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| **Contact:** | | Noah Luo Huawei Technologies China | | | Tel: +44 (11) 8920 8954 Fax: +44 (11) 8920 8900 E-mail: [noah@huawei.com](mailto:noah@huawei.com) |

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| **Keywords:** | ITU-T SG16; Multimedia; Lead study group report; |
| **Abstract:** | This TD contains the Report on Lead SG activities for ITU-T SG16 since last TSAG meeting. |

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# 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-16 Res.2):

* multimedia coding, systems and applications
* ubiquitous multimedia applications
* telecommunication/ICT accessibility for persons with disabilities
* human factors
* multimedia aspects of intelligent transport system (ITS) communications
* Internet Protocol television (IPTV) and digital signage
* multimedia aspects of e-services

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:

* ISO/IEC JTC1 SC29 WGs 1 and 11 on still image and video coding, and on digital transport
* ISO/IEC JTC1 SC35 on accessibility and human factors
* ISO TC22 SC31 WG8 on vehicular domain service (VDS)
* WHO, ISO, IEC and CENELEC on e-health standardization
* IEC TC100 on IPTV and accessibility standardization
* Various disability organizations within the scope of Study Group 16's accessibility work.

# Recent results

At its recent virtual meeting, 22 June – 3 July 2020, SG16 accomplished the following results, in line with its mandate and lead SG roles (all TD references are SG16 TDs, except where otherwise noted):

* **WTSA-20 preparations:** After the significant discussions on the title, points of guidance and lead roles at the previous SG16 meeting, focus was put on completing the text of 14 Questions being proposed to WTSA-20 for the study period 2021-2024. A plenary ad hoc group that discussed a more substantive proposal to create a new Question on vehicular multimedia concluded that it would be better to amend the mandate of current Q27/16 [[TD416/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0416)]. At the closing plenary, SG16 endorsed the mandate as discussed at the previous SG16 meeting and the final 14 Question updates coming from Q1/16 and the three WPs [[TD411-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0411), [TD412/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0412), [TD413/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0413), [TD414-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0414), [TD415/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0415)]. These will be packaged and sent to WTSA-20 for further deliberations for the study period 2021-2024.
* **New Question** [**23/16**](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q23.aspx) on "*Digital culture-related systems and services*" proposed at the previous SG16 meeting held its inaugural sessions after completing the approval process at the opening SG16 plenary.
* Two of the ITU-T SG16 focus group had their terms renewed at this meeting. The ITU-T Focus Group on AI for health (**FG-AI4H**), which works in partnership with WHO, was extended for two more years, after review of its progress [[TD386/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0386)], and current status of deliverables [[TD393/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0393)]. The Focus Group on Vehicular Multimedia (**FG-VM**) was extended for approximately one more year after review of its progress [[TD387/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0387)]; the first deliverable from the FG-VM was already Consented at this meeting, in close coordination between FG-VM and Q27/16, see below. The new **ITU-T Focus Group on AI for autonomous and assisted driving (FG-AI4AD**) provided its first progress report, having held two interim meetings and a number of interim WG meetings [[TD385/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0385)]. More details are found in the [FG-AI4AD home page](https://itu.int/go/fgai4ad).
* **Video and image coding:** There were three major outcomes at this meeting
* A remarkable achievement at this meeting was the completion of the next generation video coding technology, called "Versatile Video Coding" (VVC), consented as ITU-T H.266, developed by the Joint Video Experts Team (JVET) jointly with ISO/IEC JTC1/SC29/WG11 [[TD445/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0445)]. VVC is expected to achieve about a 50% bit rate reduction vs. H.265/HEVC for equal subjective video quality. Test results demonstrate that VVC provides about a 40% bit rate reduction for 4K/UHD test sequences using objective metrics. Application areas especially targeted for the use of VVC include ultra-high definition 4K and 8K video, video with a high dynamic range and wide colour gamut, and video for immersive media applications such as 360° omnidirectional video, as well as conventional standard-definition and high-definition video content.
* Another Recommendation that was completed at this meeting is H.274 (ex H.SEI), "Versatile supplemental enhancement information for coded video bitstreams". It specifies the syntax and semantics of video usability information parameters and supplemental enhancement information messages for use with coded video bitstreams, VVC in particular [[TD446-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0446)].
* Work was also completed for Technical Paper HSTP-VID-WPOM, describing working practices using objective metrics for evaluation of video coding efficiency experiments [[TD444/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0444)].

No image coding Recommendations were ready for starting the approval process at this meeting.

* **Safe listening:** the collaboration with WHO continued with a future planned revision of ITU-T H.870 (ex F.SLD) "Guidelines for safe listening devices/systems", a joint ITU/WHO technical standard on the desired behaviour of safe listening music players [[TD279/WP2](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-WP2-0279)]. Work is also being progressed towards a conformance testing spec for H.870 [[TD288-R1/WP2](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-WP2-0288)].
* **Personal connected health devices:** An update was completed for eight conformance testing specifications for the Continua Design Guidelines, that reflect maintenance activity of the specifications since the SG16 meeting in October 2019:
* ITU-T H.841 "*Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 1: Optimized Exchange Protocol: Personal Health Device*" (Rev.) [[TD423/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0423)]
* ITU-T H.850.1 "*Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10A: Transcoding for Bluetooth Low Energy: Personal Health Gateway - Thermometer*" (Rev.) [[TD424/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0424)]
* ITU-T H.850.2 "*Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10B: Transcoding for Bluetooth Low Energy: Personal Health Gateway - Blood pressure*" (Rev.) [[TD425/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0425)]
* ITU-T H.850.3 "*Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10C: Transcoding for Bluetooth Low Energy: Personal Health Gateway - Heart-rate*" (Rev.) [[TD426/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0426)]
* ITU-T H.850.4 "*Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10D: Transcoding for Bluetooth Low Energy: Personal Health Gateway - Glucose meter*" (Rev.) [[TD427/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0427)]
* ITU-T H.850.5 "*Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10E: Transcoding for Bluetooth Low Energy: Personal Health Gateway - Weighing scales*" (Rev.) [[TD428/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0428)]
* ITU-T H.850.6 "*Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10F: Transcoding for Bluetooth Low Energy: Personal Health Gateway - Pulse oximeter*" (Rev.) [[TD429/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0429)]
* ITU-T H.850.7 "*Conformance of ITU-T H.810 personal health system: Personal Health Devices interface Part 10G: Transcoding for Bluetooth Low Energy: Personal Health Gateway - Continuous glucose monitoring*" (Rev.) [[TD430/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0430)]
* **Sleep monitoring:** Two new specifications were completed, complementing ITU-T H.862.0 on requirements and framework for ICT sleep management service models, ITU-T H.862.1 on a data model for the sleep management services, and ITU-T H.862.2 on annotation methods for bio-signal data [[TD432/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0432), [TD433/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0433)]
* **Speech interface:** ITU-T H.862.3 (ex F.VMI-HS) "*Requirements of voice management interface for human-care services*" was Consented at this meeting. This Recommendation defines requirements of voice management interface for human-care services, which include health, welfare, and protection of people, and could assist in the design of innovative services and applications, such as nursing robots to care patients and to identify current and future health issues through conversation with patients (e.g. early diagnosis of dementia) [[TD434/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0434)]. Work was also completed on F.746.10 (ex H.LLS-DIA) "*Architecture for spontaneous dialog processing system for language learning*" [[TD420/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0420)] and F.746.11 (ex F.IQAS-INT) "*Interfaces for Intelligent Question Answering Service*" [[TD419/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0419)].
* **Intelligent transport systems (ITS):** Work within the ITU-T SG16 and ISO TC22/SC31/WG8 **Joint Project Team on vehicle domain service (JVDS)** continued; [four joint work items](https://www.itu.int/itu-t/workprog/wp_search.aspx?isn_sp=3925&isn_status=-1,1,3,7&title=Road%20vehicles&details=0&field=acdefghijo) are being progressed. The group is holding various interim activities and participation in the group is open to experts from either parent group. More information is found in its [home page](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/jvds.aspx); and in the [JVDS collaboration site](https://extranet.itu.int/sites/itu-t/jointgroups/jvds).
* **Vehicular multimedia:** The first deliverable from the FG-VM was Consented at this meeting, ITU-T F.749.3 (ex F.VM-URVMN) "*Use cases and requirements for the vehicular multimedia networks*" [[TD441/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0441)].
* **IPTV and Digital Signage:** Experts completed work on new ITU-T H.704 (ex H.IPTV-EUIF.1) "*Enhanced UI framework for IPTV terminal device - Gesture control interface* " [[TD438/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0438)], which will allow users to define or use pre-defined gestures to control an IPTV terminal device. Experts also completed work on Technical Paper HSTP.DS-Gloss with a glossary on digital signage [[TD398/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0398)].
* **Content delivery networks (CDNs & ICNs):** Work completed on the following CDN and multimedia data management specifications:
* ITU-T H.644.3 (ex H.MCDN) "*Functional architecture of multimedia content delivery networks*" [[TD422/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0422)]
* ITU-T F.743.20 (ex F.AFBDI) "*Assessment framework for big data infrastructure*" [[TD417/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0417)]
* ITU-T F.743.21 (ex F.DAM) "*Framework for data asset management*" [[TD418/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0418)]
* **Visual surveillance:** Two new and one revised Recommendations were completed at this meeting:
* ITU-T F.735.1 (ex F.SDC) "*Requirements for software-defined camera*" [[TD431/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0431)]
* ITU-T F.743.11 (ex F.MPUVSReqs) "*Requirements for video surveillance with mobile premises units*" [[TD435-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0435)]
* ITU-T H.627 (V2) "*Signalling and protocols for a video surveillance system*" [[TD396/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0396)]
* **Civilian unmanned aerial vehicles:** Work was completed on Recommendation ITU-T F.749.12 (ex H.CUAV-F) describes the general framework for a CUAV application communication and control including its functional entities and reference points [[TD421/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0421)] for areas such as flight control, flight data transportation, mission payload data services and video / images services.
* **AI and machine learning:** The first multimedia AI/ML work item was completed at this meeting. ITU-T F.748.11 (ex F.AI-DLPB) addresses metrics and evaluation methods for benchmarking processors used by deep neural network [[TD439-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0439)].
* **DLT:** The first three distributed ledger technology (DLT) Recommendations (originally developed at the now closed [FG-DLT](https://www.itu.int/en/ITU-T/focusgroups/dlt)) were completed at this meeting:
* ITU-T F.751.0 (ex F.DLS) "*Requirements for distributed ledger systems*" [[TD436/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0436)]
* ITU-T F.751.1 (ex F.DLT-AC) "*Assessment criteria for distributed ledger technologies*" [[TD437/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0437)]
* ITU-T F.751.2 (ex H.DLT) "*Reference framework for distributed ledger technologies*" [[TD451/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0451)]

The DLT experts also agreed to organize a series of [DLT "meet-ups"](https://itu.int/go/dlt-meetups) (a form of interactive and informal webinars), to discuss topics related to Distributed Ledger Technology(DLT) and their standardization. The main goal of this initiative is to increase the collaboration of Q22/16 with global DLT community. Potential participants include DLT technology and service providers, research institutions, United Nations agencies, regulators, and other related professionals.

* **Immersive live experience:** ILE work progressed with the conclusion of new Recommendation ITU-T H.430.5 (ex H.ILE-PE) "*Reference models for ILE presentation environment*" that provides three reference models for proscenium, open, and arena scene style presentation environments, and provides functional blocks and some implementation guidelines for ILE viewing sites as additional information [[TD447/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0447)].
* **Accessibility:** Experts completed the revision of ITU-T H.702 (V2) "*Accessibility profiles for IPTV systems*", which provides needed updates and adds support for some cognitive disabilities [[TD443/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0443)]. Work also completed on new ITU-T F.922 (ex F.ACC-ISSVReq) "*Requirements of information service systems for visually impaired persons*" [[TD448/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0448)] and on two new Technical Papers: ITU-T FSTP.ACC-ALD "*Overview of assistive listening systems*" [[TD450/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0450)] and ITU-T FSTP.ACC-WebVRI "G*uidelines on web-based remote sign language interpretation*" [[TD449/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0449)]. The **collaboration with ISO/IEC JTC1 SC35** (User Interfaces) progressed with Consent of ITU-T T.701.11 (ex H.ACC.AltText), which is a twin text with ISO/IEC 20071-11; this specification provides guidance on the use of text alternatives for images (also known as "Alt-Text")" [[TD440/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0440)]. Other four joint work items remain open:
* [H.ACC-GAD](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14438) Guidance on audio descriptions (twin text of ISO/IEC TS 20071-21:2015)
* [H.ACC-GAP](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14440) Guidance on the audio presentation of text in videos, including captions, subtitles and other on-screen text (twin text of ISO/IEC 20071-25:2017)
* [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)
* [F.ACC-AVSL](https://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)

# Recent "collocated" activities

* Joint Video Experts Team ([JVET](http://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/video/jvet.aspx)) and the Joint Collaborative Team on Video Coding ([JCT-VC](http://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/video/jctvc.aspx)) from 22 June to 1 July 2020, as part of its ongoing collaboration with ISO/IEC JTC1 / SC29 / WG11 (MPEG) for the development of enhanced capabilities for video coding.
* Joint Project Team of ITU-T SG16 and ISO TC22/SC31/WG8 on Vehicle Domain Services ([JVDS](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/jvds.aspx)) on 24 June 2020.
* ITU [IRG-AVA](https://www.itu.int/en/irg/ava) on 25 June 2020
* ITU-T [JCA-AHF](https://www.itu.int/en/ITU-T/jca/ahf) on 1 July 2020
* [MPEG131](https://mpeg.chiariglione.org/meetings/131) (ISO/IEC JTC1 / SC29 / WG11) meeting (29 June – 3 July 2020)

# Future meetings

* Interim WP meetings: WP2/16 tentatively plans one meeting in the October – November time frame to Consent Q28/16 work items that may become mature. Dates TBD.
* Next SG16 meeting: currently planned in Geneva, 19-30 April 2021, date and details to be confirmed pending facilities availability to host MPEG.
* Subsequent meetings:
  + January 2022, in Geneva; collocated with MPEG.
  + Later meetings till the end of the next study period are unlikely to be held in ITU premises, due to the Varembé II construction project. *Invitations for meetings outside Geneva are welcome.*

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

# ITU Council trial for SME participation in the work of study groups

## SME participation in the work of Study Group 16

Now that the SME trial approved by the ITU Council has finished, SMEs that wish to continue participating in the work of the study group will be requested to join ITU under the SME reduced fee for Associates. The following organizations have taken advantage of this membership arrangement and joined the SG16 meeting:

* Beijing Zhongdun Security Technology Development Co.
* ePaiLive Auction (Beijing) Co., Ltd.
* Onchain Solutions (Shanghai Distributed Technology Co., Ltd.)
* Shenzhen Transsion Holdings Co. Limited

# Feedback and status reports on interim activities and collaboration

## TSAG meeting

In addition to this report, SG16 sent one document to this TSAG meeting:

| TD | Source | Subject |
| --- | --- | --- |
| [TSAG-TD884](https://www.itu.int/md/T17-TSAG-200921-TD-GEN-0884/en) | ITU-T SG16 | ITU-T SG16 proposals to WTSA-20 for its Questions and Res.2 at its final meeting in the study period 2017-2020 (Virtual, 22 June - 3 July 2020) |

## E-services and multimedia

### JCA-MMeS

The ITU-T JCA on multimedia aspects of e-services (JCA‑MMeS) held 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). No meetings were held in the interim period, nor during the last SG16 meeting.

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

As part of its studies on building blocks for different multimedia services and applications, one new Question started operations:

* Q23/16 "Digital culture-related systems and services", with Mr [Hong (Norman) Chen](mailto:norman_chen2020@163.com) (BUPT, China) as Rapporteur and Mr [ShiZhong Xu](mailto:xsz@uestc.edu.cn) (UESTC, China) as Associate Rapporteur.

## Accessibility and human factors

**Question 26/16** is the key Question in ITU-T for accessibility and it held one interim meeting online on May 2020.

**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.

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 21 May 2020 jointly with Q26/16. The meeting report will be found on the JCA-AHF webpage.

As part of continuous collaboration between SG16 and ISO/IEC **JTC1 SC35** "User interfaces", a proposal to create a new work item was submitted to this SG16 meeting on Guidance on alternative text for images, as joint work. The ideas of this work was presented at the Q26/16 interim meeting ([Q26/16-DOC11 (200518)](https://extranet.itu.int/meetings/ITU-T/T17-SG16RGM/Q26-200518/DOCs/T17-SG16RGM-Q26-200518-DOC-0011.docx)).

For various potential humanitarian projects, and in particular to provide global digital telecommunications platform designed to meet the specific needs of persons with disabilities worldwide, a new work item for a new draft Recommendation F.ACC-Humanitarian was created at Q26/16 in May 2020.

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

Q26/16 organized a session on *Telecom relay services: Practical experiences, challenges and opportunities in Europe* at the [Accessible Europe](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/Events/2019/AE/AccessibleEurope.aspx), Malta, 4-6 December 2019.

## IPTV and digital signage

Question 13/16 on IPTV had one online meeting on 2020-05-27. Question 14/16 on Digital Signage did not meet in the interim period.

SG16 participates in the IRG-IBB, see report in §6.8.2.

SG16 maintains standardization roadmaps for IPTV and Digital Signage, see [SG16-TD332/WP1](http://www.itu.int/md/T17-SG16-200622-TD-WP1-0332) and online at:

* <https://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/rm/iptv.aspx>
* <https://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/rm/ds.aspx>

## E-health

Question 28/16 on e-health met as follows and work progressed in various safe listening work items:

|  |  |  |  |
| --- | --- | --- | --- |
| 2020-02-17 | Geneva/WHO | [Q28/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=9816&Group=16) | Q28/16 - Safe Listening meeting |
| 2020-04-27 | E-Meeting | [Q28/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=9956&Group=16) | Q28/16 - Safe Listening meeting |
| 2020-06-05 & 10 | E-Meeting | [Q28/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=9957&Group=16) | Q28/16 - Safe Listening meeting |

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

Eight revised conformance testing specs were Consented at this meeting, see the [highlight clause](#PCHA) of this report.

### Collaboration with WHO

* Safe listening: the draft of revised H.870 (V2) continues to be developed. The draft progressed during the Rapporteur meeting in February 2020 as well as e-meetings in April and June 2020 (see above table).
* Draft new Technical Paper [HSTP-CONF-H870](https://www.itu.int/itu-t/workprog/wp_item.aspx?isn=14906) will provide guidelines for testing of personal audio systems for compliance with H.870. The draft progressed during the interim meetings dedicated to safe listening (table above).
* An ITU/WHO video promoting the safe listening standard is found here: <https://youtu.be/Nm6T0f8SeHs>.
* The draft of the ITU/WHO toolkit for digital health platform implementation is complete and has been issued in the six UN languages as a joint ITU and WHO publication.

NOTE – See §6.5.3 concerning cooperation with HWO 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)

A detailed progress report for the October 2019 to June 2020 period is found in [SG16-TD386/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0386). This report is complemented by [SG16-TD393/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0393) with the current draft of the FG-AI4H deliverables.

The next meetings are planned online (30 Sep. – 2 Oct 2020) and then every two months (to be confirmed), for the time being as virtual meetings.

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

## ITS

As part of its lead SG role in multimedia aspects of intelligent transport system (ITS) communications, SG16 addresses standardization for vehicular gateways and has recently launched studies in vehicular media. The lead Question in SG16 is Q27/16. 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-TD809](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-200921-TD-GEN-0809).

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.

### Vehicular multimedia (FG-VM)

Since the creation of the FG-VM in July 2018, it has held nine meetings, under the chairmanship of Mr Jun Harry Li (TIAA, China) as chairman and Ms Gaëlle Martin-Cocher (Interdigital, Canada) and Mr Kaname Tokita (Honda, Japan) as vice-chairmen.

The management team is:

* Chairman: Jun (Harry) Li (TIAA, People's Republic of China)
* Vice-chairmen: Gaëlle Martin-Cocher (Interdigital, Canada) and Kaname Tokita (Honda, Japan)

The progress report of this Focus Group for the October 2019 to June 2020 period can be found in [SG16-TD387/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0387).

For more information, check <https://itu.int/go/fgvm>.

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

A detailed progress report since last SG16 meeting is found in [SG16-TD385/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0385).

The ITU-T Focus Group on AI for Autonomous and Assisted Driving (FG-AI4AD) was established by ITU-T SG16 at its meeting in Geneva, Switzerland, 7-17 October 2019. This Focus Group delves into the behavioural evaluation of the AI responsible for the dynamic driving task of a vehicle, in accordance with the 1949 and 1968 Convention on Road Traffic of the UNECE Global Forum for Road Safety. It aims to facilitate international harmonisation on the definition of a minimal performance threshold for these AD vehicles.

The first meeting of FG-AI4AD was held in London, United Kingdom from 21-22 January 2020.

At its first meeting, FG-AI4AD agreed on the workstreams under which future activities will be carried out:

* 1st Workstream: Outreach through participation, collaborations and public engagement
* 2nd Workstream: Technical specification and demonstration
* 3rd Workstream: Research based guidance & notices

A second meeting of FG-AI4AD was held electronically from 4-5 May 2020.

At its second meeting, FG-AI4AD agreed to develop three Technical Reports as follows:

* TR01: "Automated driving safety data protocol specification"
* TR02: "Automated driving safety data protocol public safety benefits of continual monitoring"
* TR03: "Practical application of AD safety data protocol: demonstrators"

No LSs were received from the FG-AI4AD since October 2019.

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

### Joint project team with ISO TC22/SC31/WG8 on vehicular domain service (JVDS)

The ISO/ITU Joint Project Team on Vehicular Domain Service (JVDS) was established in October 2019 by ITU-T SG16 and ISO TC22/SC31 to develop technically aligned standards for ITU-T Recommendations | ISO International Standards for vehicle domain service technologies that will enhance the current V2X communication mechanisms. The group is chaired by [Hideki Yamamoto](mailto:yamamoto436@oki.com) (OKI Electric, Japan), ITU-T SG16, and [Kaname Tokita](mailto:kaname_tokita@n.t.rd.honda.co.jp) (Honda, Japan), ISO/IEC TC22/SC31.

The group held three meetings since the last SG16 meeting:

* Meeting C: e-meeting, 5 Nov. 2019: [Announcement](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Documents/jvds/ISO-TC22-SC31-WG8_N0061_ISO_ITU_JVDS_3rd_Announcement_2019-11-05.pdf) - [Agenda](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Documents/jvds/JVDS-D-001_5%20Nov%202019_agenda.pdf) - [Docs](https://extranet.itu.int/sites/itu-t/jointgroups/jvds/docs/Forms/191105.aspx)
* Meeting D: Geneva, 10-11 Dec. 2019: [Announcement](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Documents/jvds/ISO-TC22-SC31-WG8_N0068_ISO-ITU-JVDS_4th_Announcement_2019-12-10_11_final.pdf) - [Agenda](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Documents/jvds/JVDS-D-001_10-11%20Dec%202019_agenda.pdf) - [Docs](https://extranet.itu.int/sites/itu-t/jointgroups/jvds/docs/Forms/191210.aspx)
* Meeting E: e-meeting, 9-10 March 2020: [Announcement](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Documents/jvds/ISO-TC22-SC31-WG8_N0072_ISO-ITU-JVDS_5th_Announcement_2020-03-09_10.pdf) - [Agenda](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Documents/202003/agenda.pdf) - [Docs](https://extranet.itu.int/sites/itu-t/jointgroups/jvds/docs/Forms/200309.aspx)

The next meeting will be held on 24 June 2020 during the SG16 meeting.

The group has various work items that are included in the Q27/16 work programme.

The group home page is <https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/jvds.aspx>, and the collaboration area is <https://extranet.itu.int/sites/itu-t/jointgroups/jvds>.

## Immersive Live Environments

Immersive Live Environments (ILE) studies have progressed under Q8/16 with two interim e-meetings.

| Dates | Place/Host | Details | Title |
| --- | --- | --- | --- |
| 2020-05-20 to 21 | E-Meeting | [Q8/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=10122&Group=16) | Q8/16 meeting |
| 2020-04-07 to 09 | E-Meeting | [Q8/16](http://www.itu.int/net/itu-t/lists/rgmdetails.aspx?id=9834&Group=16) | Q8/16 meeting |

One more Recommendation was completed at the last SG16 meeting, ITU-T H.430.5 (ex H.ILE-PE) "*Reference models for ILE presentation environment*" that provides three reference models for proscenium, open, and arena scene style presentation environments, and provides functional blocks and some implementation guidelines for ILE viewing sites as additional information.

## 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 three recent meetings of the group were:

* 15th meeting: Geneva, 9 October 2019 (1615-1730 hours CEST)  
  [Announcement](https://itu.int/ml/lists/arc/irgava/2019-09/msg00000.html) - [Agenda](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-1910-001-R1.docx) - [Report](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-1910-002.docx) ([SG16-TD269/WP2](https://www.itu.int/md/T17-SG16-200622-TD-WP2-0269)) - [Transcript](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/RTC-20191009-IRG-AVA-Raw.docx) - [LS in](https://itu.int/net/itu-t/ls/ols.aspx?from=-1&to=2531&after=2019-06-06&before=2019-10-09) - [LS Out](https://itu.int/net/itu-t/ls/ols.aspx?from=2531&after=2019-10-08&before=2019-10-10) - [Documentation](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/Forms/1910GVA.aspx)
* 16th meeting: Geneva, 4 February 2020 (1545-1730 hours CET)  
  [Announcement](https://itu.int/ml/lists/arc/irgava/2019-12/msg00000.html) - [Agenda](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2002-001-R1.docx) - [Report](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2002-002.docx) ([SG16-TD270/WP2](https://www.itu.int/md/T17-SG16-200622-TD-WP2-0270)) - [Transcript](https://extranet.itu.int/sites/irg/ava/_layouts/15/WopiFrame.aspx?sourcedoc=%7b3CED3159-8C11-4BEB-899C-0AD259707D28%7d&file=IRG-AVA-2002-000-Caption.rtf&action=default) - [LS in](https://itu.int/net/itu-t/ls/ols.aspx?from=-1&to=2531&after=2019-10-09) - [LS Out](https://itu.int/net/itu-t/ls/ols.aspx?from=2531&after=2019-10-09) - [Documentation](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/Forms/2002GVA.aspx)
* 17th meeting: Online, 25 June 2020 (1545-1730 hours CEST)  
  [Announcement](https://www.itu.int/ml/lists/arc/irgava/2020-06/msg00000.html) - [Agenda](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2006-001.docx) - [Report](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/IRG-AVA-2006-002.docx) - [Transcript](https://extranet.itu.int/sites/irg/ava/_layouts/15/WopiFrame.aspx?sourcedoc=%7b700DD76E-6F0A-4170-933C-E87554A65E6C%7d&file=IRG-AVA-2006-000-Caption.docx&action=default) - [LS in](https://www.itu.int/net/itu-t/ls/ols.aspx?from=-1&to=2531&after=2019-10-09) - [LS Out](https://www.itu.int/net/itu-t/ls/ols.aspx?from=2531&after=2019-10-09) - [Documentation](https://extranet.itu.int/sites/irg/ava/Shared%20Documents/Forms/2006VIR.aspx)

Another meeting is planned to take place online, 20 October 2020, 1530-1730 hours CEST.

### IRG-IBB

Q13/16 is part of the IRG-IBB, the *Intersector Rapporteur Group on* *Integrated Broadcast-Broadband (IBB)*. The group's homepage is <http://itu.int/en/irg/ibb>. The SG16 co-chair in the group is Mr Marcelo Moreno (Brazil).

IRG-IBB held its 13th meeting "collocated" with ITU-T Study Group 16 meeting online on 29 June 2020.

All documents discussed by IRG-IBB are available in the IFA for the group at [https://www.itu.int/‌ifa/c/irg/ibb/mgt/](https://www.itu.int/ifa/c/irg/ibb/mgt/).

IRG-IBB will continue its work by correspondence via he mailing list ([irgibb@lists.itu.int](mailto:irgibb@lists.itu.int)), and the tenth meeting will be held in Geneva, on 1 April 2020.

## Various collaboration matters

Coordinated activity continued with inter alia MPEG.

### ITU-T SG9

The Liaison Officer from SG9 into SG16 is Mr Jeong Yun Kim, ETRI, Korea (Rep. of).

Close coordination will be expected with SG9 on accessibility matters, as a new Question on accessibility was created within SG9. ITU-T SGs 9 and 16 take both part in two IRGs, IRG-AVA (§6.8.1) and IRG-IBB (§6.8.2).

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

| TD | Source | Title | Questions |
| --- | --- | --- | --- |
| [SG16-TD476/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0476) | ITU-T SG9 | LS/r on the current text of new draft Recommendations J.cable-rf-ip "Requirements of cable network for RF and IP secondary distribution of television programmes" (SG16-LS169) | Q13/16 |
| [SG16-TD477/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0477) | ITU-T SG9 | LS on start of new draft Recommendations J.rfip-switching "RF/IP adaptive video distribution scheme over cable television networks" | Q21/16, Q13/16 |
| [SG16-TD478/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0478) | ITU-T SG9 | LS/r on recent activities of Recommendations related to TVOS (SG16-LS168) | Q13/16 |
| [SG16-TD479/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0479) | ITU-T SG9 | LS on AAP Consent of draft new Recommendation ITU-T J.299 (ex J.acs-stb) "Functional Requirements for remote management of cable STB by Auto Configuration Server" | Q13/16 |
| [SG16-TD480/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0480) | ITU-T SG9 | LS on AAP consent of draft new Recommendation ITU-T J.1211 (ex J.ipvb-spec) "Specifications of IP Video Broadcast (IPVB) for CATV Networks" | Q21/16, Q13/16 |
| [SG16-TD481/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0481) | ITU-T SG9 | LS/r on new work items for J.ipvb-spec "Specifications of IP Video Broadcast (IPVB) for CATV Networks" and TP.ipvb-ucase "Use case and service scenario of IP Video Broadcast (IPVB) for CATV Networks" (SG16-LS170) | Q13/16 |
| [SG16-TD482/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0482) | ITU-T SG9 | LS on ITU-T SG9 Technical Paper TP.fdx-asi "Analysis and Related Solutions for Full Duplex Interference" | Q1/16 |
| [SG16-TD483/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0483) | ITU-T SG9 | LS on ITU-T Q9/9 new work item (draft Recommendation) on E2E Network Characteristics Requirement for Video Services | Q21/16, Q13/16 |
| [SG16-TD484/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0484) | ITU-T SG9 | LS/r on approval of new terms and definitions (SCV-LS26) [from ITU-T SG9 to SCV/CCV] | Q1/16 |
| [SG16-TD485/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0485) | ITU-T SG9 | LS/r on reference table to be used for Conformance and Interoperability testing (SG11-LS111) [from ITU-T SG9 to SG11] | Q1/16 |
| [SG16-TD486/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0486) | ITU-T SG9 | LS/r on ITU inter-Sector coordination (TSAG-LS22R1) [from ITU-T SG9 to TSAG] | Q1/16 |
| [SG16-TD487/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0487) | ITU-T SG9 | LS/r on hot topics (TSAG-LS32) | Q1/16 |
| [SG16-TD488/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0488) | ITU-T SG9 | LS/r on the new version of the Access Network Transport (ANT) Standards Overview and Work Plan (SG15-LS226) [from ITU-T SG9 to ITU-T SG15] | Q1/16 |
| [SG16-TD489/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0489) | ITU-T SG9 | LS/r on Telecommunication Management and OAM Project Plan (SG2-LS140) [from ITU-T SG9 to SG2] | Q1/16 |
| [SG16-TD490/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0490) | ITU-T SG9 | LS to inform on new Question 11/9 on "Accessibility to system and services" and first meeting results | Q26/16 |

### ITU-T SG12

The Liaison Officer is Mr Paul Coverdale (Huawei Technologies, China). Areas of common interest continue to include:

* Quality assessment methods
* ITS and telepresence
* Safe listening (H.870)

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

| TD | Source | Title | Questions |
| --- | --- | --- | --- |
| None |  |  |  |

### ITU-R

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

| TD | Source | Title | Questions |
| --- | --- | --- | --- |
| [SG16-TD471/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0471) | ITU-R WP5D | LS on development of a draft new report ITU-R M.[IMT.C-V2X] - Application of the Terrestrial Component of IMT for Cellular-V2X | Q27/16 |
| [SG16-TD451/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0451) | ITU-R WP6C | LS/r on comments on ITU-T Series H Supplement 19 "Usage of video signal type code points" (SG16-LS161) | Q6/16 |

### IEC TC100 and IEC SyC AAL

The last meeting of the IEC TC 100 ad hoc group for coordination with other SDOs took place in Geneva, Sat. 21 January 2017 PM, at ITU HQs. A draft report was reviewed in Macau as [SG16-TD110/Plen](https://www.itu.int/md/T17-SG16-171016-TD-Plen-0110).

No LS was received from IEC TC 100 in the interim period.

No LSs was received from the IEC system committee on active assisted living (IEC SyC AAL), for Q26/16 in the interim period

### ISO/IEC JTC 1

None at this meeting.

### Video and image coding

Work has been completed on two twin texts within the JVET, which were Consented and later approved:

* ITU-T H.266 (ex H.VVC), *Versatile video coding*, twin text with ISO/IEC 23090-3.
* ITU-T H.274 (ex H.SEI), *Versatile supplemental enhancement information messages for coded video bitstreams*, twin text with ISO/IEC 23002-7.

One LS was prepared to inform numerous organizations on the Consent of H.266/VVC.

#### ISO/IEC JTC1 SC 29

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

SC 29 held two sets of plenary meetings by teleconference since the previous meeting of SG16 (during which an SC 29 meeting was hosted onsite at ITU facilities). These meetings were held on 7 & 9 April and 2–4 June 2020.

The primary purpose of these recent meetings was to discuss the future scope, structure and leadership of SC 29. A modified scope for SC 29 had been adopted by JTC 1 in November 2019. One matter considered in these discussions at the April and June meetings was whether to recommend that SC 29 be split so that part of the current SC 29 would be moved into a newly established SC with a scope corresponding to subjects currently assigned to MPEG (WG 11 of SC 29), leaving SC 29 with a scope corresponding to the subjects currently assigned to JPEG (WG 1 of SC 29). The proposed internal structure for working groups and advisory groups within SC 29 and in the proposed new SC was also considered. After consideration, SC 29 recommended to JTC 1 to retain its scope of work within a single SC and established a planned change of its internal structure by elevating some of the current subgroups of WG 11 (MPEG) to become distinct MPEG working groups (WGs) and advisory groups (AGs) of SC 29 rather than subgroups of one of its WGs. The MPEG community will become an affiliated group of WGs and AGs that will continue meeting together according to previous MPEG meeting practices and will continue to progress the standardization activities of the MPEG work programme. The internal restructuring is planned to take effect following the next meeting of SC 29, to be held during 15–17 July 2020, at which time the convenors for the WGs and AGs are planned to be appointed. Most of the new convenorships are expected to be held by the same persons who chaired corresponding subgroups within MPEG.

A press release was issued by SC 29 to provide information about its restructuring and is found in [SG16-TD474/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0474).

#### 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 SG16 Q6/16) and ISO/IEC JTC1 SC 29/WG1. 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.

Just after the previous meeting of SG16, the JPEG image compression standard (T.81 *et al.*) was recognized by a 2019 Primetime Emmy Engineering Award for outstanding achievement in engineering development, announced at <https://www.emmys.com/news/awards-news/191001-engineering> and <https://news.itu.int/how-jpeg-gained-emmy-fame/>. ITU-T was represented at the award ceremony by Mr Gary Sullivan.

The history of JPEG is reviewed in an ITU interview with Touradj Ebrahimi and Istvan Sebestyen (on the occasion of the 2019 Emmy Engineering Award), found at <https://youtu.be/nIC-YCdRN0A?list=PLpoIPNlF8P2PAd8Q3nrtE0ogzi_x46Ti9> and [https://youtu.be/yK5imlmtQZE?‌list=PLpoIPNlF8P2PAd8Q3nrtE0ogzi\_x46Ti9](https://youtu.be/yK5imlmtQZE?list=PLpoIPNlF8P2PAd8Q3nrtE0ogzi_x46Ti9).

Meetings of JPEG since the last meeting of SG16 have been held in San Jose, California, USA, during 2–8 November 2019, in Sydney, Australia, during 18–24 January 2020, and during 25–30 April 2020 by teleconference.

Revisions of several common text and twin text Recommendations are under development in JPEG, including T.801 V2 JPEG 2000 Extensions, revised editions of T.803 conformance testing and T.804 reference software for JPEG 2000, T.815 V2 Encapsulation of JPEG 2000 images into ISO/IEC 23008-12, T.816 V2 JPEG 2000 extensions for coding discontinuous media, and T.873 V2 reference software for the original JPEG standard.

Recent work within JPEG includes such projects as JPEG XS backward-compatible extensions of the older JPEG coding format (including raw sensor compression), 360° omnidirectional image representation, JPEG Pleno for coding of such information as 3D light fields, JPEG XL image compression with support of reversible transcoding of images encoded using the older JPEG coding format, and systems and file format support for image coding. This other recent new work has so far not been planned within SG16 for joint approval by ITU‑T.

JPEG has also begun studying image coding using machine learning (a.k.a. artificial intelligence) technology and blockchain applications for media technology.

Updated information about JPEG work was provided in incoming liaison statements [SG16-TD435/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parehttps://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0435nt=T17-SG16-191007-TD-GEN-0361) and [SG16-TD491/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0491) to SG16. Q6/16 had previously responded to [SG16-TD435/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parehttps://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0435nt=T17-SG16-191007-TD-GEN-0361) during the interim period since the previous meeting of SG16, as recorded in [SG16-TD414/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0414).

Q6/16 agreed to stop work plans for T.802 (V2) Motion JPEG 2000, as this work item had been planned by Q6/16 in error due to a misunderstanding of the status in JPEG; instead JPEG had planned to develop a revision of T.801 (V2) JPEG 2000 Extensions, and thus a corresponding work item was agreed to be established in the SG16 work programme. Prior plans in JPEG for development of amendments to common text Recommendations T.803 and T.804 had been changed to plan for development of revisions rather than amendments, and the SG16 work programme was updated accordingly.

An Option 3 (a.k.a. "Type 3") patent rights licensing declaration was received by ITU, ISO and IEC for the common text Recommendation T.814 | ISO/IEC 15444-15 (High-throughput JPEG 2000, aka HTJ2K), and the matter was raised in a reply LS sent to JPEG from the current meeting, as recorded in LS#3 in [SG16-TD142-R1/WP3](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-WP3-0142). T.814 had been approved in June 2019 and published in August 2019 by ITU (and January 2020 by ISO/IEC) and was developed in collaboration with SC 29/WG 1 (JPEG). The LS requested JPEG to review the declaration and to keep SG16 informed on the progress on their review and on any plans for action; and informed that SG16 is awaiting consultation with JPEG toward resolving the matter before taking any action on it.

#### ISO/IEC JTC1 SC 29/WG 11 (MPEG)

The SG16 Liaison Officer to MPEG concerning collaboration on video coding is Mr Gary Sullivan (Microsoft, USA). The video coding work conducted collaboratively with MPEG has been very active, attracting 250–350 participants and about twice that number of contributions for the recent and current meetings.

Video coding work is currently being conducted jointly with ISO/IEC JTC1/‌SC29/WG 11 (MPEG), especially in two joint collaborative teams (JCTs) known as the Joint Video Experts Team (JVET) and the Joint Collaborative Team on Video Coding (JCT-VC). Meetings of JVET and JCT-VC were held in a collocated fashion with this ITU-T SG16 meeting under its auspices. The activities in JVET and JCT-VC are managed on the ITU-T side by Q6/16. JVET is tasked with the development of Versatile Video Coding (VVC, twin text with ISO/IEC 23090-3) and Versatile Supplemental Enhancement Information (VSEI, twin text with ISO/IEC 23002-7). The JCT-VC is tasked with development, maintenance and general extension of High Efficiency Video Coding (HEVC, Rec. ITU-T H.265, twin text with ISO/IEC 23008-2), Advanced Video Coding (AVC, Rec. ITU-T H.264, twin text with ISO/IEC 14496-10) and coding-independent code points for video (CICP, Rec. ITU-T H.273, twin text with ISO/IEC 23091-2).

An announcement from SC29 "ISO/IEC JTC1/SC29 note on the future of SC29 with JPEG and MPEG" ([SG16-TD474/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0474)) described plans for SC29 to reorganize its structure to elevate some of the current subgroups of WG 11 (MPEG) to become distinct MPEG working groups (WGs) and advisory groups (AGs) of SC 29 rather than subgroups of one of its WGs.

The internal restructuring is planned to take effect following the next meeting of SC 29, to be held during 15–17 July 2020, at which time the convenors for the WGs are planned to be appointed. Most of the new convenorships are expected to be held by the same persons who chaired corresponding subgroups within the previous WG 11.

A joint meeting session was held between Q6/16 and MPEG during the current meeting to discuss the finalization of the VVC and VSEI standards and the general status of work and planning for future collaboration. Aside from matters of specifics to be documented in the reports of the JVET and JCT-VC meetings, Q6/16 indicated its desire to propose a merger of the JCT-VC into JVET and a revision of the scope of future work of JVET, and MPEG seemed receptive to the suggestion.

A liaison statement was sent to MPEG and SC 29 from the current meeting proposing revised Terms of Reference (ToR) for JVET in [SG16-TD143-R2/WP3](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-WP3-0143). SG16 has proposed to include all joint activities with MPEG within JVET and to close JCT-VC, in the interest of organizational simplification and improved coordination of the work. The proposed revised Terms of Reference for JVET are also attached as Annex L of this report. Note that these ToR are to be considered provisional for the time being, pending possible further discussion with SC29.

In addition to the primary efforts affecting the VVC, HEVC, AVC, and CICP twin text standards, the development work in JCT-VC has included the development of (twin text) associated conformance testing and reference software specifications and with maintenance and improvement of H-series Supplements 15, 18, and 19, which provide non-normative technical guidance information on common video signal type indicators, conversion practices, coding practices, signalling, backward compatibility, and display adaptation for standard dynamic range (SDR), high dynamic range (HDR) and wide colour gamut (WCG) video content.

A virtual meeting of MPEG was held in a coordinated fashion during the current meeting of SG16, hosted by ITU during 29 June – 3 July 2020. A meeting of MPEG had also been held in a collocated fashion with the previous meeting of SG16, and two additional meetings of MPEG had been held during 13–17 January 2020 in Brussels, BE, and during 20–24 April 2020 via teleconference since the previous meeting of SG16.

The current status of collaboration between SG16 and MPEG had been summarized in [SG16-TD376/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-PLEN-0376), and an updated LS communicating the current status in MPEG was received as [SG16-TD498/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0498). The previous LSs from MPEG, found in [SG16-TD444/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0444) and [SG16-TD459/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0459), had already been discussed and responded to at the interim meetings of Q6/16 (and the outgoing reply LS are recorded in [SG16-TD414/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-GEN-0414)).

Meetings of the JVET and JCT-VC joint collaborative teams had been hosted by ITU-T SG16 in Geneva, Switzerland, during the previous meeting of ITU-T SG16 in October 2019. Two additional meetings for each of JVET and JCT-VC (which are under the purview of Q6/16) had also been held April 2020 via teleconference and January 2020 in Brussels, Belgium, in the interim period since the last meeting of ITU-T SG16; and each of these groups also held another meeting under SG16 auspices together with the current SG16 meeting via teleconference.

Several video-related projects have recently also recently been planned and launched in MPEG that are not currently planned as joint work with SG16. One of these is an exploration activity in Dense Neural Network Video Compression (DNNVC), which is studying neural networking-based technologies for video coding. Another is the exploration activity in Video Coding for Machine (VCM), which is studying technologies for coding video and feature vectors intended for usage in inferencing tasks rather than, or in addition to, human viewing.

MPEG issued Final Draft International Standard (FDIS) of an "MPEG-5 Essential Video Coding" (EVC, ISO/IEC 23094-1) in April 2020. The EVC project is said to be motivated by combination of business and technology requirements. The new standard has a Baseline profile containing technologies which are over 20 years old or which have only "Type 1" (royalty-free) patent rights declarations, and also a Main profile containing a small number of additional tools, each of which is capable of being switched off or switched over to the corresponding Baseline tool on an individual basis. The timely publication of licensing terms for this proposed standard has been encouraged, and the coding efficiency of EVC is somewhat better than that of HEVC, although not quite as high as that of VVC, as measured using objective metrics.

Another standard in MPEG is a layered coding method known as "Low-Complexity Video Coding" (LCEVC, ISO/IEC 23094-2). MPEG is also developing an immersive video coding standard, including as "MPEG Immersive Video", to be standardized as ISO/IEC 23090-12, which enables 6 Degrees of Freedom (6-DoF) viewer movement.

A reply LS to MPEG with updated ITU-T approval status information on the projects under joint development and a request to continue to be kept informed of additional work items in MPEG in the area of video coding was prepared by Q6/16 and is found in LS#1 of [SG16-TD142-R1/WP3](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-200622-TD-WP3-0142).

### ISO TC22 SC31 WG8

See §6.6.3 concerning the joint project team on vehicular domain service (JVDS) between SG16 and ISO TC22 SC31 WG8.

### Other groups

Other groups of interest for SG16 include [ITU-T JCA-IoT&SCC](https://www.itu.int/en/ITU-T/jca/iot), [JCA-IMT2020](https://www.itu.int/en/ITU-T/jca/imt2020).

No particular reports were provided for the following groups:

| Group | SG16 representative in that group |
| --- | --- |
| [ISO TC 215](http://www.iso.org/iso/iso_technical_committee?commid=54960) Health informatics (on e-health) | Mr Masahito Kawamori Email: [masahito.kawamori@ties.itu.int](mailto:masahito.kawamori@ties.itu.int) |
| [W3C](http://www.w3.org/) World Wide Web Consortium (IPTV and e-health) | Mr Masahito Kawamori Email: [masahito.kawamori@ties.itu.int](mailto:masahito.kawamori@ties.itu.int) |

## 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 23 June 1130-1300 hours (recording).

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