution 44 (Rev. Hammamet, 2016) and he raised the need for a top-down approach to better understand ITU-T Recommendations, and that the lack of capacity to understand these Recommendations contributes to low implementations of the Recommendations.
  2. Mr Bilel Jamoussi, TSB, presented [TD610](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0610) "Update on the Implementation of WTSA-16 Resolution 44", which provides an overview of the activities carried out under the purview of WTSA-16 Resolution 44.
  3. TSAG, observing the decreasing audio quality during Mr Asadu's presentation, took note of C047 and of TD610.

# Intellectual Property Rights (IPR)

* 1. IPR issues were pertinent to the revision work of revised Recommendations ITU-T A.1, A.5, and A.25 at this meeting, see also section 16.7.3.
  2. The TSB Director shared in [TD458](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0458) findings from the meetings of the TSB Director's IPR AHG related to intellectual property rights associated to the A-series Recommendations. See also §16.7.3.

# Kaleidoscope

* 1. Ms Alessia Magliarditi, TSB, presented [TD503](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0503) "Kaleidoscope 2019 - ICT for Health: Networks, standards and innovation and Kaleidoscope 2020", which provides an overview of the ITU Kaleidoscope academic conference 2019 (K-2019) that will be held in Atlanta, USA, 4-6 December 2019. This document also calls for the next Kaleidoscope conference's host, and mentions official recognition of the success of the Kaleidoscope conferences (PP relevant Resolutions). TSAG took note of TD503.

# ITU Journal: *ICT Discoveries*

* 1. Ms Alessia Magliarditi, TSB, presented [TD504](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0504) "ITU Journal: *ICT Discoveries*", provides information on the publication of the current special issue on radio wave propagation of the ITU Journal: ICT Discoveries, and announces the open call of the upcoming special issue on "The future of video and immersive media". TSAG took note of TD504.

# Results of TSAG Rapporteur Groups

Six TSAG Rapporteur Groups conducted their work and brought their results to the TSAG closing plenary. Reports were noted and the Plenary decisions are summarized below. [Annex A](#_Annex_B_Summary_1) provides a table listing the TDs with the reports of the various Rapporteur Groups, the liaison statements they produced, as well as the interim activities that are planned.

[TD506-R3](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0506) summarizes the received incoming statements since 1 January 2019, and the approved and sent outgoing liaison statements from this TSAG meeting.

## TSAG Rapporteur Group on Regional Groups (RG-CPTRG)

* + 1. The Rapporteur of RG-CPTRG, Mr Kwame Baah-Acheamfuor (Ghana), presented the report of RG-CPTRG in [TD453](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0453). TSAG took note of that report.
    2. TSAG agreed to consider providing additional sessions with interpretation for RG-CPTRG in the next TSAG meeting in 2020.
    3. RG-CPTRG will meet at the next TSAG meeting.

## TSAG Rapporteur Group on Review of WTSA Resolutions (RG-ResReview)

* + 1. The Rapporteur of RG-ResReview, Mr Vladimir Minkin (Russian Federation), presented the report of RG-ResReview in [TD455](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0455), which TSAG noted.
    2. TSAG agreed to send one liaison statement in [TSAG-LS21-R2](https://www.itu.int/ifa/t/2017/ls/tsag/sp16-tsag-oLS-00021r2.zip) on streamlining resolutions information and action (if any) to ITU Inter-Sector Coordination Group (ISCG), ITU secretariat's Inter-Sector Coordination Task Force (ISC-TF), TDAG, RAG, all ITU-T study groups, and all regional organizations.
    3. TSAG authorized RG-ResReview to hold one interim e-meeting if contributions are submitted on reviewing WTSA resolutions, including streamlining as in the scope of this Rapporteur Group, see [Annex A](#_Annex_B_Summary_1).
    4. RG-ResReview will meet at the next TSAG meeting.

## TSAG Rapporteur Group on Strengthening Collaboration (RG-SC)

* + 1. The Rapporteur of RG-SC, Mr Glenn Parsons (Canada), presented the report of RG-SC in [TD457](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0457). TSAG took note of that report.
    2. In accordance with the Traditional Approval Process (TAP) in Resolution 1 clause 9 (rev. Hammamet, 2016), the meeting considered the inputs from contributions and consultation responses, each of which were very carefully considered. The reply results of the TAP consultation are outlined in [TD505](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0505), which includes the specific details of comments received from the Russian Federation ([TD580](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0580)), Saudi Arabia ([TD567](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0567)), UAE ([TD575](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0575)) and Tunisia ([TD588](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0588)) among others. Agreement was reached on several updates to the Determined text, which was then approved. Accordingly,TSAG approved:
* draft revised Recommendation ITU-T A.5 "Generic procedures for including references to documents of other organizations in ITU-T Recommendations" (in [TD591](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0591)).

Notable amendments, principally from the Russian Federation, include but are not limited to:

* Add a deadline for proposals asking for the inclusion of normative reference (clause 6.3),
* Add a reference to ITU-T A.5 justification for the qualification of the other organization into TAP Circular or AAP Last Call (clause 7.3),
* Add a requirement in the criteria for qualifying organizations, to notify ITU if the right of any party with material interest to be a member of the other organization is restricted (Annex B, 3); and
* draft revised Recommendation ITU-T A.25 "Generic procedures for incorporating text between ITU-T and other organizations" ([TD592](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0592)-R1).

Notable amendments, principally from the Russian Federation, include but are not limited to:

* Add requirements to clarify which organization is in charge of the maintenance of incorporated text (clause 6.1.2.10, Appendix II, 10),
* Add a deadline for Circular notification if the other organization is responsible of producing new versions of the text when the draft resulting ITU-T Recommendation is planned for determination for TAP consultation or consent for AAP last call (clause 6.1.3),
* Remove text related to transferring of any IPR issues from the other organization incorporated text to ITU-T Recommendation (clause 6.1.6),
* Add a requirement to change cover sheet of the resulting ITU-T Recommendation which contains some incorporated text (clause 6.1.7).

Approval of the above Recommendations is reflected in TSB Circular 198 of 3 October 2019.

* + 1. TSAG agreed to send one outgoing liaison statement on ITU inter-Sector coordination to ISCG, TDAG, ITU-D SGs, RAG, ITU-R SGs, ITU-T SGs (in [TSAG-LS22-R1](https://www.itu.int/ifa/t/2017/ls/tsag/sp16-tsag-oLS-00022r1.zip))  
       (ref. updated mappings of common interest areas of work between the ITU-D and ITU-T study groups and between the ITU-R and ITU-T study groups for ITU inter-Sector coordination).
    2. TSAG took note of RG-SC agreement that SG17 should seek ITU-T A.5 qualification of UPU so that ITU-T A.25 could be applied for incorporation of UPU S68 in an ITU-T Recommendation.
    3. TSAG authorized RG-SC to meet electronically for one interim e-meeting, see [Annex A](#_Annex_B_Summary_1).
    4. RG-SC will meet at the fifth TSAG meeting.

## TSAG Rapporteur Group on Strategic and Operational Plan (RG-SOP)

This Rapporteur Group did not meet at this TSAG meeting.

## TSAG Rapporteur Group on Standardization Strategy (RG-StdsStrat)

* + 1. The Rapporteur of RG-StdsStrat, Mr Didier Berthoumieux (Nokia Corporation, Finland), presented the results and meeting report in [TD461-R1](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0461). TSAG took note of that report.
    2. TSAG agreed to send an outgoing liaison statement in [TSAG-LS23](https://www.itu.int/ifa/t/2017/ls/tsag/sp16-tsag-oLS-00023.zip) on "New IP, Shaping Future Network" to IETF, IAB, and all ITU-T study groups.
    3. TSAG took note that by recognizing the broad support on the statistics, to elaborate further until the next TSAG meeting on the development of realistic metrics and statistics within RG-StdsStrat; and to investigate together with TSB on the feasibility of automating those metrics generation for their implementation by the Bureau.
    4. TSAG authorized RG-StdsStrat to hold up to three interim e-meetings (see [Annex A](#_Annex_A_Summary)) on the basis that contributions will be received. RG-StdsStrat plans to meet at the next TSAG meeting.
    5. TSAG thanked Mr Didier Berthoumieux for his excellent leadership since January 2019.
    6. TSAG confirmed that Ms Rim Belhassine-Cherif (Tunisie Telecom) is the rotating Rapporteur for RG-StdsStrat from October 2019 until February 2020.

## TSAG Rapporteur Group on Work Programme (RG-WP)

* + 1. Rapporteur of RG-WP, Mr Reiner Liebler (Germany), presented the RG-WP report in [TD465](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0465). TSAG took note of this report.
    2. TSAG endorsed the following changes of Questions in ITU-T study groups:
* SG9: creation of new Question QA/9 "Accessibility to cable systems and services" ([TD630](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0630)). TSAG has slightly edited the original Question A/9 text proposed by SG9. Also TSAG endorsed the revision of Q6/9 "Functional requirements for residential gateway and set-top box for the reception of advanced content distribution services" ([TD565](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0565)) as proposed by SG9;
* SG12: merging Q18/12 "Measurement and control of the end-to-end quality of service (QoS) for advanced television technologies, from image acquisition to rendering, in contribution, primary distribution and secondary distribution networks" into Q19/12 "Objective and subjective methods for evaluating perceptual audiovisual quality in multimedia and television services", and to disband Question 18/12 ([TD543](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0543));
* SG16: creation of Q12/16 "Visual surveillance systems and services" ([TD522-R1](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0522)); and
* SG17: revision of Q2/17 "Security architecture and framework" ([TD511](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0511)).
  + 1. TSAG requested SG11 and SG12 to coordinate and collaborate on a new work item in SG11 on the impact of counterfeit mobile devices on quality of service (TR-CF-QoS) ([TD544](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0544)).

## TSAG Rapporteur Group on Working Methods (RG-WM)

* + 1. The Rapporteur of RG-WM, Mr Stephen Trowbridge (USA), presented the report of RG-WM in [TD463](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0463), which was further revised and corrected in [TD463-R2](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0463). TSAG took note of that report.
    2. In accordance with the Traditional Approval Process (TAP) in Resolution 1 clause 9 (rev. Hammamet, 2016), TSAG approved:
* draft revised Recommendation ITU-T A.1 "Working methods for study groups of the ITU Telecommunication Standardization Sector" ([TD637](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0637)) with essential amendments compared with the input TAP text in TSAG-R04, including requirements to expand IPR question at each meeting (clauses 1.4.6, 2.3.3.12, Appendix I i), deletion of conditional usage of contributed text (clause 3.1.6), and some editorials amendments, and
* draft revised Recommendation ITU-T A.13 "Non-normative ITU-T publications, including Supplements to ITU-T Recommendations" ([TD612-R2](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0612)) with some editorials amendments compared with the input TAP text in TSAG-R06.

Approval of the above Recommendations is reflected in TSB Circular 198 of 3 October 2019.

* + 1. TSAG, upon request by Russian Federation, advised the TSB Director to bring to the attention of the next meeting of the TSB Director's Ad Hoc Group on IPR the issue of checking compatibility of the ITU IPR guidelines with Resolution 66, Documents and publications of the Union (Rev. Dubai, 2018), and to seek appropriate advice from that meeting.
    2. TSAG authorized RG-WM to organize two interim e-meetings with the terms of reference as reproduced in [Annex A](#_Annex_B_Summary_1). The exact date of the meeting will be decided later by RG-WM Rapporteur upon consultations and will be circulated via TSAG e-mail list.

# ITU-T meeting schedule including date of next TSAG meetings

* 1. TSAG took note of [TD472-R1](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0472), which outlines the meetings schedule for ITU-T from September 2019 to December 2020.
  2. TSAG agreed the schedule of the next TSAG meetings in this study period:
* Monday 24 – Friday 28 February 2020.
* Monday 21 – Friday 25 September 2020 (to be confirmed).

# Any other business

* 1. The United States reminded TSAG to consider its own working methods and observed an overloaded schedule at this TSAG meeting; too many ad-hoc group sessions scheduled in the evening or during lunch time is not sustainable, while other Rapporteur Groups had only one session and many Rapporteur Groups ran over-time and did not manage to handle all documents. While e-meetings could be a way of continuing discussions and progressing work in the interim period, the usage of e-meetings should be consistent through all TSAG Rapporteur Groups; especially those which will be facing an increased workload for preparation of WTSA-20. It is therefore important that the TSAG meetings run as efficient and effective as possible and are appropriately prioritized among the resources and the many topics on the agenda. The United States suggested for future TSAG meetings to consider time limits for topical discussion, and to move on in case consensus will not be reached. Tutorials proposed in contributions should be scheduled only if the meeting agreed. The United States invited the TSAG management team to consider organizing webinars, and to extend the duration of TSAG meetings to eight days, and to consider a way for improving the efficiency and productivity of TSAG meetings. The United States requested to see their comments and suggestions reflected in the meeting report.

# Consideration of draft meeting Report

As had been the practice in past TSAG meetings, a draft report will be open for review and comment for two weeks.

# Closure of meeting

* 1. The TSB Director saw that this TSAG meeting was challenging but also brought new emerging technologies and new emerging trends. The learnings helped to prepare for WTSA-20, which should be looking until year 2024 and even beyond until 2030. TSAG plays an important role for preparations of the next Assembly, as do the [WTSA-20 Regional Preparatory Meetings](https://www.itu.int/en/ITU-T/wtsa20/prepmeet/Pages/default.aspx) which are resuming their work in the various regions. He expressed his hope to keep the momentum until the next TSAG meeting.
  2. The TSAG Chairman thanked all, in particular the TSAG Vice Chairmen (Ms Rim Belhassine-Cherif, Ms Weiling Xu, Mr Reiner Liebler, Mr Vladimir Minkin, Mr Matano Ndaro, and Mr Omar Tayseer Al-Odat) and Rapporteurs (Mr Steve Trowbridge, Mr Glenn Parsons, Mr Didier Berthoumieux, Mr Kwame Baah-Acheamfuor, Mr Vladimir Minkin, Mr Reiner Liebler), the Chairman of AHGs (Mr Arnaud Taddei, and Mr Ahmed Said), the Chairmen of the study groups, Mr Chaesub Lee, Mr Reinhard Scholl, Mr Martin Euchner, Ms Lara Al-Mnini, TSB staff, the delegates for their active participation and their spirit of compromise, the interpreters and captioners for their support and work.
  3. The TSAG meeting was closed on 27 September 2019 at 1551 hours.

# Annex A Summary of results of the TSAG Rapporteur Groups

| Rapporteur Group | RG Report | Outgoing liaison statements | Future meetings |
| --- | --- | --- | --- |
| RG-CPTRG | [TD453](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0453) | --- | * Next TSAG meeting. |
| RG-ResReview | [TD455](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0455) | * LS/o on streamlining to ITU Inter-Sector Coordination Group (ISCG), ITU secretariat's Inter-Sector Coordination Task Force (ISC-TF), TDAG, RAG, all ITU-T study groups, and all regional organizations (in [TSAG-LS21-R2](https://www.itu.int/ifa/t/2017/ls/tsag/sp16-tsag-oLS-00021r2.zip)) | * One interim e-meeting if contributions are submitted on reviewing WTSA resolutions, including streamlining as in the scope of this Rapporteur Group. * Next TSAG meeting. |
| RG-SC | [TD457](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0457) | * LS/o on ITU inter-Sector coordination to ISCG, TDAG, ITU-D SGs, RAG, ITU-R SGs, ITU-T SGs (in [TSAG-LS22-R1](https://www.itu.int/ifa/t/2017/ls/tsag/sp16-tsag-oLS-00022r1.zip)). | * One e-meeting to progress the work, on the condition that contributions will be received. * Next TSAG meeting. |
| RG-SOP | --- | --- | * Next TSAG meeting. |
| RG-StdsStrat | [TD461-R1](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0461) | * LS/o on New IP, Shaping Future Network [to IETF, IAB, all ITU-T study groups] (in [TSAG-LS23](https://www.itu.int/ifa/t/2017/ls/tsag/sp16-tsag-oLS-00023.zip)) | Up to three interim e-meetings on the basis that contributions will be received.  Contributions having a strategic nature are invited until the next TSAG meeting, in particular, on   * focus on hot topics which are not already discussed by ITU-T study groups and do not clearly fall within their areas of activity, * provide guidance on the metrics that could be developed to analyse the current activity within ITU-T and obtain useful insight, * discuss criteria of mapping ITU-T results to the SDGs and possible procedures for the mapping of new work items versus SDGs.   + TSAG-C099 on Architecture Advisory Board, and TSAG-C089 on SDG indicators.   The interim e-meetings will also analyse the Communiqués of the TSB Director CxO meetings.  The interim e-meetings are open to all ITU-T members.  Three e-meetings are planned:   * + Friday, 1 November 2019, 13:00-15:00 Geneva time   + Friday, 31 January 2020, 13:00-15:00 Geneva time.   + Friday, 27 March 2020, 13:00-15:00 Geneva time.   RG-StdsStrat will meet at the 5th TSAG meeting in 2020. |
| RG-WM | [TD463-R2](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0463) | None. | * Two interim e-meetings before next TSAG meeting. The dates of the interim e-meetings will be decided offline via consultation. The interim meetings have the following Terms of reference: * 1st e-meeting: Present and discuss the documents pending from the current TSAG RG-WM meeting: C81 (China); C82 (China); C72 (CT, MIIT) C77 (UK); C78 (UK); TD473 (Director); TD530 (ITU-T SG13); TD557 (ITU-T SG5); TD573 (ITU-T SG15); * 2nd e-meeting: Progress and finalize the Editor and Rapporteur Manual: C67R1 (Orange); C71 (CT, MIIT); TD613; * Next TSAG meeting. |
| RG-WP | [TD465](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0465) | --- | * Next TSAG meeting. |

# Annex B TSAG work programme

| Work item | New/ Revised | Title | Editor | Latest draft in | Timing |
| --- | --- | --- | --- | --- | --- |
| A.1rev (\*) | Revised | Draft revised Recommendation ITU-T A.1  Working methods for study groups of the ITU Telecommunication Standardization Sector | Stephen J Trowbridge | [TD637](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0637) | 27 September 2019 (\*\*) |
| A.5rev (\*) | Revised | Draft revised Recommendation ITU-T A.5  Generic procedures for including references to documents of other organizations in ITU T Recommendations | Olivier Dubuisson | [TD591](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0591) | 27 September 2019 (\*\*) |
| A.13rev (\*) | Revised | Draft revised Recommendation ITU-T A.13  Non-normative ITU-T publications, including Supplements to ITU T Recommendations | Stephen J Trowbridge | [TD612-R2](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0612) | 27 September 2019 (\*\*) |
| A.25rev (\*) | Revised | Draft revised Recommendation ITU-T A.25  Generic procedures for incorporating text between ITU-T and other organizations | Olivier Dubuisson | [TD592](https://www.itu.int/md/T17-TSAG-190923-TD-GEN-0592)-R1 | 27 September 2019 (\*\*) |

Notes:

(\*) – Draft revised Recommendations that were approved (TAP) at this meeting

(\*\*) – Date of approval.

# Annex C Terms of reference for ITU-T Focus Group on "Quantum Information Technology for Networks" (FG-QIT4N)

**1 Rationale and Scope**

The integration of quantum physics and information technology has forged the so-called quantum information technology (QIT).

QIT has promoted the booming of the second quantum revolution and will have a profound impact on ICT networks.

Quantum computation is a new computation model that follows the laws of quantum mechanics to control quantum information units. Combined with the quantum parallelism, quantum information processing has greater potential than classical information processing. Quantum computers represent a breakthrough in Moore's Law, implying enormous computing power potential. Quantum computer has potential applications in many fields, such as optimization over huge data sets and design of new materials and molecular functions.

Quantum communication includes a class of novel communication technologies that is based on the transmission of quantum signals, such as quantum key distribution (QKD), quantum teleportation, quantum repeater. QKD is an area of great interest in QIT application at this moment. Metro/backbone QKD networks have been constructed and satellite-based quantum communication experimental applications have been realized in last decade. In the future, quantum repeater would be an essential building block in constructing distributed quantum computing.

Quantum metrology is the study of measurement techniques that give higher resolution and sensibility in measurements of physical parameters than the same measurement performed in a classical framework.

Quantum information network (QIN) is expected to connect quantum information processing nodes, including QKD nodes, quantum computers and quantum sensors, via quantum communication technologies such as quantum teleportation and quantum repeating, to realize quantum information transmission and networking. QIN has potential to provide series of new applications, such as distributed quantum computing and quantum sensor network.

The ITU-T Focus Group on "Quantum information technology for networks" (FG-QIT4N) would provide a platform to study QIT for networks. It engages researchers, engineers, practitioners, entrepreneurs and policy makers, to take full advantages of ability and potential of QIT in networks.

**2 Objectives of the FG-QIT4N**

This Focus Group is to provide a collaborative platform for pre-standardisation aspects of QIT for the ICT networks, with the following objectives:

1. Considering evolution and applications of QIT for networks.
2. The topics of study include:
   1. Telecom/network aspects of QKD networks that are identified in close coordination with ITU-T SG13 and SG17 as not within the scope of SG13 (QKD network architecture aspects) and SG17 (security aspects of QKD network and applications of QRNG for security).
   2. QIN technology and network evolution.
3. The FG outputs will focus on terminology and use cases.

The FG will reference relevant terminology defined in the pertinent ITU-T SGs. When necessary, the FG will liaise with the relevant SGs if terminology needs to evolve to take into account technology evolution.

1. To provide necessary technical background information and collaborative conditions in order to effectively support QIN-related standardization work in ITU-T study groups.
2. To provide an open cooperation platform with ITU-T study groups and other SDOs, including collaborative standardization work, co-located meetings, and workshop on quantum topic.

**3 Structure**

The FG-QIT4N may establish sub-groups if needed.

**4 Specific Tasks and Deliverables**

The expected tasks with potential deliverables for QIT4N are listed below:

1. To collaborate and cooperate with study groups and other SDOs and sub-groups, such as ETSI ISG-QKD, ETSI TC Cyber, IEEE, ISO/IEC JTC 1/SC27/WG3, ISO/IEC JTC 1/AG4, IETF, IRTF.
2. To develop technical report(s) about evolution and applications of QIT (e.g., quantum computing, quantum communication) for networks.
3. To develop technical report(s) on telecom/network aspects of QKD networks that are identified in close coordination with ITU-T SG13 and SG17 as not within the scope of SG13 (QKD network architecture aspects) and SG17 (security aspects of QKD network and applications of QRNG for security), focused on terminologies, new use cases, protocols and transport technologies.
4. To develop technical report(s) on the evolution of QIN focused on terminologies and use cases.
5. To organize thematic workshops on QIT for networks, which will bring together interested stakeholders to promote the FG activities, and encourage both ITU members and non-ITU members to jointly contribute on this topic.

**5 Relationships**

This Focus Group will work in close collaboration with all ITU-T study groups, especially SG13, SG17, SG15, SG2 and SG11.

This FG QIT4N will collaborate with relevant entities, in accordance with Recommendation ITU-T A.7. These entities include the following: SDOs, industry forums and consortia (such as ISO/IEC JTC 1/SC27/WG3, ISO/IEC JTC 1/AG4, ETSI ISG-QKD, ETSI TC Cyber, IEEE-SA, IETF, IRTF), tech companies, academic institutions, research institutions and other relevant organizations.

**6 Parent group**

The parent group is ITU-T TSAG.

**7 Leadership**

See clause 2.3 of Recommendation ITU-T A.7.

**8 Participation**

See clause 3 of Recommendation ITU-T A.7. A list of participants will be maintained for reference purposes and reported to the parent group.

It is important to mention that the participation in this Focus Group has to be based on contributions and active participations.

**9 Administrative support**

See clause 5 of Recommendation ITU-T A.7.

**10 General financing**

See clauses 4 and 10.2 of Recommendation ITU-T A.7.

**11 Meetings**

The schedule and location of meetings will be determined by the Focus Group and the overall meetings plan will be announced after the approval of the terms of reference. The Focus Group will work electronically using teleconferences and with face-to-face meetings. Meetings will be held as determined by the Focus Group and the meetings will be announced by electronic means (e.g., e-mail and website, etc.) at least four weeks in advance.

**12 Technical contributions**

See clause 8 of Recommendation ITU-T A.7.

**13 Working language**

The working language is English.

**14 Approval of deliverables**

See clause 10.1 of Recommendation ITU-T A.7.

**15 Working guidelines**

See clause 13 of Recommendation ITU-T A.7.

**16 Progress reports**

See clause 11 of Recommendation ITU-T A.7.

**17 Announcement of Focus Group formation**

The formation of the Focus Group will be announced via TSB Circular to all ITU membership, via the ITU-T News log, press releases and other means, including communication with the other involved organizations.

**18 Milestones and duration of the Focus Group**

The Focus Group lifetime is set for one year from the first meeting and reports to the last TSAG meeting before WTSA-20, see ITU-T A7, clause 2.2.

**19 Patent policy**

See clause 9 of Recommendation ITU-T A.7.

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1. <https://www.itu.int/en/ITU-T/tsag/2017-2020/Documents/Captioning/TSAG-Captioning-September2019.zip> [↑](#footnote-ref-2)
2. Webcast recording is available at <https://www.itu.int/en/ITU-T/tsag/2017-2020/Pages/webcasts-l.aspx>. The direct link to the archived webcast is [here](https://www.itu.int/webcast/archive2/t2017-20tsag?order=field_start_date&sort=desc). [↑](#footnote-ref-3)