|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A black and white logo  Description automatically generated with low confidence | INTERNATIONAL TELECOMMUNICATION UNION  **TELECOMMUNICATION STANDARDIZATION SECTOR**  STUDY PERIOD 2022-2024 | | | TSAG-TD037 |
| TSAG |
| Original: English |
| **Question(s):** | | | N/A | Geneva, 12-16 December 2022 |
| **TD** | | | | |
| **Source:** | | | Chairman, ITU-T SG16 | |
| **Title:** | | | ITU-T SG16 Lead Study Group Report (March-December 2022) | |
| **Contact:** | | Noah Luo Huawei Technologies China | | Tel: +44 (11) 8920 8954 E-mail: [noah@huawei.com](mailto:noah@huawei.com) |

|  |  |
| --- | --- |
| **Abstract:** | This TD contains the Report on Lead SG activities for ITU-T SG16 since last TSAG meeting. |

**CONTENTS**

[1 Lead SG roles 2](#_Toc120309058)

[2 Recent results 2](#_Toc120309059)

[3 Recent collocated activities 6](#_Toc120309060)

[4 Future meetings 7](#_Toc120309061)

[5 New participation in the work of Study Group 16 7](#_Toc120309062)

[6 Feedback and status reports on interim activities and collaboration 7](#_Toc120309063)

[6.1 TSAG meeting 7](#_Toc120309064)

[6.2 Multimedia technologies, applications, systems and services 7](#_Toc120309065)

[6.2.1 JCA-MMeS 7](#_Toc120309066)

[6.2.2 Ubiquitous multimedia applications 8](#_Toc120309067)

[6.2.3 Metaverse 8](#_Toc120309068)

[6.3 Human factors and ICT accessibility for digital inclusion 9](#_Toc120309069)

[6.4 IP-based television services and digital signage 10](#_Toc120309070)

[6.5 Multimedia aspects of digital health 11](#_Toc120309071)

[6.5.1 Personal connected health – H.810-H.850 series 11](#_Toc120309072)

[6.5.2 Collaboration with WHO 12](#_Toc120309073)

[6.5.3 Artificial Intelligence for health 12](#_Toc120309074)

[6.6 Multimedia aspects of automotive-related intelligent services 14](#_Toc120309075)

[6.6.1 Vehicular multimedia (FG-VM) 15](#_Toc120309076)

[6.6.2 AI for autonomous and assisted driving (FG-AI4AD) 16](#_Toc120309077)

[6.7 Multimedia aspects of distributed ledger technology (DLT) and its applications 18](#_Toc120309078)

[6.8 Digital culture 18](#_Toc120309079)

[6.9 Intersector Rapporteur Groups 19](#_Toc120309080)

[6.9.1 IRG-AVA 19](#_Toc120309081)

[6.9.2 IRG-IBB 19](#_Toc120309082)

[6.10 Various collaboration matters 19](#_Toc120309083)

[6.10.1 ITU-T SG9 19](#_Toc120309084)

[6.10.2 ITU-T SG12 20](#_Toc120309085)

[6.10.3 ITU-R 20](#_Toc120309086)

[6.10.4 ITU-D 21](#_Toc120309087)

[6.10.5 ISO/IEC JTC 1 21](#_Toc120309088)

[6.10.6 Video and image coding 21](#_Toc120309089)

[6.10.7 Other groups 25](#_Toc120309090)

[6.11 Bridging the standardization gap (BSG) 27](#_Toc120309091)

# Lead SG roles

ITU-T SG16 is responsible for studies relating to ubiquitous multimedia applications, multimedia capabilities for services and applications for existing and future networks. This encompasses accessibility; multimedia architectures and applications; human interfaces and services; terminals; protocols; signal processing; media coding and systems (e.g. network signal processing equipment, multipoint conference units, gateways and gatekeepers).

ITU-T Study Group 16 performs on the following lead SG roles (WTSA-20 Res.2):

– multimedia technologies, applications, systems and services

– IP-based television services and digital signage

– human factors and ICT accessibility for digital inclusion

– multimedia aspects of automotive-related intelligent services

– multimedia aspects of digital health

– digital culture

– multimedia aspects of distributed ledger technology (DLT) and its applications

In addition to being the parent of the new JCA on multimedia aspects of e-services, ITU-T Study Group 16 also had active participation in the JCA-AHF [Joint Coordination Activity on Accessibility and Human factors](http://www.itu.int/ITU-T/jca/ahf/index.html)

The Study Group also coordinates its activities with a number of external players, there including:

* ITU-T SG9
* ITU-T SG12
* ITU-R and ITU-D study groups
* ISO/IEC JTC1
* ISO/IEC JTC1 SC29 and its Working Groups (WG1/JPEG and WG5/JVET)
* Focus Groups (FG-AI4A, FG-AI4AD, FG-AI4EE, FG-AI4H, FG-AI4NDM, FG-AN, FG-TBFxG, FG-VM).
* Intersector Rapporteur Groups (IRG-AVA)
* Various disability organizations within the scope of Study Group 16's accessibility work.

# Recent results

ITU-T SG16 met once since the last TSAG meeting. This meeting was online, 19-30 April 2021. SG16 accomplished the following results, in line with its mandate and lead SG roles (all TD references are SG16 TDs, except where otherwise noted):

* **Organization for this study period:** The structure and leadership for this study period was reviewed / agreed [[SG16-TD5/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0005), [SG16-TD6/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0006)]. The working party structure and Question allocation is as follows:
* Working Part 1/16 "Infrastructure for multimedia systems" co-chaired by Shin-Gak Kang and (Rep. of Korea) and Marcelo Moreno (Brazil) with Questions 11, 13, 21, 22, 27/16
* Working Part 2/16 "Multimedia digital services and human aspects" co-chaired by Mohannad El-Megharbel (Egypt) and Hideki Yamamoto (Japan) with Questions 23, 24, 26, 28/16.
* Working Part 3/16 "Audiovisual technologies and intelligent immersive applications" co-chaired by Hideo Imanaka (NICT, Japan) and Yuan Zhang (China Telecom, China) with Questions 5, 6, 8, 12/16.

Question 1/16 remains assigned to Plenary, with Ms Sarra Rebhi (Tunisia) as Rapporteur. Most Rapporteurs were reinstated, based on their availability (see [Appointments](#_Appointments), below). The list is kept up to date on the [SG16 website](https://www.itu.int/net4/ITU-T/lists/loqr.aspx?Group=16&Period=17).

* **WTSA-24**: Recognizing that this is a short study period, an ad hoc group of the plenary was created to advance the discussions in SG16 for the proposals to WTSA-24, in particular for its study Questions and Res.2 mandate, lead roles and guidance. The SG16 AHG-WTSA will meet online regularly until the end of the study period to review progress of discussions ITU-T wide as well as to consider member contributions on the topic[[SG16-TD72/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0072)]
* **Focus groups:** Two of the SG16 FGs concluded its activities, FG-VM and FG-AI4AD. The reports to the SG16 plenary highlighted its activities and in particular deliverables that were moved into the standardization track within Q27/16 [[SG16-TD12/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0012), [SG16-TD14/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0014)]. The FG-AI4H will run till September 2023 and reported on three deliverables and on its progress for the establishment of a Global Initiative on AI4H between ITU and WHO [[SG16-TD13/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0013)].
* **Correspondence group on metaverse:** The CG-Metaverse provided a progress report [[SG16-TD21/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0021)] and during this SG16 meeting focused on refining a proposal towards an ITU-T Focus Group on metaverse. The group agreed to extend its activities until the next SG16 meeting in July 2023 [[SG16-TD45-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0045)] and provided input to TSAG on the creation of an FG on metaverse / (LS in [[SG16-TD46-R2/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0046)]; ToR [[SG16-TD39-R4/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0039)]). Messrs Shin Gak Kang (ETRI, Rep. of Korea) and Kepeng Li (Tencent, China) will continue to convene the CG-Metaverse. The file repository is in the [SG16 IFA](https://www.itu.int/ifa/t/2022/sg16/exchange/plen/cgmv) and the mailing list for the CG-Metaverse is [t22sg16cgmetaverse@lists.itu.int](mailto:t22sg16cgmetaverse@lists.itu.int) (subscribe [here](https://www.itu.int/go/tsg16/services)).
* **Proposed Question on computer audition:** The meeting reviewed a proposal in [SG16-C127](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-C-0127) to create a new Question Q.IASS on intelligent auditory systems and services that explore how machines can explore information in audio signals (i.e. "computer audition") to perform a number of tasks (for example, parsing voice commands, detection of health conditions, forecast machinery failure in a factory, etc). While it agreed that it is important to study the topic, creation of a new Question should be considered within the context of SG16 proposals to WTSA-24. In the meantime, work on computer audition will continue under Q5/16 with an informally agreed updated set of ToRs that highlight the specific computer audition study areas [[SG16-TD59/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0059)].
* **Video and image coding standards:** At this meeting, collaboration on image compression continued with JPEG (JTC1/SC29/WG1) with the start of approval process for three common texts:
* ITU-T T.807 | ISO/IEC 15444-8 Ed.2 "Information technology – JPEG 2000 image coding system: Secure JPEG 2000" (Rev.) [[SG16-TD80/Plen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0080)]
* ITU-T T.808 | ISO/IEC 15444-9 Ed.2 "Information technology – JPEG 2000 image coding system: Interactivity tools, APIs and protocols" (Rev.) [[SG16-TD73/Plen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0073)]
* ITU-T T.816 | ISO/IEC 15444-17 Ed.1 "Information technology – JPEG 2000 image coding system: Extensions for coding of discontinuous media" (New) [[SG16-TD81/Plen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0081)]

For video compression work, collaboration continued within the context of the [JVET](https://www.itu.int/en/ITU-T/studygroups/2022-2024/16/video/Pages/jvet.aspx), as well as with the start of a new joint work for the development of a new Supplement H.Sup.MACVC on optimization of encoders and receiving systems for machine analysis of coded video content.

* **Maintenance of echo cancelling specifications:** Work was completed on a corrigendum to ITU-T G.168 "Digital network echo cancellers" to correct reference errors [[SG16-TD56/Plen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0056)].
* **Accessible telehealth:** Following adoption by both ITU and World Health Organization (WHO) of ITU-T F.780.2 on use cases and requirements for accessible telehealth services, new work started to define a conformity testing specification to enable verification that implementations meet the necessary requirements [[SG16-TD31/WP2](https://www.itu.int/md/T22-SG16-221017-TD-WP2-0031)].
* **Safe listening:** Following approval of the 2nd edition of [ITU-T H.870](https://www.itu.int/rec/T-REC-H.870-202203-I/en) "Guidelines for safe listening devices/systems", which is a joint standard of ITU and WHO, work started on a revised version of the conformity testing specification for the joint ITU & WHO standard [[SG16-TD37/WP2](https://www.itu.int/md/T22-SG16-221017-TD-WP2-0037)].
* **Digital health:** Maintenance work for the Continua Design Guidelines of the H.810 series continued with revised ITU-T H.845.10 "Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 5J: Insulin pump" [[SG16-TD32/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0032)]. Two other new Recommendations and one new Technical Paper were also completed:
* ITU-T F.760.1 (ex F.EMRESCUE) "Requirements and reference framework for emergency rescue systems" [[SG16-TD55-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0055)]
* ITU-T F.780.3 (ex F.TCUR-UHD) "Use cases and requirements for ultra-high-definition teleconsulting system" [[SG16-TD94/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0094/en)]
* ITU-T FSTP-CONF-F780.1 "Technical paper: Conformance test specification for F.780.1" [[SG16-TD58/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0058/en)]
* **Multimedia conferencing systems:** A corrigendum was prepared for ITU-T H.245, which is part of the H.323 system that is used worldwide for supporting IP-based multimedia communications [[SG16-TD31/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0031)]. Updates were also completed for the MPEG-2 system specification in H.222.0 | ISO/IEC 13818-1 with correction of important missing field [[SG16-TD29/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0029)] and the addition of support for of MPEG-5 Part 2 Low Complexity Enhancement Video Coding (LCEVC) and other improvements [[SG16-TD30/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0030)].
* **Intelligent transport systems (ITS) and vehicular multimedia:** Work completed at this meeting for new H.Sup20 (ex H.Sup.ITS-SD) on practice for intelligent traffic sensing device deployment in the roadside [[SG16-TD92/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0092/en)]. Work was started to evolve a deliverable of the [ITU-T FG-AI4AD](https://www.itu.int/en/ITU-T/focusgroups/ai4ad) into an ITU-T Recommendation for a specification for automated driving safety data protocol (provisionally labelled *H.ADSDP-spec*) [[SG16-TD70-R1/WP1](https://www.itu.int/md/T22-SG16-221017-TD-WP1-0070/en)].
* **Digital culture:** New work started on virtual reconstruction system for restoration of cultural relics and artworks based on artificial intelligence [[SG16-TD40/WP2](https://www.itu.int/md/T22-SG16-221017-TD-WP2-0040/en)].
* **Content delivery networks (CDNs),** **IPTV and Digital Signage:** At this meeting, work completed on new ITU-T H.644.5 (ex H.MCDN-CRRS) "Functional architecture of content request routing service in MCDN" [[SG16-TD48/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0048)]. Work started on a new WI:
* Requirements and architecture for multimedia functions for autonomous mobile robots connected with network [[SG16-TD46/WP1](http://www.itu.int/md/T22-SG16-221017-TD-WP1-0046)]
* **Video surveillance:** In addition to progressing the current work items, work started on new F.MGSReqs on model generalization [[SG16-TD36/WP3](https://www.itu.int/dms_inf/itu-t/md/22/sg16/td/221017/WP3/T22-SG16-221017-TD-WP3-0036!!MSW-E.docx)] and F.MFSVreqs on multimodal fusion system for vision [[SG16-TD37/WP3](https://www.itu.int/dms_inf/itu-t/md/22/sg16/td/221017/WP3/T22-SG16-221017-TD-WP3-0037!!MSW-E.docx)] for in intelligent video surveillance. Work completed on four new Recommendations and one new Technical paper:
* ITU-T H.627.3 (ex H.PIVSS) "Protocols for intelligent video surveillance systems" [[SG16-TD78-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0078)]
* ITU-T F.743.22 (ex F.ATVSReqs) "Requirements and architecture of algorithm training system for intelligent video surveillance" [[SG16-TD76/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0076)]
* ITU-T F.743.19 (ex F.IVS-ISC) "Requirements for intelligent surveillance camera in intelligent video surveillance systems" [[SG16-TD75-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0075)]
* ITU-T F.743.18 (ex F.5GUHDC) "Requirements for IMT-2020 ultra-high definition surveillance camera" [[SG16-TD74-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0074)]
* ITU-T FSTP-VS-SDCA "Technical paper: Application of software-defined camera in surveillance industry" [[SG16-TD79-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0079)]
* **Civilian unmanned aerial vehicles:** TAP approval process started for ITU-T F.749.16 (ex F.CUAV-LX) "Requirements for logistics express delivery based on civilian unmanned aerial vehicles" [[SG16-TD47/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0047)]. Experts will also work on a new specification for framework and requirements on the use of CUAVs in emergency services (F.CUAV-ES ) [[SG16-TD513/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-220117-TD-WP1-0513)].
* **Ubiquitous multimedia applications:** New study will start on three new WIs for digital humans [[SG16-TD21/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0021), [SG16-TD27/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0027), [SG16-TD30/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0030)], one on computer audition for machinery fault diagnosis [[SG16-TD28/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0028)] and three others on multimedia data asset management, status monitoring, and media processing platforms [[SG16-TD29-R1/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0029), [SG16-TD20/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0020), [SG16-TD33-R1/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0033)]. Two new Recommendations extend the toolset of SG16 Recommendations for support of multimedia applications and services:
* ITU-T F.746.14 (ex F.CVR-RRF) "Requirements and reference framework for cloud virtual reality systems" (New) [[SG16-TD43/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0043/en)]
* ITU-T F.746.17 (ex F.MPSReqs) "Requirements for media processing services" (New) [[SG16-TD44/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0044)]
* **AI and machine learning:** The multimedia AI topic was very active at this meeting. In addition to [various ongoing and 14 new work items](https://www.itu.int/ITU-T/workprog/wp_search.aspx?q=5/16), ten texts were completed:
* ITU-T F.748.17 (ex F.AICP-MD) "Technical specification for artificial intelligence cloud platform: AI model development" (New) [[SG16-TD82-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0082/en)]
* ITU-T F.748.18 (ex F.AI-DLEMT) "Metric and evaluation methods for AI-enabled multimedia application computing power benchmark" (New) [[SG16-TD83-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0083/en)]
* ITU-T F.747.12 (ex F.AI-MVSLWS) "Requirements for artificial intelligence based machine vision system in smart logistics warehouse" (New) [[SG16-TD84/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0084/en)]
* ITU-T F.746.15 (ex F.SBNG) "Requirements for smart broadband network gateway in multimedia content transmission" (New) [[SG16-TD85/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0085/en)]
* ITU-T F.742.1 (ex F.SCAI) "Requirements for smart class based on artificial intelligence" (New) [[SG16-TD86-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0086/en)]
* ITU-T F.748.19 (ex F.AI-FASD) "Framework for audio structuralizing based on deep neural network" (New) [[SG16-TD87-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0087/en)]
* ITU-T F.748.20 (ex F.AI-DMPC) "Technical framework for Deep Neural Network model partition and collaborative execution" (New) [[SG16-TD88-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0088/en)]
* ITU-T F.747.11 (ex F.AI-ISD) "Requirements for intelligent surface-defect detection service in industrial production line" (New) [[SG16-TD89-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0089/en)]
* ITU-T F.748.21 (ex F.FDIS) "Requirements and framework for feature-based distributed intelligent systems" (New) [[SG16-TD90-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0090/en)]
* ITU-T F.746.16 (ex F.AI-ILICSS) "Technical requirements and evaluation methods of intelligent levels of intelligent customer service systems" (New) [[SG16-TD91-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0091/en)]
* **DLT:** In addition to [ten new work items](https://www.itu.int/ITU-T/workprog/wp_search.aspx?q=22/16), work progressed on various other drafts. The approval process started for TAP Recommendation ITU-T F.751.8 (ex H.DLT-TFR) "Technical framework for DLT to cope with regulation" [[SG16-TD52-R1/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0052)]. Additionally, work completed on three new AAP Recommendations:
* ITU-T F.751.5 (ex F.DLT-DMPG) "Requirements for distributed ledger technology-based power grid data management" (New) [[SG16-TD49/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0049)]
* ITU-T F.751.6 (ex H.DLT-PAM) "Performance assessment methods for distributed ledger technology platforms" (New) [[SG16-TD51/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0051)]
* ITU-T F.751.7 (ex H.DLT-FAM) "Functional assessment methods for distributed ledger technology platforms" (New) [[SG16-TD50/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0050)]
* **Immersive live experience:** In addition to progressing the various existing work items, ILE work started on an architecture for interactive immersive services systems (H.IIS-FA, [[SG16-TD79/WP3](https://www.itu.int/md/T22-SG16-221017-TD-WP3-0079/en)])
* **Accessibility:** Worked progressed with the approval of a revised technical paper ITU-T FSTP.ACC-WebVRI (V2) "Technical paper: Guideline on web-based remote sign language interpretation or video remote interpretation (VRI) system" [[SG16-TD53/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0053)]. Work started for a new Technical Paper FSTP-ACC-Rural "Use cases of accessibility to multimedia systems in rural and out-of-home environments" [[SG16-TD39/WP2](https://www.itu.int/ITU-T/workprog/wp_search.aspx?lang=en&parent=T22-SG16-221017-TD-WP2-0039)].

Collaborative work continued within the IRG-AVA on [J.acc-us-prof](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=17754) on "Common user profile format for audiovisual content distribution" and with JTC1/SC35 "*User interfaces*" for two joint texts:

* Draft [H.ACC-GVP](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14439) Guidance on the Visual presentation of audio information, including captions and subtitles (twin text of ISO/IEC 20071-23)
* Draft [F.ACC-AVSL](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16371) Visual presentation of audio information in sign languages (twin text of ISO/IEC 20071-24).
* **Human factors:** In addition to ITU-T F.747.10 approved at the opening plenary (see details above), two new work items were created:
* F.ECHO "Requirements for conversation system in a hybrid work environment" [[SG16-TD18/WP2](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP2-0018)]
* F.DSDP "Requirements for intelligent UI for digital safety diagnosis platform" [[SG16-TD17/WP2](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP2-0017)]

Several activities were collocated with the Study Group 16 meeting:

# Recent collocated activities

Several activities were collocated with the Study Group 16 meeting:

* [ITU-T Study Group 16](http://www.itu.int/go/tsg16) (Geneva, 17-28 October 2022)
* ITU-T [IRG-AVA](https://www.itu.int/en/irg/ava/Pages/default.aspx) on 25 October 2022
* ITU-T [JCA-AHF](https://www.itu.int/en/ITU-T/jca/ahf) on 26 October 2022
* As an exception to the usual practice, the MPEG, JPEG and JVET meetings were not collocated physically with SG16 at this time:
* **JPEG** of ISO/IEC JTC1/SC 29 [WG 1] met online, 24-28 October 2022.
* **MPEG** of ISO/IEC JTC1/SC 29 [AGs 2, 3, 5 and WGs 2 to 8] and the **JVET** met in Mainz, Germany, 20-28 October 2022 (WGs 2 and 4 met online only)
* ITU Workshop on [Metaverse and multimedia](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2022/1018/Pages/default.aspx) *(18 October 2022)*

# Future meetings

Interim WP meetings are tentatively planned for WP1/16 and WP2/16 on 17 March 2023 to Consent or Determine texts that may become stable before the next full SG16 meeting.

The meeting was informed that the next full SG16 meeting is currently planned to be physical in Geneva, 10-21 July 2023, date and details to be confirmed (collocated with JVET and JTC1/SC29 WGs). Check the [SG16 homepage](https://itu.int/go/tsg16) for updates.

The subsequent meeting is foreseen for April-May 2024 timeframe, outside Geneva (collocated with JTC1/SC29 WGs). The meeting was reminded that meetings from 2023 till at least 2026 cannot be guaranteed to be held in ITU premises, due to the Varembé II construction project. Invitations for meetings outside Geneva are welcome; please contact TSB at [tsbsg16@itu.int](mailto:tsbsg16@itu.int).

Rapporteur meeting activities are listed at <https://itu.int/go/rgm/tsg16>.

# New participation in the work of Study Group 16

The following organizations have joined the SG16 activities:

* Sector Members: State Grid Corporation (China); Hewlett Packard Enterprise (United States)
* Associates: Japan Industrial Imaging Association (JIIA), Luster LightTech (China), and Guangdong OPPO Mobile Telecommunications (China)
* Academia: Digital Currency Institute of the People's Bank of China, Peng Cheng Laboratory (China), and Renmin University of China

# Feedback and status reports on interim activities and collaboration

## TSAG meeting

In addition to this report, three documents from SG16 are available at this TSAG meeting:

| TD | Source | Subject |
| --- | --- | --- |
| [TSAG-TD106](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0106/en) | ITU-T SG16 | LS/i on the establishment of a new Focus Group on the "metaverse/immersive virtual universe" |
| [TSAG-TD107](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0107) | ITU-T SG16 | LS/r on smart TV Operating System (SG9-LS8) |
| [TSAG-TD70](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0070) | ITU-T SG16 | LS/r on smart TV Operating System (reply to SG9-LS158) |

## Multimedia technologies, applications, systems and services

### JCA-MMeS

No meetings of the ITU-T JCA on multimedia aspects of e-services (JCA‑MMeS) were held after its 4th meeting in Geneva, 14 October 2019 [[Announcement](https://www.itu.int/ml/lists/arc/jca-mmes/2019-10/msg00000.html) | [Documents](https://www.itu.int/en/ITU-T/jca/mmes/Pages/docs.aspx) | [Report](https://www.itu.int/en/ITU-T/jca/mmes/JCAMMeS%20Docs/JCA-MMeS-Doc032.docx) | [LS-In](https://www.itu.int/net/itu-t/ls/ols.aspx?from=-1&to=6667&after=2019-03-30&before=2019-10-14)| [LS-Out](https://www.itu.int/net/itu-t/ls/ols.aspx?from=6667&after=2019-10-15&before=2020-06-30)] (the report was reviewed by SG16 at its closing plenary, 17 October 2019).

In reference to ITU-T A.1 clause 5 provisions, this SG16 meeting **did not consider** the continuation of the JCA-MMeS, which has been inactive for several meetings. As per A.1 clause 5.10, TSAG is expected to review all JCAs at its first meeting following the WTSA.

The list of nominated representatives is found in [JCA-MMES-DOC13-R1](https://www.itu.int/en/ITU-T/jca/mmes/JCAMMeS%20Docs/JCA-MMeS-Doc013-R1.docx).

The website for the JCA-MMES is found at <http://itu.int/en/ITU-T/jca/mmes>.

### Ubiquitous multimedia applications

New study will start on digital humans [[TD21/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0021), [TD27/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0027), [TD30/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0030)], computer audition for machinery fault diagnosis [[TD28/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0028)], and on multimedia data asset management, status monitoring, and media processing platforms [[TD29-R1/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0029), [TD20/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0020), [TD33-R1/WP1](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-WP1-0033)].

Two new Recommendations extend the toolset of SG16 Recommendations for support of multimedia applications and services:

* ITU-T F.746.14 (ex F.CVR-RRF) "Requirements and reference framework for cloud virtual reality systems" (New) [[TD43/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0043/en)]
* ITU-T F.746.17 (ex F.MPSReqs) "Requirements for media processing services" (New) [[TD44/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0044)]

### Metaverse

During the SG16 meeting in January 2022, a SG16 correspondence group on metaverse was created with the ToR found in Annex G of [SG16-R35](https://www.itu.int/md/T17-SG16-R-0035/en) (2022-01) with Messrs Shin-Gak Kang (ETRI, Rep. of Korea) and Kepeng Li (Tencent, China) as co-convenors. The group held three interim meetings from January till October 2022 (Attachments 1, 2 and 3 to [SG16-TD21/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0021)) and prepared a draft general report found in the main part of [SG16-TD21/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0021). The **main outcomes** during this period were a **general report** of activities **and** a **proposal for the creation of a focus group on metaverse**.

During this SG16 meeting, the CG-Metaverse had three sessions during the two weeks of the SG16 meeting to discuss the Contributions and LSs received:

* [SG16-C4](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-C-0004): CGMV: Standardization gap analysis on metaverse issues for a new work item proposal [China Mobile, ETRI]
* [SG16-C149-R1](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-C-0149): CGMV: On consideration of issues related to metaverse [Russia]
* [SG16-C5](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-C-0005): CGMV: New: F.MV-intro: a proposal for a new work item on "Overview and ecosystem for metaverse interoperability" [ETRI]
* [SG16-C102](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-C-0102): CGMV: Proposed Focus Group on the Metaverse [UK]
* [SG16-C156-R1](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-C-0156): CGMV: Proposal of the consideration points to create a focus group on metaverse in ITU-T [KDDI, Keio University, Mitsubishi Electric, NICT, NEC, OKI, Rakuten Mobile, Waseda University (Japan)]
* [SG16-TD65/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0065): [ITU-T SG20] LS on request for update on activities of CG-Metaverse (QALL/16)
* [SG16-TD78/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0078): [ITU-T SG17] LS on the establishment of a Focus Group on the "immersive virtual universe" (QALL/16).

The report of the discussions at this meeting is found in [SG16-TD60/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0060), which was presented and approved at the closing SG16 plenary.

The follow up actions of the activity are as follows:

* Continuation of the CG-Metaverse until the next SG16 meeting in July 2023 with the updated terms of reference found in SG16-R1 Annex H. The SG16 CG-Metaverse will continue to use a dedicated mailing list [t22sg16cgmetaverse@lists.itu.int](mailto:t22sg16cgmetaverse@lists.itu.int), and the file repository at <https://www.itu.int/ifa/t/2022/sg16/exchange/plen/cgmv>.
* Send a proposal to TSAG for the creation of a focus group on metaverse (open whether the parent group should be SG16 or TSAG) including draft terms of reference.

Both proposals were agreed by the plenary, as well as the related liaison statement to TSAG:

* LS on the establishment of a new Focus Group on the "metaverse/immersive virtual universe" ([TSAG-TD106](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0106/en) = [SG16-LS9](https://www.itu.int/net/itu-t/ls/ls.aspx?isn=28748)).

Delegates reiterated a concern whether the name "Metaverse" could be used due to trademark restrictions. It was pointed out that the situation is unclear, the WIPO [Global Brand Database](https://branddb.wipo.int/branddb/en/) contains over 820 applications since 1993 under different classes (e.g., education; providing of training; entertainment; sporting and cultural activities; computer software). As trademarks need to be registered in a specific class of goods and services, the general concept of the metaverse itself might not be registerable. There was support to take for the time being a *pragmatic approach* of continuing to use the term "metaverse" (lowercase), as already suggested in the context of the CG-Metaverse discussions.

Delegates interested on the topic were invited to follow up the discussions at this TSAG meeting (Geneva, 12-16 December 2022).

## Human factors and ICT accessibility for digital inclusion

**Question 26/16** is the key Question in ITU-T for accessibility and it held no interim meetings.

The Question continued to collaborate with ITU-T SG9 Q11/9 within the IRG-AVA to progress draft new J.acc-us-prof "Common user profile format for audiovisual content distribution".

**Question 24/16** is the key Question in ITU-T for human factors. The Question held two interim meetings online in April and May 2020.

* 2022-05-31 Online [Q24/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=13067&Group=16) [[TD7/WP2](https://www.itu.int/md/T22-SG16-221017-TD-WP2-0007)]
* 2022-08-25 Online [Q24/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=13118&Group=16) [[TD8/WP2](https://www.itu.int/md/T22-SG16-221017-TD-WP2-0008)]

Currently, Masahito Kawamori (Keio University, Japan) is the SG16 Liaison Officer for accessibility and human factor matters in **ITU-T** [**JCA-AHF**](http://www.itu.int/en/ITU-T/jca/ahf/Pages/default.aspx). The JCA-AHF coordinates activities related to accessibility and human factors, and it held a meeting online on 2 September 2021 and during SG16 on 26 October 2022. The meeting report is found on the JCA-AHF webpage, and a separate report is provided for this TSAG meeting ([TSAG-TD40](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0040/en)).

Collaboration between SG16 and ISO/IEC **JTC1 SC35** "User interfaces" continues. Work completed on:

* ITU-T [T.701.11](https://www.itu.int/rec/T-REC-T/recommendation.asp?lang=en&parent=T-REC-T.701.11) (2020) "Guidance on text alternatives for images" (twin text of ISO/IEC 20071-11:2019)
* ITU-T [T.701.21](https://www.itu.int/rec/T-REC-T/recommendation.asp?lang=en&parent=T-REC-T.701.21) (2022) "Guidance on audio description" (twin text of ISO/IEC TS 20071-21:2015)
* ITU-T [T.701.25](https://www.itu.int/rec/T-REC-T/recommendation.asp?lang=en&parent=T-REC-T.701.25) (2022) "Guidance on the audio presentation of text in videos, including captions, subtitles and other on-screen text" (twin text of ISO/IEC 20071-25:2017)

The following texts are being progressed:

* [F.ACC-AVSL](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=16371) | ISO/IEC 20071-24 "*Visual presentation of audio information in sign languages*"
* [H.ACC-GVP](http://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14439) | ISO/IEC 20071-23:2018 "*Guidance on the visual presentation of audio information, including captions and subtitles*"

The Questions received various LSs:

|  |  |  |
| --- | --- | --- |
| [SG16-TD92/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0092) | ITU-T SG9 | LS on initiation of new work item draft new ITU-T Tech. Rep. JSTR.LCAP "Technical advances, challenges, and best practices in live captioning" |
| [SG16-TD25/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0025) | ITU-T SG2 | LS on a socio-economic analysis of PTS-procured telephony services for people with disabilities |
| [SG16-TD67/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0067) | ITU-T SG20 | LS on guidelines on developing ICT services for accessible smart cities |
| [SG16-TD69/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0069) | ITU-T SG20 | LS on accessibility matters |
| [SG16-TD50/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0050) | ITU-T SG11 | LS on ITU recognition of testing laboratories |

SG16 participates in the IRG-AVA, see report in §6.8.1.

## IP-based television services and digital signage

Question 13/16 on IPTV, Digital Signage and CDN had one online meeting:

* 2022-07-20~22 Online [Q13/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=13091&Group=16) [[TD8/WP1](https://www.itu.int/md/T22-SG16-221017-TD-WP1-0008)]

SG16 also participated in the IRG-IBB, which is now closed (see §6.8.2).

SG16 maintains standardization roadmaps for IPTV, digital signage and multimedia content delivery networks (MCDN), see online at:

* <https://itu.int/en/ITU-T/studygroups/2022-2024/16/Pages/rm/iptv.aspx>
* <https://itu.int/en/ITU-T/studygroups/2022-2024/16/Pages/rm/ds.aspx>
* <https://www.itu.int/en/ITU-T/studygroups/2022-2024/16/Pages/rm/mcdn.aspx>

The Question had significant interaction with SG9 Questions as well as other groups:

|  |  |  |
| --- | --- | --- |
| [SG16-TD3/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0003) | ITU-R WP6C | LS on energy aware broadcasting systems [from ITU-R WP 6C] |
| [SG16-TD7/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0007) | ITU-R WP6B | LS/r on H.721V3 "IPTV terminal devices: basic model" (SG16-LS286) [from ITU-R WP 6B] |
| [SG16-TD23/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0023) | ASTAP | LS on approval of new work plan about APT report "Survey on problems and requirements on CDN services in COVID-19 in Asia-Pacific region" [from ASTAP] |
| [SG16-TD26/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0026) | ITU-T SG3 | LS/r on OTTs (SG16-LS281) [from ITU-T SG3] |
| [SG16-TD32/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0032) | TSB | Question ITU-R 147/6 "Energy aware broadcasting systems" |
| [SG16-TD47/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0047) | ETSI ISGMEC | LS/r on CDN-MEC (SG16-LS287) [from ETSI ISG MEC] |
| [SG16-TD84/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0084) | ITU-R WP6B | LS on Integrated broadcast-broadband systems [from ITU-R WP 6B] |
| [SG16-TD86/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0086) | ITU-T SG9 | LS on start of draft new Recommendation ITU-T J.cable-rf-to-ip "Requirements of cable television system for migration from RF to IP" [from ITU-T SG9] |
| [SG16-TD87/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0087) | ITU-T SG9 | LS on initiation of new work item on the draft ITU-T Technical Report TR.WiFiTV "Secondary distribution of digital television and audiovisual content to portable devices using Wi-Fi" |
| [SG16-TD88/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0088) | ITU-T SG9 | LS/r on smart TV Operating System (SG16-LS282) [from ITU-T SG9 to TSAG] |
| [SG16-TD90/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0090) | ITU-T SG9 | LS on the final baseline text for ITU-T J.cable-mabr "Requirements of multicast adaptive bitrate (M-ABR) IP delivery" [from ITU-T SG9 to DVB] |
| [SG16-TD52/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0052) | ITU-T SG13 | LS on new Recommendation ITU-T Y.3537 (Y.mc-reqts) "Cloud computing - Functional requirements of cloud service partner for multi-cloud" [from ITU-T SG13] |
| [SG16-TD89/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0089) | ITU-T SG9 | LS on the initiation of new work item ITU-T J.mma-req and J.mma-spec [from ITU-SG9] |
| [SG16-TD92/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0092) | ITU-T SG9 | LS on initiation of new work item draft new ITU-T Technical Report JSTR.LCAP "Technical advances, challenges, and best practices in live captioning" [from ITU T SG9] |
| [SG16-TD50/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0050) | ITU-T SG11 | LS on ITU recognition of testing laboratories [from ITU-T SG11] |
| [SG16-TD18/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0018) | ITU-T SG17 | LS on new work item "Technical Report: Security consideration of collaboration of multiple computing power networks" [from ITU-T SG17] |
| [SG16-TD62/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0062) | ITU-T SG5 | LS/r on terms and definitions from approved new work items (SG16-LS278) [from ITU-T SG5] |
| [SG16-TD63/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0063) | ITU-T SG20 | LS/r on terms and definitions from approved new work items (SG16-LS278) [from ITU-T SG20] |
| [SG16-TD46/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0046) | SCV | LS/r on terms and definitions from approved new work items (SG16-LS278) [from SCV] |
| [SG16-TD6/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0006) | ITU-R SG6 | LS on information on the progress of ITU-R SG6 Rapporteur Group on a vision for the future of broadcasting (RG-FOB) [from ITU-R SG6] |
| [SG16-TD91/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0091) | ITU-T SG9 | LS on ITU-T J.pcnp-char: "E2E Network Characteristics Requirement for Video Services", J.cloud-game-req: "Requirements of E2E Network Platform for Cloud Gaming Service", and J.cloud-vr-arch: "Architecture of E2E Network Platform for Cloud-VR Service" [from ITU-T SG9] |

## Multimedia aspects of digital health

The reference Question on digital health is Q28/16.

The Question received various LSs:

|  |  |  |
| --- | --- | --- |
| [SG16-TD50/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0050) | ITU-T SG11 | LS on ITU recognition of testing laboratories |
| [SG16-TD42/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0042) | JCA-DCC | LS on highlights from the first meeting of the Joint Coordination Activity on Digital COVID-19 Certificates (JCA-DCC) |
| [SG16-TD59/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0059) | ITU-T SG5 | LS/r on EMC in accessible telehealth (reply to SG16-LS300) |
| [SG16-TD73/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0073) | JCA-DCC | LS on highlights from the second meeting of the Joint Coordination Activity on Digital COVID-19 Certificates (JCA-DCC) |
| [SG16-TD15/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0015) | ITU-T SG2 | LS on SCV activity in SG2 |

### Personal connected health – H.810-H.850 series

Maintenance work for the Continua Design Guidelines of the H.810 series continued with revised ITU-T H.845.10 "Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 5J: Insulin pump" [[TD32/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0032)].

Two other new Recommendations and one new Technical Paper were also completed:

* ITU-T F.760.1 "Requirements and reference framework for emergency rescue systems" [[TD55-R1/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0055)]
* ITU-T F.780.3 "Use cases and requirements for ultra-high-definition teleconsulting system" [[TD94/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0094/en)]
* ITU-T FSTP-CONF-F780.1 "Technical paper: Conformance test specification for F.780.1" [[TD58/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0058/en)]

### Collaboration with WHO

* **Accessible telehealth:** Following adoption by both ITU and World Health Organization (WHO) of ITU-T F.780.2 on use cases and requirements for accessible telehealth services, new work started to define a conformity testing specification to enable verification that implementations meet the necessary requirements.
* **Safe listening:** Following approval of the 2nd edition of [ITU-T H.870](https://www.itu.int/rec/T-REC-H.870-202203-I/en) "Guidelines for safe listening devices/systems", which is a joint standard of ITU and WHO, work started on a revised version of the conformity testing specification for the joint ITU & WHO standard.
* An ITU/WHO video promoting the safe listening standard is found here: <https://youtu.be/Nm6T0f8SeHs>.

NOTE – See §6.5.3 concerning cooperation with WHO in the area of AI for health.

### Artificial Intelligence for health

As part of its studies on new standardization areas, a Focus Group on AI for health was established from a proposal from World Health Organization (WHO) and other ITU members. The Chairman is Thomas Wiegand (Fraunhofer HHI, Germany) and it has a life span till October 2022. Vice-chairmen representing different key stakeholders working on AI for health have been nominated:

* Stephen Ibaraki (ACM and REDDS Capital, USA)
* Ramesh Krishnamurthy (WHO/Health Metrics and Measurement Cluster)
* Naomi Lee (The Lancet, UK)
* Sameer Pujari (Be Healthy Be Mobile Initiative and WHO/Non-communicable Diseases Cluster)
* Manjula Singh (ICMR, India)
* Shan Xu (CAICT, China)

The FG has seven established working groups and one in preparation ([ToRs](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/wg.aspx)):

* Data and AI solution assessment methods (WG-DAISAM)  
  Chair: Pat Baird (Philips)  
  Vice-chair: Luis Oala (Fraunhofer HHI, DE)
* Data and AI solution handling (WG-DASH)  
  Chair: Marc Lecoultre (MLlab.AI, CH)  
  Vice chair: Ferhat Kerif (CHUV, CH)
* Operations (WG-O)  
  Co-chairs: Markus Wenzel and Monique (Fraunhofer HHI, Germany)
* Regulatory considerations on AI for health (WG-RC)  
  Chair: Naomi Lee (The Lancet, UK)  
  Vice-chairs:
* Paolo Alcini (European Medicines Agency, EU)
* Chandrashekar Ranga   
  (CDSCO, India)
* Khair ElZarrad (FDA, USA)
* Wolfgang Lauer (Federal Institute for Drugs and Medical Devices, Germany)
* Peng Liang (National Medical Products Administration, China)
* Ethical considerations on AI for health (WG-Ethics)  
  Chair: Andreas Reis (WHO)
* Clinical Evaluation (WG-CE)  
  Chair: Naomi Lee (The Lancet, UK)

The group works in partnership with the WHO and is a collaborative platform to establish a standardized (ICT) assessment framework for the evaluation of AI-based methods for health, diagnosis, triage or treatment decisions. It held one meeting since last TSAG meeting (online, 7-8 May 2020) and expanded the number of identified several use cases:

* Cardiovascular disease risk prediction (TG-Cardio)
* Dermatology (TG-Derma)
* Falls among the elderly (TG-Falls)
* Histopathology (TG-Histo)
* Malaria detection (TG-Malaria)
* Neurological disorders (TG-Neuro)
* Ophthalmology (TG-Ophthalmo)
* Outbreak detection (TG-Outbreaks)
* Psychiatry (TG-Psy)
* Snakebite and snake identification (TG-Snake)
* Symptom assessment (TG-Symptom)
* Tuberculosis (TG-TB)
* Volumetric chest computed tomography (TG-DiagnosticCT)
* Primary and secondary diabetes prediction (TG-Diabetes)
* Diagnoses of bacterial infection and anti-microbial resistance (AMR) (TG-Bacteria)
* Dental diagnostics and digital dentistry (TG-Dental)
* AI-based detection of falsified medicine (TG-FakeMed)
* Maternal and child health (TG-MCH)
* Radiotherapy (TG-Radiotherapy)
* Endoscopy (TG-Endoscopy)
* Musculoskeletal medicine (TG-MSK)
* Human reproduction and fertility (TG-Fertility)
* Point-of care diagnostics (TG-POC)

A detailed progress report for the January to October 2022 period is found in [SG16-TD13/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0013). Additional meetings held after the last SG16 are:

The FG-AI4H held three meetings since last SG16 meeting in January 2022:

* Meeting N - Online, 15-17 February 2022  
  [Announcement](https://staging.itu.int/ml/lists/arc/fgai4h/2021-11/msg00004.html) - No Workshop - [Documents](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/Forms/220215.aspx) - [Report](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-N-101.docx) - [LS/in](https://staging.itu.int/net/itu-t/ls/ols.aspx?from=-1&to=7952&after=2021-09-30&before=2022-02-17) - [LS/out](https://staging.itu.int/net/itu-t/ls/ols.aspx?from=7952&after=2022-02-14&before=2022-02-18)
* Meeting O - Berlin, 30 May - 2 June 2022  
  [Announcement](https://staging.itu.int/ml/lists/arc/fgai4h/2022-05/msg00001.html) - [Workshop](https://staging.itu.int/en/ITU-T/Workshops-and-Seminars/ai4h/20220530/Pages/default.aspx) - [Documents](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/Forms/220531.aspx) - [Report](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-O-101.docx) - [LS/in](https://staging.itu.int/net/itu-t/ls/ols.aspx?from=-1&to=7952&after=2022-02-17&before=2022-06-03) - [LS/out](https://staging.itu.int/net/itu-t/ls/ols.aspx?from=7952&after=2022-09-30&before=2022-06-03)
* Meeting P - Helsinki, 19-22 September 2022  
  [Announcement](https://staging.itu.int/ml/lists/arc/fgai4h/2022-05/msg00001.html) - [Workshop](https://staging.itu.int/en/ITU-T/Workshops-and-Seminars/ai4h/20220919/Pages/default.aspx) - [Documents](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/Forms/220919.aspx) - [Report](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-P-101.docx) - [LS/in](https://staging.itu.int/net/itu-t/ls/ols.aspx?from=-1&to=7952&after=2022-06-03&before=2022-09-23) - [LS/out](https://staging.itu.int/net/itu-t/ls/ols.aspx?from=7952&after=2022-09-18&before=2022-09-23)

It also organized two workshops on AI for health:

* Berlin, [30 May 2022](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/ai4h/20220530/Pages/default.aspx)
* Helsinki, [19 September 2022](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/ai4h/20220919)

The FG-AI4H plans four additional meetings till it closes operations in September 2023, as decided in the previous SG16 meeting. Ideas on an ITU/WHO global initiative on AI for health, on similar grounds to other cooperation platforms between the two IGOs, was progressed. Current thinking is to structure it around activities that could help all concerned stakeholders enable, facilitate and implement adoption of AI-based technologies for health.

Overall, progress was made towards the deliverables and in the Open Code Initiative (OCI), which has prototyped audits and benchmarking for a few topic groups according to draft guidelines being developed in the FG-AI4H.

Four **deliverables** have been completed:

* DEL0.1 Common unified terms in artificial intelligence for health [P-038](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-P-038.docx) (agreed at meeting P)
* DEL1 AI4H ethics considerations [O-201](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-N-201.docx) (agreed at meeting O; published)
* DEL2 Overview of regulatory considerations on artificial intelligence for health [O-049](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-N-049.docx) (agreed at meeting P)
* DEL2.2 Good practices for health applications of machine learning: Considerations for manufacturers and regulators [O-031](https://extranet.itu.int/sites/itu-t/focusgroups/ai4h/docs/FGAI4H-N-031.docx) (agreed at meeting P)

The repository for the published FG-AI4H deliverables is <https://www.itu.int/pub/T-FG-AI4H>.

The next meetings were planned in December 2022 and MIT, USA, March 2023, and then every two months (to be confirmed).

For more details, see <https://itu.int/go/fgai4h>.

## Multimedia aspects of automotive-related intelligent services

As part of its lead SG role in multimedia aspects of automotive-related intelligent services, SG16 addresses standardization for vehicular gateways and has recently launched studies in vehicular media. The lead Question in SG16 is Q27/16, which had three interim meetings since the last SG16 meeting:

* 2022-09-06 Online [Q27/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=13164&Group=16) [[SG16-TD10/WP1](https://www.itu.int/md/T22-SG16-221017-TD-WP1-0010)]
* 2022-09-22 Online [Q27/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=13165&Group=16) [[SG16-TD11/WP1](https://www.itu.int/md/T22-SG16-221017-TD-WP1-0011)]
* 2022-06-16 Online [Q27/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=13065&Group=16) [[SG16-TD7/WP1](https://www.itu.int/md/T22-SG16-221017-TD-WP1-0007)]

SG16 also takes part of the Collaboration on Intelligent Transportation Systems Communication Standards (CITS), which is a collaboration platform coordinated under TSAG. An updated report on CITS activity is found in [TSAG-TD47](https://www.itu.int/md/T22-TSAG-221212-TD-GEN-0047/en) and it is not discussed here.

Work under ITS area was also progressed in SG17 Q13/17 on security aspects for Intelligent Transport Systems is working in close coordination with Q27/16 on standards for secure software updates, which have direct application for connected cars.

The ITS work was complemented by two FGs:

* The FG-VM (see ‎6.6.1)
* The FG-AIAD (see ‎6.6.2)

Both FG-AI4AD and FG-VM concluded its operations in September 2022.

The following LSs were received concerning ITS:

|  |  |  |
| --- | --- | --- |
| [SG16-TD13/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0013) | FG-VM | LS/r on the Focus Group on Vehicular Multimedia (IEC TC100/AGM/1686) |
| [SG16-TD22/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0022) | ETSI TC ITS | LS on Multi-Channel Operations: Open contribution or Review of the MCO set of specifications consisting of the MCO architecture specification (TS 103 697), the MCO Facilities layer functionalities specification (TS 103 141), the MCO Networking & Transport layer functionalities specification (TS 103 836-4-1) and the MCO Access layer functionalities specification (TS 103 695) for C-ITS Release 2 |
| [SG16-TD41/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0041) | ITU-T SG12 | LS on new SG12 work item P.ASR: Performance requirements for automatic speech recognition (ASR) in vehicles |
| [SG16-TD74/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0074) | FG-VM | LS on Completion of FG-VM Technical Report 3 (TR03) for ITU-T SG16 consideration |
| [SG16-TD75/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0075) | FG-VM | LS/r on new SG12 work item P.ASR: Performance requirements for automatic speech recognition (ASR) in vehicles (SG12-LS15) |
| [SG16-TD79/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0079) | ITU-T SG17 | LS on ITS security work in SG17 |
| [SG16-TD14/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0014) | FG-AI4AD | LS on approved Technical Report FGAI4AD-02 "Automated driving safety data protocol - Ethical and legal considerations of continual monitoring" |
| [SG16-TD82-R1/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0082) | FG-AI4AD | LS on final list of approved Technical Reports |

### Vehicular multimedia (FG-VM)

The FG-VM progress report for its activities the interim period (January to October 2022) is found in [TD14/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0014). The report was presented by the WG3 chairman, Mr Francois Fischer (Huawei Germany), on behalf of the FG-VM Chairman, Mr Jun (Harry) Li (TIAA, China).

The FG completed its work and has provided a final deliverable to be pursued under Q27/16.

The [ITU-T Focus Group on Vehicular Multimedia](https://www.itu.int/en/ITU-T/focusgroups/vm/Pages/default.aspx) was established by ITU-T SG16 (July 2018). Since its establishment, 17 FG-VM meetings have been convened along with 16 Working Group meetings. The first FG-VM meeting took place in Ottawa, Canada in October 2018, and the full list of past meetings is available on the FG-VM Webpage at [https://www.itu.int/go/fgvm](https://itu.int/go/fgvm).

FG-VM was granted an initial lifetime of two years. In June 2020, FG-VM requested an extension of its lifetime, to advance its deliverables and engage with different stakeholders, following which SG16 granted the extension till December 2021. In January 2022, FG-VM requested an additional extension of its lifetime, to finalise its deliverables and engage with different stakeholders, following which SG16 granted the extension till October 2022.

In keeping with its mandate, FG-VM had been developing three Technical Reports under its various Working Groups:

* **WG1:** Technical Report (TR1) on *"Use cases and requirements for the vehicular multimedia networks"*. This Technical Report was finalized and published by FG-VM in 2019, revised in 2020 and then submitted to SG16 for consideration. Subsequently, this Technical Report was updated within SG16 and endorsed in August 2020, following AAP approval process, as Recommendation [ITU-T F.749.3](https://www.itu.int/rec/T-REC-F.749.3-202008-I/en).
* **WG2:** Technical Report (TR2) on *"Architecture of Vehicle Multimedia Systems"*. This Technical Report was finalized and published by FG-VM in April 2020as contained in [FGVM-O-058](https://extranet.itu.int/sites/itu-t/focusgroups/vm/output/Forms/AllItems.aspx). Subsequently, following its submission to SG16, the TR2 was updated as ITU-T Recommendation and is undergoing "Determination" (TAP approval process) as contained in [SG16-R34 (2021-10)](https://www.itu.int/md/T17-SG16-R-0034). The TAP was chosen as the TR2 includes consideration on security and privacy, which was Decided as ITU-T H.551 "Architecture of vehicular multimedia systems" by SG16 in January 2022.
* **WG3:** Technical Report on *"Implementation Aspects of Vehicular Multimedia"*. This Technical Report has been finalized by FG-VM and the latest text is as contained in [FGVM-I-283-R1](https://extranet.itu.int/sites/itu-t/focusgroups/vm/input/FGVM-I-283.zip) (1-2 September 2022).

FG-VM also organized a number of technical workshops, to build a community of stakeholders and brainstorm on topics within this domain.

The list of events is as reported below:

* [1st Meeting of the FG-VM: Mini-workshop](https://www.itu.int/en/ITU-T/focusgroups/vm/Pages/11-11_Mini-workshop.aspx) (Ottawa, Canada, 11 October 2018)
* [ITU Workshop on "The Future of Vehicular Multimedia"](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20190123/Pages/default.aspx) (Tokyo, Japan, 23 January 2019)
* [Workshop on "The Future of Vehicular Multimedia"](https://www.itu.int/en/ITU-T/focusgroups/vm/Pages/11-9_wsp.aspx) (Budapest, Hungary, 11 September 2019)
* [ITU Workshop on Vehicular Multimedia Implementation](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20201210/Pages/default.aspx) (Virtual, 10 December 2020)
* [Special Session on Implementation aspects of Vehicular Multimedia](https://www.itu.int/en/ITU-T/focusgroups/vm/Pages/12-04_Special-session.aspx) (Virtual, 12 April 2021)
* [ITU Workshop on Vehicular Multimedia Implementation Aspects](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2022/0427/Pages/default.aspx) (Virtual, 27 April 2022)
* [ITU Workshop on Voice Recognition Implementation in Vehicles](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/2022/0630/Pages/default.aspx) (Virtual, 30 June 2022)

During this first and second phases, FG-VM conducted various outreach activities, completed WG1 and WG2 Technical Reports and commenced its activities under WG3 and the related deliverables.

During the third phase FG-VM conducted various outreach activities, completed WG3 Technical Report and drafted this progress report for the consideration of ITU-T SG16.

The ongoing COVID-19 pandemic has shifted all FG-VM meetings to the virtual space. This has made it more challenging to engage with relevant stakeholders and has slowed down the work. The FG-VM would like to note that the topic of vehicular multimedia is unique in the standardization landscape as it is currently not directly addressed by other SDOs.

FG-VM is pleased to report to SG16 the completion of the last technical report (TR3) after an intense work under the auspices of WG3.

ITU-T SG16 was made aware through this progress report that FG-VM stakeholders are already actively involved in Question 27/16 and have successfully proposed to Q27/16 to establish a new work item to develop a draft Recommendation to develop implementation aspects of vehicular multimedia. The Recommendation will be developed through Members contributions to Q27/16 and will be inspired by the content of this Technical Report (TR03). There is no intention to use TR03 as baseline text as the purpose of the Technical Report was to discuss various aspects of vehicular multimedia implementation, some of which go beyond the scope of an ITU-T Recommendation.

SG16 took note of the final report in [TD14/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0014) and endorsed the decision to close FG-VM, thanking its chair, vice-chairs and participants for their contribution to advancing understanding on the topic and providing inputs to SG16 to further standardization on the topic.

SG16 also noted the FG-VM request to approve the creation of new work item H.VM-VMIA (which was initiated at previous Q27/16 interim rapporteur meeting) and invited members to contribute to the text of H.VM-VMIA, which will be informed by FG-VM technical report TR03.

The group home page was <https://itu.int/go/fgvm>.

### AI for autonomous and assisted driving (FG-AI4AD)

The FG-AI4AD progress report for its activities during the interim period (January to October 2022) is found in [TD12/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0012). The report was presented by its chairman, Mr Bryn Balcombe (UK).

The FG reports stopping of its operations after producing three deliverables:

– TR01: "Automated driving safety data protocol – Specification"(Pre-published as [FGAI4AD-O-033](https://extranet.itu.int/sites/itu-t/focusgroups/ai4ad/output/FGAI4AD-O-033.docx) = [FGAI4AD-I-178R2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4ad/input/FGAI4AD-I-178R2.zip))

– TR02: "Automated driving safety data protocol – Ethical and legal considerations of continual monitoring" (Published as [FGAI4AD-02)](https://www.itu.int/pub/T-FG-AI4AD-2021-02)

– TR03: "Automated driving safety data protocol – Practical demonstrators" (Pre-published as [FGAI4AD-O-032](https://extranet.itu.int/sites/itu-t/focusgroups/ai4ad/output/FGAI4AD-O-032.docx) = [FGAI4AD-I-177R2](https://extranet.itu.int/sites/itu-t/focusgroups/ai4ad/input/FGAI4AD-I-177R2.zip))

It also suggests a new WI based on its Deliverable TR01 to be added to the SG16 work programme.

During its life, the FG organized various workshops:

* [In service monitoring and reporting for automated driving safety](https://aiforgood.itu.int/event/in-service-monitoring-and-reporting-for-automated-driving-safety/)  
  Virtual, 16 May 2022
* [ITU Webinar on AI for road safety – launch event](https://aiforgood.itu.int/event/ai-for-road-safety/)  
  Virtual, 6 October 2021
* [ITU Webinar on AI Policy, Standards and Metrics for Automated Driving Safety](https://aiforgood.itu.int/event/ai-policy-standards-and-metrics-for-automated-driving-safety/)  
  Virtual, 2 June 2021
* [ITU Webinar on A Regulatory Framework for AD: the Value of in-use Data for Creating a no-blame Culture of Safety](https://aiforgood.itu.int/events/a-regulatory-framework-for-automated-driving-the-value-of-in-use-data-for-creating-a-no-blame-culture-of-safety/)  
  Virtual, 2 March 2021
* [ITU Workshop on Autonomous Driving safety data and metrics - what do we really need?](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20201202/Pages/default.aspx)  
  Virtual, 2 December 2020

* [ITU Webinar on AI safety & ethics for self-driving – Introducing the Molly problem](https://aiforgood.itu.int/event/ai-safety-ethics-for-self-driving-introducing-the-molly-problem/) Virtual, 20 October 2020
* [ITU Workshop on Autonomous Driving safety data and metrics - what do we really need?](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20200916/Pages/default.aspx)  
  Virtual, 16 September 2020
* [ITU Workshop on Explainable AI (XA) for Autonomous and Assisted Driving](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/20200121/Pages/default.aspx)  
  London, United Kingdom, 21 January 2020
* [ITU Workshop on The Turing Test for Autonomous Driving - A Global Performance Standard for AI on our Roads](https://www.itu.int/en/ITU-T/Workshops-and-Seminars/092019/Pages/default.aspx)  
  Budapest, Hungary, 10 September 2019

FG-AI4AD also spearheaded the launch of the "[AI for Road Safety](https://aiforgood.itu.int/about/ai-ml-pre-standardization/ai4roadsafety/)" initiative on 6 October 2021. This initiative explores how advances in AI technologies may be used to enhance **road safety for all road users**, including vehicles and vulnerable road users (motorized and non-motorized, e.g., pedestrian, cyclists, motorcyclists, electric scooters, etc.). The initiative is a joint effort of the [ITU](https://www.itu.int/en/Pages/default.aspx), the [UN Secretary-General's Special Envoy for Road Safety](https://unece.org/united-nations-special-envoy-road-safety) and the [UN Envoy on Technology](https://www.un.org/techenvoy/), and plans to involve more UN agencies as partners as well as other stakeholders from private and public sector.

SG16 took note of the final report in [TD12/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0012) and endorsed the decision to close FG-AI4AD, thanking its chair, vice-chairs and participants for their contribution to advancing understanding on the topic and providing inputs to SG16 to further standardization on the topic.

SG16 encouraged its members to supporting the efforts of FG-AI4AD stakeholders who are expected to submit contributions to SG16 to start work items aiming to develop ITU-T Technical Recommendations in this topic and with the technical support that the three technical reports developed may provide. In this sense, the WP1/16 co-chairman Mr Marcelo Moreno requested the FG-AI4H chairman to provide the meeting with a draft A.1 justification text for discussion at the Q27/17 sessions during this SG16 meeting, to take advantage of the momentum on towards a new specification for an automated driving safety data protocol based on the FG-AI4AD Deliverable 3.

The webpage of the group was <https://www.itu.int/en/ITU-T/focusgroups/ai4ad> and the documentation is found at <https://extranet.itu.int/sites/itu-t/focusgroups/ai4ad>.

## Multimedia aspects of distributed ledger technology (DLT) and its applications

The reference Question on DLT is Q22/16. The Question held no interim meetings.

In addition to [ten new work items](https://www.itu.int/ITU-T/workprog/wp_search.aspx?q=22/16), work progressed on various other drafts. The approval process started for TAP Recommendation ITU-T F.751.8 "Technical framework for DLT to cope with regulation" [[TD52-R1/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0052)]. Additionally, work completed on three new AAP Recommendations:

* ITU-T F.751.5 "Requirements for distributed ledger technology-based power grid data management" (New) [[TD49/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0049)]
* ITU-T F.751.6 "Performance assessment methods for distributed ledger technology platforms" (New) [[TD51/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0051)]
* ITU-T F.751.7 "Functional assessment methods for distributed ledger technology platforms" (New) [[TD50/Plen](http://www.itu.int/md/T22-SG16-221017-TD-PLEN-0050)]

The Question received various LSs:

|  |  |  |
| --- | --- | --- |
| [SG16-TD9/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0009) | SCV | LS on blockchain-related terms and definitions proposed by ITU-T SG20 |
| [SG16-TD20/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0020) | ITU-T SG17 | LS on Q14/17 progress on security aspects for Distributed Ledger Technologies (DLT) |
| [SG16-TD27/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0027) | ITU-T SG2 | LS/r on the progress of DLT standardization in Q22/16 (SG16-LS292) |
| [SG16-TD29/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0029) | JPEG | LS/r on DLT (SG16-LS292) |
| [SG16-TD15/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0015) | ITU-T SG2 | LS on SCV activity in SG2 |
| [SG16-TD62/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0062) | ITU-T SG5 | LS/r on terms and definitions from approved new work items (SG16-LS278) |
| [SG16-TD63/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0063) | ITU-T SG20 | LS/r on terms and definitions from approved new work items (SG16-LS278) |
| [SG16-TD46/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0046) | SCV | LS/r on terms and definitions from approved new work items (SG16-LS278) |

## Digital culture

The reference Question on digital culture is Q23/16. The Question held no interim meetings.

New work started on virtual reconstruction system for restoration of cultural relics and artworks based on artificial intelligence.

The Question received various LSs:

|  |  |  |
| --- | --- | --- |
| [SG16-TD62/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0062) | ITU-T SG5 | LS/r on terms and definitions from approved new work items (SG16-LS278) |
| [SG16-TD63/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0063) | ITU-T SG20 | LS/r on terms and definitions from approved new work items (SG16-LS278) |
| [SG16-TD46/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0046) | SCV | LS/r on terms and definitions from approved new work items (SG16-LS278) |
| [SG16-TD91/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0091) | ITU-T SG9 | LS on ITU-T J.pcnp-char: "E2E Network Characteristics Requirement for Video Services", J.cloud-game-req: "Requirements of E2E Network Platform for Cloud Gaming Service", and J.cloud-vr-arch: "Architecture of E2E Network Platform for Cloud-VR Service" |

## Intersector Rapporteur Groups

### IRG-AVA

Q26/16 is part of the [IRG-AVA](https://www.itu.int/en/irg/ava/Pages/default.aspx), the *Intersector Rapporteur Group on Audiovisual Media Accessibility*. The SG16 co-chair in the group is Mr Masahito Kawamori (Keio University, Japan). The two recent meetings of the group were:

* 24th meeting: Geneva, 25 October 2022 (1430-1730 CEST)  
  [Announcement](https://www.itu.int/ml/lists/arc/irgava/2022-10/msg00000.html) - [Agenda](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2210-001.docx) - [Report](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2210-002.docx) - [Transcript](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2210-000-Captioning.docx) - [LS in](https://www.itu.int/net/itu-t/ls/ols.aspx?from=-1&to=2531&after=2022-02-01&before=2022-09-07) - [LS Out](https://www.itu.int/net/itu-t/ls/ols.aspx?from=2531&after=2022-02-01) - [Documentation](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/Forms/2209VIR.aspx)
* 23rd meeting: virtual, 7 September 2022 (1315-1600 hours CEST)  
  [Announcement](https://www.itu.int/ml/lists/arc/irgava/2022-08/msg00000.html) - [Agenda](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2209-001.docx) - [Report](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2209-002.docx) - [Transcript](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2209-000-Captioning.docx) - [LS in](https://www.itu.int/net/itu-t/ls/ols.aspx?from=-1&to=2531&after=2022-02-01&before=2022-09-07) - [LS Out](https://www.itu.int/net/itu-t/ls/ols.aspx?from=2531&after=2022-02-01) - [Documentation](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/Forms/2209VIR.aspx)
* 22nd meeting: virtual, 1 February 2022 (1315-1600 hours CET)  
  [Announcement](https://www.itu.int/ml/lists/arc/irgava/2022-01/msg00014.html) - [Agenda](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2202-001.docx) - [Report](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2202-002.docx) - [Transcript](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2202-000-Captioning.docx) - [LS in](https://www.itu.int/net/itu-t/ls/ols.aspx?from=-1&to=2531&after=2021-11-15&before=2022-02-01) - [LS Out](https://www.itu.int/net/itu-t/ls/ols.aspx?from=2531&after=2021-11-16) - [Documentation](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/Forms/2202VIR.aspx)

The next meeting is planned on.

No LSs were received from the IRG-AVA in the interim period.

The next meeting is not yet planned.

### IRG-IBB

Q13/16 experts participated in the *Intersector Rapporteur Group on* *Integrated Broadcast-Broadband (IBB)* until it closed operations at the end of the previous study period.

The group's homepage was <http://itu.int/en/irg/ibb> and the co-chairs were [Ana Eliza Faria e Silva](mailto:ana.eliza@tvglobo.com.br) (Brazil; ITU-R SG6), [Satoshi Miyaji](mailto:sa-miyaji@kddi.com) (Japan; ITU-T SG9), and [Marcelo Moreno](mailto:%20moreno@ice.ufjf.br) (Brazil; ITU-T SG16).

## Various collaboration matters

Coordinated activity continued with inter alia MPEG and JPEG.

### ITU-T SG9

The Liaison Officer from SG9 into SG16 is Mr Satoshi Miyaji (KDDI, Japan).

Close coordination continues with SG9 on accessibility matters, as Question 11/9 on accessibility. ITU-T SGs 9 and 16 take both in IRG-AVA (§6.8.1), now that IRG-IBB is closed (see §6.8.2).

The current list of LSs received from ITU-T SG9 are as given below:

| TD | Source | Title |
| --- | --- | --- |
| [SG16-TD86/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0086) | ITU-T SG9 | LS on start of draft new Recommendation ITU-T J.cable-rf-to-ip "Requirements of cable television system for migration from RF to IP" |
| [SG16-TD87/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0087) | ITU-T SG9 | LS on initiation of new work item on the draft ITU-T Technical Report TR.WiFiTV "Secondary distribution of digital television and audiovisual content to portable devices using Wi-Fi" |
| [SG16-TD88/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0088) | ITU-T SG9 | LS/r on smart TV Operating System (SG16-LS282) [from ITU-T SG9 to TSAG] |
| [SG16-TD90/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0090) | ITU-T SG9 | LS on the final baseline text for ITU-T J.cable-mabr "Requirements of multicast adaptive bitrate (M-ABR) IP delivery" [from ITU-T SG9 to DVB] |
| [SG16-TD89/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0089) | ITU-T SG9 | LS on the initiation of new work item ITU-T J.mma-req and J.mma-spec |
| [SG16-TD92/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0092) | ITU-T SG9 | LS on initiation of new work item draft new ITU-T Technical Report JSTR.LCAP "Technical advances, challenges, and best practices in live captioning" |
| [SG16-TD91/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0091) | ITU-T SG9 | LS on ITU-T J.pcnp-char: "E2E Network Characteristics Requirement for Video Services", J.cloud-game-req: "Requirements of E2E Network Platform for Cloud Gaming Service", and J.cloud-vr-arch: "Architecture of E2E Network Platform for Cloud-VR Service" |

### ITU-T SG12

The Liaison Officer is vacant, following Mr Paul Coverdale's retirement. Areas of common interest continue to include:

* AI in multimedia
* Quality assessment methods
* ITS and telepresence
* AR/VR/XR/Metaverse
* Safe listening (H.870)

The following LSs were received from SG12 for this meeting (one reply LS):

| TD | Source | Title |
| --- | --- | --- |
| [SG16-TD41/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0041) | ITU-T SG12 | LS on new SG12 work item P.ASR: Performance requirements for automatic speech recognition (ASR) in vehicles |
| [SG16-TD35/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0035) | ITU-T SG12 | LS on performance requirements for smart speaker based intelligent multimedia communication system |
| [SG16-TD38/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0038) | ITU-T SG12 | LS on draft revised Recommendation ITU-T G.191: Software tools for speech and audio coding standardization |
| [SG16-TD37/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0037) | ITU-T SG12 | LS on draft new Recommendation ITU-T G.1036 (ex G.QoE-AR): Quality of experience (QoE) influencing factors for augmented reality (AR) services |
| [SG16-TD36/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0036) | ITU-T SG12 | LS on draft new Recommendation ITU-T P.1320 (ex P.QXM): QoE assessment of extended reality (XR) meetings |
| [SG16-TD40/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0040) | ITU-T SG12 | LS on terms and definitions from SG12 [from ITU-T SG12 to SCV] |
| [SG16-TD39/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0039) | ITU-T SG12 | LS on SG12 liaison representatives to ITU-T Study Groups, SCV and JCAs |

### ITU-R

In addition to the IRG-AVA work, SG16 received or was copied in one information document from ITU-R:

| TD | Source | Title |
| --- | --- | --- |
| [SG16-TD6/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0006) | ITU-R SG6 | LS on information on the progress of ITU-R SG6 Rapporteur Group on a vision for the future of broadcasting (RG-FOB) |
| [SG16-TD7/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0007) | ITU-R WP6B | LS/r on H.721V3 "IPTV terminal devices: basic model" (SG16-LS286) |
| [SG16-TD84/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0084) | ITU-R WP6B | LS on Integrated broadcast-broadband systems |
| [SG16-TD8/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0008) | ITU-R WP6B | LS/r on interactive immersive services (SG16-LS309) |
| [SG16-TD85/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0085) | ITU-R WP6B | LS/r on interactive immersive services (SG16-LS3) |
| [SG16-TD3/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0003) | ITU-R WP6C | LS on energy aware broadcasting systems |
| [SG16-TD4/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0004) | ITU-R WP6C | LS/r on interactive immersive services (Doc6C/130) [from ITU-R WP 6C to ITU-R WP6B] |
| [SG16-TD5/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0005) | ITU-R WP6C | LS/r on new work item for media transport protocols, signalling information of haptic transmission for Immersive Live Experience (ILE) systems, ITU-T H.ILE-Haptic (SG16-LS309) |

### ITU-D

SG16 did not receive or was copied in any LS from ITU-D:

### ISO/IEC JTC 1

None at this meeting.

### Video and image coding

Collaboration on image compression continued with JPEG (JTC1/SC29/WG1) with the start of approval process for three common texts:

* ITU-T T.807 | ISO/IEC 15444-8 Ed.2 "Information technology – JPEG 2000 image coding system: Secure JPEG 2000" (Rev.) [[TD80/Plen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0080)]
* ITU-T T.808 | ISO/IEC 15444-9 Ed.2 "Information technology – JPEG 2000 image coding system: Interactivity tools, APIs and protocols" (Rev.) [[TD73/Plen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0073)]
* ITU-T T.816 | ISO/IEC 15444-17 Ed.1 "Information technology – JPEG 2000 image coding system: Extensions for coding of discontinuous media" (New) [[TD81/Plen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0081)]

For video compression work, collaboration continued within the context of the [JVET](https://www.itu.int/en/ITU-T/studygroups/2022-2024/16/video/Pages/jvet.aspx), as well as with the start of a new joint work for the development of a new Supplement H.Sup.MACVC on optimization of encoders and receiving systems for machine analysis of coded video content.

#### ISO/IEC JTC1 SC 29

The Liaison Officer is Mr Gary Sullivan (Microsoft, USA), who is also the chair of SC29.

Many of the JTC1 SC29 areas of work are closely related to those of SG16, and the two organizations also have joint work as further described below. The SC29 structure is illustrated in Figure 1.

Chart

Description automatically generated

Figure 1: Structure of ISO/IEC JTC1/SC29, effective July 2020

SC29 held two plenary meetings by teleconference since the previous meeting of SG16. These meetings were held on 8–10 February 2022 and on 30 August – 1 September 2022. The next meeting of SC29 is scheduled during 7–9 February 2023.

Meetings of most of the working groups and advisory groups of SC29 are being held in person with remote participation in Mainz, Germany, or by teleconference, during the current meeting of SG16. For information regarding potential joint meeting sessions with SC29 groups during the current meeting, see the time plan in the latest revision of [SG16-TD4/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0004/en). One area of recent new work in SC 29 is in the subject of haptics, as noted in two incoming liaison statements [SG16-TD2/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0002) and [SG16-TD61/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0061). The charter of SC 29/WG 7 has been expanded to include haptics coding.

Ongoing collaborations with SC 29 are conducted with SC 29/WG 1 (JPEG) and SC 29/WG 5 (as JVET), as further discussed in subsections of this section.

The following is a compilation of the LS received from SC29 (including its WGs).

| TD | Source | Title | Questions |
| --- | --- | --- | --- |
| [SG16-TD31/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0031) | ISO/IEC JTC1/SC29/WG1 | LS/r on event-based vision systems (SG16-LS291) [from JPEG] | Q21/16 |
| [SG16-TD29/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0029) | ISO/IEC JTC1/SC29/WG1 | LS/r on DLT (SG16-LS292) [from JPEG] | Q22/16 |
| [SG16-TD30/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0030) | ISO/IEC JTC1/SC29/WG1 | LS/r on joint standardisation of JPEG AI (SG16-LS308) [from JPEG] | Q6/16 |
| [SG16-TD80/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0080) | ISO/IEC JTC1/SC29/WG1 | LS on JPEG AI [from JPEG] | Q6/16 |
| [SG16-TD81/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0081) | ISO/IEC JTC1/SC29/WG2 | LS on video coding for machines [from ISO/IEC JTC1/SC29/WG2] | Q6/16, Q5/16 |
| [SG16-TD2/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0002) | ISO/IEC JTC1/SC29/WG2 | LS on Haptics [from JTC1/SC29/WG2] | Q8/16 |
| [SG16-TD61/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0061) | ISO/IEC JTC1/SC29/WG7 | LS/r on a work item for media transport protocols, signalling information of haptic transmission for Immersive Live Experience (ILE) systems: ITU-T H.ILE-Haptic (SG16-LS4) [from ISO/IEC JTC1/SC29/WG7] | Q8/16 |

#### ISO/IEC JTC1 SC 29/WG 1 (JPEG)

The Liaison Officer is Mr Gary Sullivan (Microsoft, USA).

Historically, the JPEG group is a joint collaborative team between ITU-T (now in SG16 Q6/16, historically previously in ITU-T SG8) and ISO/IEC JTC1 SC29/WG 1. A number of texts in the area of image coding, including the T.8x (JPEG), T.80x (JPEG 2000) and T.83x (JPEG XR) series, are common or twin ISO/IEC and ITU-T texts.

A teleconference meeting of JPEG was held during the last meeting of SG16, two further JPEG teleconference meetings have been held since then (during 25–29 April and 25–29 July 2022), and another JPEG meeting is being held by teleconference during 24–28 October 2022 during the current meeting of SG16.

Revisions of several common and twin text Recommendations are under development in JPEG, and there was an agreement reached at the previous SG16 meeting to begin work on a new Recommendation T.JPEG-AI “JPEG AI learning-based image coding system” for a learning-based image coding standard offering a single-stream, compact compressed-domain representation, targeting both human visualization, with significant compression efficiency improvement over image coding standards in common use at equivalent subjective quality, and effective performance for image processing and computer vision tasks, with the goal of supporting a royalty-free baseline. JPEG AI targets a wide range of applications such as cloud storage, visual surveillance, autonomous vehicles and devices, image collection storage and management, and live monitoring of visual data and media distribution. The objective is to design a coding solution that offers significant compression efficiency improvement over coding standards in common use at equivalent subjective quality with an effective compressed-domain processing capability for machine learning based image processing and computer vision tasks. Other key requirements include hardware/software implementation-friendly encoding and decoding, support for 8- and 10-bit depth, efficient coding of images with text and graphics and progressive decoding. Responses to the JPEG-AI Call for Proposals issued in January 2022 were evaluated at the JPEG meeting of July 2022, with several proposals showing very promising results.

At the current meeting, Consent was reached for the following collaboration work items with JPEG:

* T.807 | ISO/IEC 15444-8 Ed.2 "Information technology - JPEG 2000 image coding system - Part 8: Secure JPEG 2000"
* T.808 | ISO/IEC 15444-9 Ed.2 "Information technology - JPEG 2000 image coding system - Interactivity tools, APIs and protocols"
* T.816 | ISO/IEC 15444-17 Ed.1 "Information technology - JPEG 2000 image coding system - Extensions for coding of discontinuous media"

#### ISO/IEC JTC1 SC29/ WG5 (JVET)

The Liaison Officer is Mr Gary Sullivan (Microsoft, USA).

The video coding work conducted collaboratively with SC29/WG 5 (formerly SC29/WG 11) as the Joint Video Experts Team (JVET) has been very active, attracting 350–400 participants and 120–150 technical contributions (not counting reports and crosschecks) for the recent and current meetings.

A meeting of JVET is being held along with the current ITU-T SG16 meeting under the auspices of ISO/IEC SC 29 rather than the auspices of SG16 on an exceptional basis due to difficulties with facilities arrangements. This JVET meeting is being held in Mainz, Germany (with remote participation provided to experts unable to travel), and collocated with meetings of some of the other ISO/IEC SC 29 MPEG working groups. The activities in JVET are managed on the ITU-T side by Q6/16. JVET is tasked with the development, maintenance and extension of the jointly developed video coding standards in the domain of SG16 and SC29, and with exploration work on potential additional such future standards development projects relating to video coding. It also maintains the specification of Versatile Supplemental Enhancement Information (VSEI, Rec. ITU-T H.274, twin text with ISO/IEC 23002-7) and Coding-Independent Code Points for Video Signal Type Identification (CICP, Rec. ITU-T H.273, twin text with ISO/IEC 23091-2) and develops reports on non-normative topics relating to video coding (including H.Sup15, H.Sup18, H.Sup19, and HSTP-VID-WPOM, which are twin texts with ISO/IEC technical reports) and reference software and conformance testing specifications relating to the jointly developed video coding specifications.

At the previous meeting of SG16 there was also an agreement to start joint work on a new supplement H.Sup-FGST “Film grain synthesis technology for video coding applications”.

A meeting of JVET was also held by teleconference together with the previous meeting of SG16, and two additional teleconference meetings of JVET were held during 20–29 April 2022 and during 13–22 July 2022 since the previous meeting of SG16.

Items for potential Consent at the current meeting of SG16 include

* H.265 (V9) “High efficiency video coding”
* H.266.1 (V2) “Conformance specification for ITU-T H.266 versatile video coding”
* H.273 (V3) “Coding-independent code points for video signal type identification”

The JVET is also exploring video coding technologies with compression capabilities beyond VVC based on machine learning as well as traditional signal processing methodologies. The exploration activities have drawn strong interest and participation. A software codebase was established in July 2022 for the neural network-based video coding (NNVC) exploration work. It contains two exemplar neural network-based loop filter models with integerized model parameters. These two models achieve similar compression performance of approximately 11–12% objective gain compared to VVC (expressed in terms of bit rate reduction for equal PSNR-based objective video quality). The enhanced compression model (ECM) exploration using traditional signal processing methodologies has also produced promising gains. Currently at version 6.0, the ECM achieves approximately 18.5% objective gain compared to VVC. Subjective tests are planned to be conducted at the current JVET meeting in order to measure the coding gain of ECM-6.0 in terms of subjective quality.

Other work in SC29 relating to video coding that is not conducted jointly with SG16 is noted to also be under way or recently completed in SC29/WG 2, SC29/WG 4 and SC29/WG 7. A noteworthy example is the exploration work on "Video Coding for Machines" (VCM), which explores ways to achieve high compression efficiency for machine vision tasks such as object detection, instance segmentation, object tracking, and so on. A VCM Call for Proposals (CfP) was issued in April 2022 by SC29/WG 2, and responses to the VCM Call for Proposals will be evaluated at this SC29/WG 2 meeting, which will be held online.

A contribution SG16-C0139 has been submitted to this SG16 meeting suggesting study of the proposed VVC-based technologies that are described in responses to the VCM CfP and to evaluate and determine whether SG16 is interested in collaborating with MPEG to jointly develop a VCM standard. A liaison statement [SG16-TD81/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-GEN-0081) has also been received regarding the status of the new VCM exploration and the related Call for Evidence and Call for Proposals recently issued by SC29/WG2.

### Other groups

A report was received for the following groups.

|  |  |
| --- | --- |
| Group: | [ISO/IEC JTC1 / SC6 / WG7](http://www.iso.org/iso/iso_technical_committee.html%3Fcommid%3D45072) – Telecommunications and information exchange between systems / Network, transport and future network |
| Liaison officer(s): | Shin-Gak KANG (ETRI, Korea) |
| Report: | JTC 1/SC 6/WG 7 is carrying out standardization work on information communication including application layer related communication protocols. Recent standardization work items are as below:   * ISO/IEC 21558-series: Future Network Architecture * ISO/IEC 21559-series: Future Network Protocols and mechanisms * ISO/IEC 4396-series: Recursive Inter-Network Architecture (RINA) * ISO/IEC 5021-series: Wireless LAN Access Control   A new PWI work has been progressing to study networking related standardization issues for blockchain applications and communication protocols in low earth orbit inter-satellite networks.  JTC 1/SC 6/WG 7's standards and related deliverables could be used by the multimedia systems and services, which are developed by the ITU-T SG16. |

|  |  |
| --- | --- |
| Group: | [CITS](https://www.itu.int/en/ITU-T/extcoop/cits/Pages/default.aspx) – Collaboration on ITS Communication Standards |
| Liaison officer(s): | Hideki Yamamoto (OKI) |
| Report: | Two CITS e-meetings (18 March 2022 and 23 September 2022) were held after 8th ITU-T SG16 meeting. The current status on ITS study in ITU-T SG16 were reported [1]. The next meeting is planned to be held in 17 March 2023.  **References**  [1] ITU-T SG16 reports for two CITS e-meetings (18 March 2022 and 23 September 2022) [[SG16-TD25/PLEN](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0025/en)]. |

|  |  |
| --- | --- |
| Group: | [APT](http://www.apt.int/) – Asia-Pacific Telecommunity |
| Liaison officer(s): | Hideki Yamamoto (OKI) |
| Report: | 34th Asia Pacific Telecommunity Standardization Program Forum (ASTAP-34) was held in Virtual/Online Meeting, 18-22 April 2022. The current status on ITU-T SG16 was reported [1]. In Expert Group on multimedia applications (EG MA), new work plan was established to report problems and requirements on CDN services in Asia-Pacific region. EG MA will discuss the detail of questionnaire in the next ASTAP. One informational liaison statement about this new work plan to ITU-T SG16 [2] was approved.  **References**  [1] ASTAP-34 Information document, “Report of the recent ITU-T SG16 meeting”, ASTAP-34/INF-04 (Rev.1) (12 April 2022) [[SG16-TD26/PLEN](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0026/en)]  [2] ASTAP-34 Output document, “Approval of new work plan about APT report ‘Survey on problems and requirements on CDN services in COVID-19 in Asia-Pacific region’” in “DRAFT LIAISON STATEMENT BY EG MA TO ITU-T SG16”, ASTAP-34/OUT-18 (22 April 2022) [[SG16-TD23/GEN](https://www.itu.int/md/T22-SG16-221017-TD-GEN-0023/en)] |

|  |  |
| --- | --- |
| Group: | [INATBA](https://inatba.org/) – International Association for Trusted Blockchain Applications |
| Liaison officer(s): | Ismael Arribas (Spain) |
| Report: | INATBA’s Identity Working Group is developing policy positions on the topic of identification and authentication for identity management. INATBA’s Governmental Advisory Body (in collaboration with the Identity Working Group) is working on formulating suggestions on how to progress cross-border digital credentials interoperability. Relevant reports can be found here <https://inatba.org/reports/inatba-report-digital-credentials-and-self-sovereign-identity-workstream/> and here <https://inatba.org/wp-content/uploads/2020/11/2020-11-INATBA-Decentralised-Identity-001.pdf>.  In cooperation with the EUBOF (European Blockchain Observatory and Forum), INATBA organizes a series of workshops and events which are valuable for the SG16 as well, for example <https://inatba.org/news/blockchain-metaverse-why-all-the-hype-event-follow-up/> and <https://inatba.org/news/industry-views-on-solutions-for-eid-in-europe-event-follow-up/> |

|  |  |
| --- | --- |
| Group: | SCV |
| Liaison officer(s): | Evgeny Tonkikh, Russian Federation ([et@niir.ru](mailto:et@niir.ru)) |
| Report: | The various LSs from SG16 were considered and feedback provided via LS addressed to the concerned Questions, for their follow up. A detailed report is found in [SG16-TD22/Plen](https://www.itu.int/md/T22-SG16-221017-TD-PLEN-0022) |

|  |  |
| --- | --- |
| Group: | [ITU-T SG17](http://www.itu.int/go/tsg17) Security (ITS security) |
| Liaison officer(s): | (From SG17 to SG16) Sang-Woo Lee, ETRI, Korea (Rep. of), Rapporteur Q13/17; (From SG16 to SG17) Hideki Yamamoto (OKI. Japan) |
| Report: | Significant development has taken place over the past few years in the area of vehicular communications for the ITS (Intelligent Transport Systems). Connected vehicles are considered as the key enabling technology in ITS. However, connected vehicles without security functions can make ITS applications vulnerable to various security threats. Therefore, security functions should be guaranteed to utilize vehicular communications since the vulnerability of the vehicle is directly related to the life of drivers and pedestrians. ITU-T SG17 started standardization on ITS security in 2014 and established a new Question 13 in 2017.  Recently, during SG 17 meeting in August 2022, the following updates were made for Recommendations and new work items related to ITS security for your consideration  Consented Recommendation is as follows:  ggITU-T X.1377 (X.ipscv, Guidelines for an intrusion prevention system for connected vehicles)  ITU-T X.1380 (X.edr-sec, Security guidelines for cloud-based data recorders in automotive environments)  ITU-T X.1381 (X.eivn-sec, Security guidelines for Ethernet-based in-vehicle networks)  ITU-T X.1382 (X.fstiscv, Guidelines for sharing security threat information on connected vehicles)  ITU-T X.1383 (X.srcd, Security requirements for categorized data in vehicle-to-everything (V2X) communication) |

|  |  |
| --- | --- |
| Group: | CENELEC TC108X |
| Liaison officer(s): | Thomas Lund, GENELEC (Finland) [thomas@lund.one](mailto:thomas@lund.one) |
| Report: | There are no relevant new activities to report as EN are still going through a review update process.  TC108X/WG3 has started to convene again regarding its new work item, “sound exposure in wireless listening devices”, so updates are expected in time for the next SG16 meeting |

No particular reports were provided for the following groups:

* IEC TC100
* IEC SyC AAL
* CEN/TC434
* CEN/CENELEC JTC19
* JIC
* DAISY
* W3C

## Bridging the standardization gap (BSG)

The mentor in ITU-T SG16 is Mr Hideki Yamamoto (OKI Electric, Japan).

No particular BSG-related activities were held under SG16 since the last TSAG meeting.

One leadership training session was provided by TSB to interested delegates on Wed 19 Oct 2022. The reference material is available as [attachment 1](https://www.itu.int/md/dologin_md.asp?id=T22-SG16-221017-TD-PLEN-0019!A1!PPT-E&type=mitems) to [SG16-TD19‑R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T22-SG16-221017-TD-PLEN-0019),. The presentation was complemented by the SG16 chairman, who provided the overview of SG16 found in [attachment 2](https://www.itu.int/md/dologin_md.asp?id=T22-SG16-221017-TD-PLEN-0019!A2!PPT-E&type=mitems) of the TD. A recording of the session is available.[[1]](#footnote-1)

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

1. [https://zoom.us/rec/play/dypti2roIzYgNZAQAgU8Z-GiRl\_oX5t2sz6mIahYPQ2A6dIZ6nBslbTs5YN0T8Jh9‌oLVDu9x61h7qrzF.T6nB-eo7s9pSyN-O?autoplay=true&startTime=1666175503000](https://zoom.us/rec/play/dypti2roIzYgNZAQAgU8Z-GiRl_oX5t2sz6mIahYPQ2A6dIZ6nBslbTs5YN0T8Jh9oLVDu9x61h7qrzF.T6nB-eo7s9pSyN-O?autoplay=true&startTime=1666175503000) [↑](#footnote-ref-1)