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| **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 meeting in Geneva, 19-29 March 2019, SG16 accomplished the following results, in line with its mandate and lead SG roles (all TD references are SG16 TDs, except where otherwise noted):

* **New Questions:** The **two Questions** proposed at the previous SG16 meeting held had their inaugural sessions at this meeting after completing the approval process: [**Q5/16**](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q5.aspx) "*Artificial intelligence-enabled multimedia applications*" and [**Q22/16**](http://itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/22.aspx) "*Distributed ledger technologies and e-services*". The meeting also agreed with the proposal for a **new Question** [**12/16**](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/q12.aspx) on "*Visual surveillance systems and services*", which needs review by TSAG before being formally adopted. Nevertheless, work will already start by taking on work items that were previously handled in Q21/16. The text is found [here](#_Annex_A:_Draft).
* ITU **Workshop** on "*Enhancing Human Life Using e-Services*", collocated with the ITU-T SG16 meeting, took place on 25 March 2019. The workshop explored how e-services can improve life outcomes in our increasingly digital lives, by addressing technologies including artificial intelligence for areas such as health and agriculture as well as the core standardization challenges in ICT accessibility. It also addressed the issue of procurement of accessible ICT services and products. The main highlights of the workshop are given in [TD279/Plen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0279).
* **Video and image coding:** Completed work on two revised video coding Recommendations at this meeting:
* ITU-T H.264 V13 "Advanced video coding for generic audiovisual services" [[TD294/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0294)]
* ITU-T H.265 V6 "High efficiency video coding" [[TD295/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0295)]

Experts also completed new **H-Series Supplement 19** with *code points for different sets of video signal properties and their combinations* that are widely used in production and video content workflows. The information in this Supplement will help producers of various content processing tools avoid processing mistakes that can cause video quality degradation due to having incorrect assumptions made about video property combinations [[TD296-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0296)]

The following image coding Recommendations were also completed:

* ITU-T T.800 V3 (15444-1) "Information technology - JPEG 2000 image coding system: Core coding system" [[TD259/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0259)]
* ITU-T T.814 (ex. T.HTJ2K, 15444-15) "Information technology - JPEG 2000 image coding system: High-throughput JPEG 2000" [[TD275/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0275)]
* ITU-T T.815 (ex T.HEJ2K, 15444-16) "Information technology - JPEG 2000 image coding system: Encapsulation of JPEG 2000 images into ISO/IEC 23008-12" [[TD274/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0274)]
* ITU-T T.832 V4 "Information technology - JPEG XR image coding system - Image coding specification" [[TD272/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0272)]
* ITU-T T.873 (ex T.JPGRS, 10918-7) "Information technology - Digital compression and coding of continuous-tone still images: Reference Software" [[TD273/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0273)]
* **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. [[TD148/WP2](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-WP2-0148)]. Work is also being progressed towards a conformance testing spec for H.870 [[RGM-181105-DOC40](https://extranet.itu.int/meetings/ITU-T/T17-SG16RGM/16907-181105/DOCs/T17-SG16RGM-16907-181105-DOC-0040.docx)].
* **E-health:** A revision was prepared to two of the conformance testing specifications for ITU-T H.810 personal health systems, ITU-T H.846 specifying of personal health gateways [[TD255/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0255)] and ITU-T H.849 on testing personal health devices using the Bluetooth Low Energy protocol [[TD256/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0256)].
* **Intelligent transport systems (ITS):** SG16 agreed to an invitation from ISO/TC22/SC31/WG8 to establish a **joint project team (JPT)** with Q27/16 to work on a **vehicle domain service (VDS)** specification. The draft ToR in [[TD158/WP2](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-WP2-0158)] for the JPT-VDS was refined in the interim period in consultation with ISO experts and is proposed to be approved at the next SG16 meeting in October 2019. At WP2/16 meeting on 14 June 2019, WP2/16 reviewed the preliminary results of the proposed collaboration between Q27/16 and ISO/TC22/SC31/WG8 (VDS) and agreed to propose that SG16 considers at its opening plenary the approval to create a Joint Project Team with WG8 on vehicular domain service (JVDS).
* **IPTV:** Experts completed work on Technical Paper HSTP.CONF-H764 that defines a conformance testing specification for ITU-T H.764, which specifies an ECMAScript language subset for IPTV terminal devices [[TD286/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0286)].
* **Digital signage:** Recommendation ITU-T H.783 that specifies audience measurement services for digital signage systems was updated [[TD280/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0280)], following the approval in November 2018 of ITU-T H.784 (Display device control interface).
* **Videoconferencing:** Two Recommendations relevant to traditional videoconferencing systems were updated:
* ITU-T H.230 "Frame-synchronous control and indication signals for audiovisual systems" [[TD276/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0276)]
* ITU-T H.243 "Procedures for establishing communication between three or more audiovisual terminals using digital channels up to 1920 kbit/s" [[TD277/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0277)]
* **Conversational bots:** Work was completed on ITU-T F.746.9 (ex H.ICR) that defines requirements and an architecture for human communication with intelligent devices inside the home [[TD281/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0281)].
* **Content delivery and information centric networks (CDNs & ICNs):** Work completed on the following CDN & ICN specifications:
* ITU-T F.743.9 (ex F.CDN-Reqs) "Use cases and requirements for multimedia CDN" [[TD293/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0293)]
* ITU-T H.644.1 (ex H.VCDN-Arch) "Functional architecture for virtual content delivery networks" [[TD287/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0287)]
* ITU-T H.643.1 (ex H.DICNArch) "Architecture for deployment of information centric network" [[TD288/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0288)]
* **Visual surveillance:** The work on visual surveillance progressed with the completion and consent of the following texts:
* ITU-T F.743.7 (ex F.VSBD) "Requirements for big data enhanced visual surveillance services" [[TD282-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0282)]
* ITU-T F.743.8 (ex F.CCVSReqs) "Requirements for cloud computing platform supporting a visual surveillance system" [[TD283/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0283)]
* ITU-T H.626.5 (ex H.IVSArch) "Architecture for intelligent visual surveillance systems" [[TD284-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0284)]
* **Unmanned aerial vehicles:** Work was completed on Recommendation ITU-T F.749.10 (ex F.CUAV) that defines requirements for communication services for civilian unmanned aerial vehicles, as well as use cases in industry and consumer application areas [[TD290/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0290)].
* **Accessibility and human factors:** Amongst the numerous active work items, no drafts were completed at this meeting. However, completion of F.WAAD [[TD156/WP2]](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-WP2-0156) with safety requirements for personal sound amplifiers is planned at the interim WP2/16 meeting on 14 June 2019. Further collaboration with ISO/IEC JTC1 SC35 (User Interfaces) is planned on visual presentation in audiovisual content of audio information and of sign language.

At its WP2/16 meeting in Geneva, 14 June 2019, SG16 consented one Recommendations on accessibility:

* Work on Rec. ITU-T H.871 "Safe listening guidelines for personal sound amplifiers" was completed at this meeting. Personal Sound Amplifiers (PSAs) are non-medical devices, intended for people with normal hearing and (a) can have a design physically comparable to hearing aids, in which case it is called Personal Sound Amplification Product (PSAP) or (b) can also simply be an app on any smartphone or other device, in which case it is called Personal Sound Amplification App (PSAA). This is the first international standard that specifies the features for the safe operation of such devices, and it prescribes the same principles as found in ITU-T H.870 on safe listening devices, which is a standard adopted by ITU and WHO. [[SG16-TD187/WP2](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190614-TD-WP2-0187)]

# Recent collocated activities

* ITU workshop on "[Enhancing Human Life Using e-Services](https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Pages/Events/2019/eServices/Enhancing-Human-Life-Using-e-Services.aspx)" (25 March 2019)
* [JCA-MMeS](https://www.itu.int/en/ITU-T/jca/mmes/Pages/default.aspx) (21 March 2019)
* ITU-T SG16 hosted the Joint Video Experts Team ([JVET](http://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/video/jvet.aspx)) Joint Collaborative Team on Video Coding ([JCT-VC](http://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/video/jctvc.aspx)) from 19-27 March 2019, as part of its ongoing collaboration with ISO/IEC JTC1 / SC29 / WG11 (MPEG) for the development of enhanced capabilities for video coding.
* [JPEG83](https://jpeg.org/items/20190316_20190322_meeting_83.html) (ISO/IEC JTC1 / SC29 / WG1) meeting (16-22 March 2019)
* [MPEG126](https://mpeg.chiariglione.org/meetings/126) (ISO/IEC JTC1 / SC29 / WG11) meeting (25-29 March 2019)

# Future meetings

The next SG16 meeting will take place in Geneva, 7-17 October 2019. The SG16 meeting is expected to be collocated in the 1st week with ISO/IEC JTC1 SC29 WG11 (MPEG), to continue our joint work on video coding.

The two subsequent meetings of SG16 are planned as follows:

* Geneva, 22 June - 3 July 2020, with MPEG in CICG
* April 2021 probably in Geneva.

NOTE – Dates for these two meetings are subject to change, in particular due to a) WTSA-20 decisions; b) the SG16 decision to shorten the SG16 meetings [[SG16-TD143/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-171016-TD-PLEN-0143) from the Macau meeting].

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

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

In October 2017, ITU-T SG16 agreed to participate at the SME trial approved by the ITU Council in its 2017 session. At this meeting, the following organizations participated under this trial:

* ASTEM (Japan)

Other SMEs interested in joining the trial are invited to contact the SG16 secretariat (tsbsg16@itu.int) for further information.

# Feedback and status reports on interim activities and collaboration

## TSAG meeting

In addition to this report, SG16 sent four LSs to this TSAG meeting:

| TD | Source | Subject |
| --- | --- | --- |
| [TSAG-TD522](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0522) | ITU-T SG16 | LS on creation of new Question Q12/16 (Visual surveillance systems and services) to TSAG [from ITU-T SG16] |
| [TSAG-TD524](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0524) | ITU-T SG16 | LS/r on hot topics (Reply to TSAG-LS16) [from ITU-T SG16] |
| [TSAG-TD526](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0526) | ITU-T SG16 | LS/r on proposed ITU-T Focus Group on Quantum Information Technology for Networks (FG-QIT4N) (TSAG-LS19) [from ITU-T SG16] |
| [TSAG-TD527](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0527) | ITU-T SG16 | LS on the progress of distributed ledger technology, application and e-service [from ITU-T SG16] |

## E-services and multimedia

### JCA-MMeS

The JCA on multimedia aspects of e-services (JCA-MMeS) met on 21 March 2019, 1615-1730 hours. Its chairman, Mr Mohannad El-Megharbel (Egypt) presented the report in [SG16-TD260/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-180709-TD-PLEN-0200). The JCA meeting reviewed one incoming liaison. The next JCA-Mmes meeting is expected to be collocated with the SG16 meeting in October 2019.

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, two new Questions started operations:

* Q5/16 (Q.MM-AI) “Artificial intelligence-enabled multimedia applications”
Rapporteur: Mr Wang Yuntao (CAICT, China); under WP3/16
* Q22/16 (Q.MM-DLT) "Distributed ledger technologies and e-services"
Acting rapporteur: Mr Wei Kai (CAICT, China); under WP2/16

One new Question is proposed to be created:

* Q12/16 "Visual surveillance systems and services" – see LS in [TSAG-TD522](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0522)

## Accessibility and human factors

**Question 26/16** is the key Question in ITU-T for accessibility and it held one interim meeting in Geneva, 5-7 November 2018. Several work items were progressed; see [TD138/WP2](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-WP2-0138).

**Question 24/16** is the key Question in ITU-T for human factors. The Question held one interim meeting in Xiamen, China, 19-21 November 2018. The meeting accepted three work items and progressed work on existing work items; see [TD137/WP2](https://www.itu.int/md/T17-SG16-190319-TD-WP2-0137).

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 on 18 July 2018 collocated with Q26/16 during the SG16 meeting in Ljubljana. The meeting report is found in [JCA-AHF Doc347](https://www.itu.int/en/ITU-T/jca/ahf/Documents/docs-2018/18July2018/Doc%20347_report.docx).

As part of collaboration between SG16 and ISO/IEC JTC1 SC35 "User interfaces", a proposal was submitted to this SG16 meeting on Presentation of sign language interpretation within the context of audiovisual media, as possible joint work ([SG16-C439](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-C-0439)).

NOTE – See §6.9.1 concerning IRG-AVA updates.

A session focusing on Telecom Relay Services was organized by ITU-T on 13 December 2018 at the ITU-EU event on Accessible Europe, Vienna, Austria, 12-14 December 2018. Chaired by Ms Andrea Saks, experts shared case studies of existing relay services in the USA, Switzerland, United Kingdom and France, then ITU-T F.930 “Multimedia telecommunication relay services” was explained and promoted.

## IPTV and digital signage

Question 13/16 on IPTV and Question 14/16 on Digital Signage met in Geneva, 22-26 October 2018. Several work items were progressed; see [TD191/WP1](https://www.itu.int/md/T17-SG16-181026-TD-WP1-0191) for Q13/16, and [TD193/WP1](https://www.itu.int/md/T17-SG16-181026-TD-WP1-0193) for Q14/16. See also SG16-R14 with the WP1/16 results, when ITU-T Rec. H.782 (V2) and ITU-T H.784 (ex H.DS-DCI) were Consented. Both are now approved and published.

SG16 participates in the IRG-IBB, see §6.9.2.

SG16 maintains standardization roadmaps for IPTV and Digital Signage, see [SG16-TD206/WP1](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-WP1-0206) 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 twice in the interim period, both in Geneva: 5-9 November 2018 & 15 February 2019. The Question also held one e-meeting, 7 January 2019. The reports of these meetings are available in [TD139/WP2](https://www.itu.int/md/T17-SG16-190319-TD-WP2-0139) (Nov. 2018), [TD141/WP2](http://www.itu.int/md/T17-SG16-190319-TD-WP2-0141) (Feb. 2019) and [TD140/WP2](http://www.itu.int/md/T17-SG16-190319-TD-WP2-0140) (e-meeting). Work progressed in various work items.

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

The Keratin updates for the H.810 specifications (CDG 2017) were approved in the interim period, as well as four Corrigenda to the Iris-related (CDG 2016) conformance testing specifications approved in December 2017. In July 2018, six new and seven revised Recommendations of the H.820-H.850 were consented, bringing the conformance testing specifications for the Continua Design Guidelines in line with the latest edition ("Keratin")

The Technical Paper for trial implementation in HSTP-H810-FHIR remains in force, as the status in HL7 and PCHA is still the same.

At this meeting, revision is proposed for two texts, H.846 ([SG16-C430](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-C-0430)) and H.849 ([SG16-C432](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-C-0432)), to reflect updates in the Test Purposes for support of the power status monitor, amongst other minor corrections.

The Personal Connected Health Alliance (PCHAlliance) underscores the following interim activities pertaining to the ITU H.810-series and Continua:

* Assessing a deeper partnership with IHE for Standardization, Conformity Assessment and Marketing: This could lead to a consolidated set of profiles including both clinical and remote home monitoring (all in one common standard)
* Working with the Joint Initiative Committee (JIC) on standards and interoperability.

### Collaboration with WHO

* Safe listening: H.870 (ex F.SLD) Consented in July 2018 is now currently available in five other languages (Russian translation should be available shortly). WHO has also published an edited version of the standard as found in "Safe listening devices and systems: a WHO-ITU standard", <https://apps.who.int/iris/bitstream/handle/10665/280085/9789241515276-eng.pdf>
* A toolkit guiding policy makers, manufacturers and civil society on how to promote the adoption of ITU-T H.870 was developed by ITU and WHO, and can now be found online at <http://itu.int/go/safelistening/toolkit>
* An ITU/WHO video promoting the safe listening standard is found here: <https://youtu.be/Nm6T0f8SeHs>.
* 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 Rapporteur meeting in November 2018.
* The draft of the ITU/WHO toolkit for digital health platform implementation is complete and will be soon issued by BDT as a joint ITU and WHO publication.

### 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 of two years. 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 five working groups ([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)
Chair: Markus Wenzel (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)
* Health requirements (WG-HR)
Co-Chairs: Laragh Gollogly (WHO) and Ramesh Krishnamurthy (WHO)

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 four meetings since last TSAG meeting (Lausanne, Jan 2019; Shanghai April 2019; Geneva May 2019; and Zanzibar Sep 2019) and expanded the number of identified several use cases:

* [Cardiovascular disease risk prediction](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/cardio.aspx) (TG-Cardio)
* [Dermatology](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/derma.aspx) (TG-Derma)
* [Falls among the elderly](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/falls.aspx) (TG-Falls)
* [Histopathology](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/histo.aspx) (TG-Histo)
* [Neuro-cognitive diseases](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/cogni.aspx) (TG-Cogni)
* [Outbreak detection](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/outbreaks.aspx) (TG-Outbreaks) New
* [Ophthalmology](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/ophthalmo.aspx) (TG-Ophthalmo)
* [Psychiatry](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/psy.aspx) (TG-Psy)
* [Radiotherapy](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/radiotherapy.aspx) (TG-Radiotherapy)
* [Snakebite and snake identification](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/snake.aspx) (TG-Snake)
* [Symptom assessment](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/symptom.aspx) (TG-Symptom)
* [Tuberculosis](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/TB.aspx) (TG-TB)
* [Volumetric chest computed tomography](https://www.itu.int/en/ITU-T/focusgroups/ai4h/Pages/diagnosticct.aspx) (TG-DiagnosticCT)

The next meetings are planned in New Delhi (Nov 2019) and Brasilia (Jan 2020).

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-TD488](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-190923-TD-GEN-0488).

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

Under this scope a new Focus Group proposed by various ITU members was created on vehicular multimedia, to study the need for new vehicular multimedia standards based on space and terrestrial networks integration. The group has a life span of 2 years (see [TSAG-TD359](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-TSAG-181210-TD-GEN-0359) for details).

The management team is:

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

It held one meeting in Blackberry, Ottawa, Canada, October 2018 and the next meeting will be hosted by Honda in Tokyo, Japan, 23-25 January 2019. For more information, check <https://itu.int/go/fgvm>.

## Immersive Live Environments

Immersive Live Environments (ILE) studies have progressed under Q8/16 with one interim meeting in Seoul, 5-7 December 2018, see [TD73/WP3](https://www.itu.int/md/T17-SG16-190319-TD-WP3-0078).

The following liaison statements were received:

| TD | Source | Title | Questions |
| --- | --- | --- | --- |
| [SG16-TD260/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0260) | ISO/IEC JTC 1/‌SC29/WG11 | LS/r on MMT based ILE system (SG16-LS109) [from MPEG] | Q8/16 |
| [SG16-TD316/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0316) | ISO/IEC JTC 1/SC 29/WG11 | LS/r on ILE system (SG16-LS115) [from MPEG] | Q8/16 |

## 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 report of the 13th IRG-AVA meeting that took place in Geneva, 16 October 2018 (1530-1730 hours), under the auspices of ITU-R SG6, is found in [TD 136/WP2](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-WP2-0136).

Pradipta Biswas was appointed the IRG-AVA co-chair representing ITU-T SG9.

The next meeting will take place in Geneva on 6 June 2019.

Various LSs were exchanged by the IRG-AVA in the interim period:

| TD | Source | Topic |
| --- | --- | --- |
| [SG16-TD275/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0275) | IRG-AVA | LS on access systems being considered for broadcasting of other delivery media [from IRG-AVA] |
| [SG16-TD276/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0276) | IRG-AVA | LS on develop guidelines for closed and open signing [from IRG-AVA to JTC1/SC35] |
| [SG9-TD495/Gen](https://www.itu.int/md/T17-SG09-181121-TD-GEN-0495/en) | ITU-T SG9 | LS/o/r on cooperation on accessible audiovisual media standardization (IRG-AVA-LS7) [to ITU IRG-AVA] |
| [SG16-LS94](https://www.itu.int/net/itu-t/ls/ls.aspx?isn=20327) | ITU-T SG16 | LS on hearing devices [to IEC TC100, EHIMA, Bluetooth SIG, ITU-T IRG-AVA] |
| [SG9-TD351/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG09-181121-TD-GEN-0351) | IRG-AVA | LS/i/r on cooperation on accessible audiovisual media standardization (SC35 N2793) [from ITU IRG-AVA] |

### 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 ninth meeting, collocated with ITU-R Study Group 6 meeting in Geneva, on Monday, 22 October 2018 under the chairmanship of Mr. Marcelo MORENO (UFJF, Brazil). The first objective of that meeting was to share the latest development in the IBB-related work items of each parent Study Group. Another objective was to review the recent updates and proposals concerning Recommendation ITU-R BT.2075 “Integrated broadcast-broadband system” and Report ITU-R BT.2267 “Integrated broadcast-broadband systems”. Contributions from Brazil, Japan and Germany sent to ITU-R WP6B on these topics were discussed. One output Liaison Statement on the standardization of smart TV operating system was agreed and submitted to ITU-T SG9 (see SG16-TD304/GEN). The 9th IRG-IBB meeting report can be found in [SG16-TD210/WP1](https://www.itu.int/md/T17-SG16-190319-TD-WP1-0210) as well as ITU-R Document 6B/297-E (<https://www.itu.int/md/R15-WP6B-C-0297/en>).

IRG-IBB will continue its work by correspondence and future meetings may be agreed and scheduled via the mailing list (irgibb@lists.itu.int).

## Various collaboration matters

Coordinated activity will continue at this meeting with inter alia MPEG.

### ITU-T SG9

The Liaison Officer position is vacant.

No matters for immediate coordination with SG9 are expected. 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-TD281/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0281) | ITU-T SG9 | LS on AAP consent of draft new ITU-T J.1 (ex J.tda) "Terms, definitions and acronyms for television and sound transmission and integrated broadband cable networks" [from ITU-T SG9] | Q1/16 |
| [SG16-TD282/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0282) | ITU-T SG9 | LS on the amendment of Q9/9 ToR [from ITU-T SG9 to TSAG]  | Q21/16, Q13/16 |
| [SG16-TD283/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0283) | ITU-T SG9 | LS/r on updated reference table of ITU-T Recommendations to be used for conformity and interoperability testing (reply to SG11-LS63) [from ITU-T SG9 to SG11] | ALL/16 |
| [SG16-TD284/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0284) | ITU-T SG9 | LS/r on ITU inter-Sector coordination (reply to TSAG-LS11) [from ITU-T SG9 to TSAG] | QALL/16 |
| [SG16-TD285/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0285) | ITU-T SG9 | LS/r on the new version of the Home Network Transport (HNT) Standards Overview and Work Plan (reply to SG15-LS141) [from ITU-T SG9 to SG15]  | Q1/16 |
| [SG16-TD286/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0286) | ITU-T SG9 | LS/r on Telecommunication Management and OAM Project Plan (reply to SG2 LS73) [from ITU-T SG9 to ITU-T SG2] | Q1/16 |
| [SG16-TD287/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0287) | ITU-T SG9 | LS/r on hot topics (reply to TSAG-LS10) [from ITU-T SG9 to TSAG] | Q1/16 |
| [SG16-TD290/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0290) | ITU-T SG9 | LS/r on recent activities of Recommendations related to TVOS (SG16 LS88) [from ITU-T SG9] | Q13/16 |
| [SG16-TD291/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0291) | ITU-T SG9 | LS/r on recent activities of Recommendations related to IBB systems (reply to 6B/TEMP/175) [from ITU-T SG9] | QALL/16 |
| [SG16-TD292/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0292) | ITU-T SG9 | LS on draft Recommendation ITU-T J.298 "Requirements and technical specifications of cable TV hybrid set-top box that has the compatibility with terrestrial and satellite TV transport" [from ITU-T SG9] | QALL/16 |
| [SG16-TD293/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0293) | ITU-T SG9 | LS/r on cooperation on accessible audiovisual media standardization (reply to IRG AVA-LS7) [from ITU-T SG9] | Q26/16 |
| [SG16-TD294/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0294) | ITU-T SG9 | LS/r on Amendment 1 to Recommendation ITU-T J.302 (2016), "System specifications of augmented reality smart television service" (reply to SG12-LS53 and SG16-LS108) [from ITU-T SG9] | Q8/16 |
| [SG16-TD295/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0295) | ITU-T SG9 | LS on start of new draft Recommendations ITU-T J.cable-ott "System architecture and interfaces between a cable television operator and an OTT service provider" [from ITU-T SG9] | QALL/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 (F.SLD)

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

| TD | Source | Title | Questions |
| --- | --- | --- | --- |
| [SG16-TD288/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0288) | ITU-T SG12 | LS on responsibility for the Y.1550-series (WTSA Resolution 2, Annex C) [from ITU-T SG12 to TSAG] | Q1/16 |
| [SG16-TD296/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0296) | ITU-T SG12 | LS on New Recommendation Y.cvms, "Considerations for Realizing Virtual Measurement Systems" [from ITU-T SG12] | Q21/16, Q13/16 |
| [SG16-TD297/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0297) | ITU-T SG12 | LS/r on guidelines for safe listening devices (SG16-LS100) [from ITU-T SG12] | Q28/16 |

### 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-TD242/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0288) | ITU-R SG5 | LS/r on ITU inter-Sector coordination: ITU-R Working Parties 1A, 1B, and 1C versus ITU-T Questions (TSAG-LS11) [from ITU-R SG5 to TSAG] | Q1/16 |
| [SG16-TD273/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0273) | ITU-R WP6C | LS/r on progress on Advanced Immersive Audio-Visual (AIAV) systems for programme production and exchange in broadcasting (SG16-LS110) [from ITU R WP6C] | Q8/16 |
| [SG16-TD274/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0274) | ITU-R WP6B | LS on the latest development in integrated broadcast broadband systems [from ITU R WP6B] | Q13/16 |
| [SG16-TD279/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0279) | ITU-R 5A | LS on the definition of "V2X" [from ITU-D Q2/2] | Q27/16 |

### 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 [TD110/Plen](https://www.itu.int/md/T17-SG16-171016-TD-Plen-0110).

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

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

### ISO/IEC JTC 1

None at this meeting.

### Video and image coding

####  ISO/IEC JTC1 SC 29

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

SC 29 has not held a plenary meeting since the last meeting of SG16. Its last meeting was in San Diego, USA, on 21 April 2018, at which time it approved the further progress of work in JPEG and MPEG and approved the Terms of Reference of the ITU-T/ISO/IEC Joint Video Experts Team (JVET) for development of a next-generation standard for video coding. The next plenary meeting of SC 29 is scheduled for 13 July 2019 in Gothenburg, Sweden. In the interim, it has progressed work by ballot, primarily for approval of actions taken in JPEG and MPEG. At the request of JTC 1, it has also undertaken to study its scope and structure for reporting to JTC 1 in May 2019.

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

Historically, the JPEG group is a joint collaborative team between ITU‑T (now SG16 Q6/16) and ISO/IEC JTC1 SC 29/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 meeting of JPEG was held in Berlin, Germany, 7–13 July 2018 (overlapping with the previous SG16 meeting, but in a different location), and two other JPEG meetings were held during the interim period since the last meeting of SG16 – in Vancouver, Canada, 13–19 October and in Lisbon, Portugal, 19–25 January 2019. Another JPEG meeting was hosted by SG16 in the first week of this SG16 meeting at ITU headquarters in Geneva, Switzerland, 16–22 March 2019.

Version 2 of the common text "JBIG2" image coding standard ITU‑T T.88 | ISO/IEC 14492 was Consented at the previous meeting and was approved in the interim period. It includes the specification of a verification test procedure for JBIG2 encoders and decoders.

Five texts developed jointly with JPEG were prepared and forwarded for Consent at the current meeting of SG16:

* New Rec. ITU‑T T.873 (ex T.JPGRS), common text with ISO/IEC 10918-7 *Information technology-Digital compression and coding of continuous‑Tone still images: Reference software*
* Rev. Rec. ITU‑T T.800 V3, common text with ISO/IEC 15444-1 (v4) *Information technology-JPEG 2000 image coding system: Core coding system* [revision to specify signalling for profiles and extended capabilities]
* New Rec. ITU‑T T.814 (ex T.HTJ2K), common text with ISO/IEC 15444-15 *Information technology – JPEG 2000 image coding system: High‑throughput JPEG 2000* (HTJ2K)
* New Rec. ITU‑T T.815 (ex T.HEJ2K), common text with ISO/IEC 15444-16 *Information technology-JPEG 2000 image coding system: Encapsulation of JPEG 2000 images into ISO/IEC 23008-12*
* Rev. Rec. ITU‑T T.832 V4, twin text with ISO/IEC 29199-2 (2012 v3) Amds. 2 and 3, *Information technology – JPEG XR image coding system – Image coding specification*. This revision includes additional colour signal type identifiers and support for JPEG XR coding in the ISO/IEC 23008-12 file format.

Two additional texts are currently under development in JPEG with joint approval expected in 2020. These are amendments to Rec. ITU‑T T.803 (2002) | ISO/IEC 15444-4 and Rec. ITU‑T T.804 (2015) | ISO/IEC 15444-5 to specify conformance and reference software for the JPEG 2000 family of standards with support for the new T.814 high‑throughput JPEG 2000 coding options (common text with ISO/IEC 15444-15, as noted above).

Other 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, and systems support for image coding. A new project has been launched with the nickname "JPEG XL" for next-generation image compression. This may include the support of reversible transcoding of images encoded using the older JPEG coding format. Recent proposals have also been considered to extend the subjective quality assessment methodology specified in ISO/IEC 29170 to include 3D image quality assessment. This other recent new work has so far not been planned within SG16 for joint approval by ITU‑T.

Updated information about its work had been provided by JPEG in the liaison statements in [SG16-TD245/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0245), [SG16-TD246/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0246), and [SG16-TD305/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0305) since the previous meeting of SG16.

Q6/16 produced a reply liaison statement to JPEG, requesting to be kept informed of relevant work as events proceed.

A liaison statement relating to the use of the original JPEG image coding standard (Rec. ITU‑T T.81 | ISO/IEC 10918-1) for coding animated sequences of images was received from Ecma International as [SG16-TD332/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0332), which had also been sent to ISO/IEC JTC 1/SC 29/WG 1 (JPEG). A letter on this topic had also been received from Ecma at the previous meeting of SG16. This LS had been discussed in the WP3/16 opening plenary and was noted by Q6/16 to request members to consider their potential interest in such a project. Further consideration of the topic may take place within ISO/IEC JTC 1/SC 29/WG 1.

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

The SG16 Liaison Officer into MPEG concerning collaboration on video coding is Mr Gary Sullivan (Microsoft, USA). The video coding work has been very active, attracting more than 300 participants at the previous joint collaborative team meetings in April 2018 and more than 400 contributions for the current meetings.

In addition to the outcomes in §2, the following was reported to SG16.

Video coding work is currently being conducted jointly with ISO/IEC JTC 1/SC29/WG11 (MPEG), especially in two joint collaborative teams (JCTs) known as the Joint Video Exploration 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), a future video coding standard with substantially improved coding performance relative to HEVC. 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), with maintenance and minor extension of Advanced Video Coding (AVC, Rec. ITU‑T H.264, twin text with ISO/IEC 14496-10) and with developing non-normative technical supplement 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.

In addition to these primary efforts affecting the HEVC and AVC twin text standards, the development work in JCT-VC has included consideration of maintenance and minor enhancements to HEVC and AVC and the development of (twin text) associated conformance testing and reference software specifications.

A meeting of MPEG was held in a collocated fashion during the current meeting of SG16, and a joint meeting session was held by Q6/16 and MPEG at this meeting. The current status of collaboration between SG16 and MPEG had been summarized in [SG16-TD249/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-PLEN-0249), and an updated liaison letter communicating the current status was received from MPEG was received in [SG16-TD315/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0315). The prior liaison letters [SG16-TD243/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0243) and [SG16-TD259/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0259) had been discussed and responded to at the interim meetings of Q6/16.

The JVET project to develop the new VVC standard has become the primary recent activity in collaborative work between SG16 and MPEG, e.g., as measured by number of contributions and number of participants. The video coding work in JVET has been very active, attracting 250-300 participants at each of the JVET meetings in the past year, and more than twice that number of contribution documents per meeting. The target date for completion of the new joint standard is mid-2020.

Meetings of the JCT-VC and JVET were hosted by ITU‑T SG16 in Ljubljana, Slovenia, during the previous meeting of ITU‑T SG16. The JCT-VC and JVET (under the purview of Q6/16) had each also held two additional meetings (in Macao, China, October 2018 and in Marrakech, Morocco, January 2019) in the interim period since the last meeting of ITU‑T SG16 and were also each holding another meeting under SG16 auspices during the current meeting in Geneva, Switzerland.

At the previous meeting of SG16, a revised (V5) edition of ITU‑T H.265.1 (V3), the conformance specification for ITU‑T H.265 high efficiency video coding (HEVC), had been Consented. It was subsequently approved without any comments submitted in response to the Last Call. It included the addition of conformance tests for the HEVC screen content coding extensions and non-intra high‑throughput profiles of HEVC.

Miscellaneous proposals and minor extensions for information to be carried in AVC and HEVC bitstreams as supplemental enhancement information (SEI) and video usability information (VUI) have remained a topic of this work and coordination. Revisions of both AVC and HEVC were produced for Consent at the current meeting of SG16 to include the outcome of such work.

At this meeting, the work of JCT-VC was completed to prepare H-series Supplement 19 (ex H.UVSTCP) for Approval, which contains information on prevalent industry usage of video signal type code points for content production and media exchange. The later development of a revision of this supplement was also planned. A LS was prepared by Q6/16 to send to a number of organizations to inform them about this new Supplement.

[SG16-TD332/Gen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0332) was received regarding an issue that was corrected in Recommendation ITU-R BT.2100-2. The effect of the corrective action by ITU-R was taken into account in the revisions of AVC and HEVC that were forwarded for Consent. The issue will also be taken into account in future work of Q6/16 on T.832 (JPEG XR) and H.273 (CICP). A reply was sent to ITU-R SG6 to thank them for the information about the problem.

Several video-related projects have recently been planned or launched in MPEG that *are not* currently planned as joint work with SG16. One of these is the development of a new video coding format with enhanced compression performance relative to HEVC, which is proposed to become known as "MPEG-5 Essential Video Coding" (EVC) ISO/IEC 23094-1. It has a relatively rapid standardization timeline, with development intended to be completed in early 2020. The proposed EVC project is said to be motivated by combination of business and technology requirements. The new standard is planned to have 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 is encouraged, and coding efficiency is expected to be somewhat better than that of HEVC, although not quite as high as that of VVC.

Additional new work has also started in MPEG towards standardization of low-complexity video coding enhancements (LCVCE) and metadata for enhanced three-degree of freedom "3DoF+" visual coding.

A joint discussion session was held between Q6/16 and MPEG on Tuesday 26 March 2019 to discuss these recent new projects being developed in MPEG.

Q6/16 participants have expressed a variety of views about the EVC project, and some indicated they had strong concerns about it. Q6/16 had communicated to MPEG that such a project could potentially confuse and fragment the industry community of technology adopters and affect perception of MPEG's degree of commitment to the success of the joint VVC project. Q6/16 had requested updated information via liaison communication about status and project plans for this new work

MPEG has proceeded with this EVC project, although during the joint meeting, it was expressed by the MPEG convenor that the VVC project remains the "flagship" video coding effort of MPEG and that much of MPEG's other work on systems technology and video-related topics is primarily focused on the use of VVC. The EVC project has moved forward and received additional technical contributions to improve its video compression capability to the degree that it is relatively close to that of VVC., The first ballot in the ISO/IEC approval process for the EVC standard is expected to be opened in July 2019, although to date it had a lower participation effort than the VVC project.

The latest status of MPEG work on LCEVC and 3DOF+ was also discussed at the joint meeting. Calls for proposals on these topics had been issued, and responses had been evaluated, such that MPEG planned to proceed with standardization. The possibility of joint collaborative development with Q6/16 for some of the new MPEG projects was discussed. However, with these several projects in MPEG moving forward very rapidly and a lack of confident assessment of these efforts in Q6/16, it was concluded that Q6/16 would not join MPEG for collaborative development of these standards.

Q6/16 produced a reply liaison statement to MPEG, requesting to be kept informed of relevant work as events proceed.

The Q6/16 ad hoc group on study of requirements for future applications, devices, and formats related to the work of Q6/16 was planned to continue, coordinated by Thomas Wiegand, Kei Kawamura and Rickard Sjöberg, with the following mandates: 1) Review and update requirements for next-gen video coding beyond HEVC, 2) Identify trends in the evolution of formats, 3) Identify new applications for digital video and their requirements, 4) Estimate development of devices and computing evolution, 5) Study network transport issues, 6) Identify other application requirements related to video coding standardization in Q6/16. AHG discussions were to be held on the main Q6/16 (VCEG) e-mail reflector.

### ISO TC22 SC31 WG8

SG16 agreed to an invitation from ISO/TC22/SC31/WG8 to establish a **joint project team (JPT)** with Q27/16 to work on a **vehicle domain service (VDS)** specification.

This joint group will be based on Supplement 5 to the A-series adapting the procedures for JTC1 groups in Recommendation ITU-T A.23 Annex A. The draft ToR in [[SG16-TD158/WP2](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-WP2-0158)] for the JPT-VDS were refined in the interim period in consultation with ISO experts, targeting at approval at the SG16 meeting in October 2019.

At WP2/16 meeting on 14 June 2019, WP2/16 reviewed the preliminary results of the proposed collaboration between Q27/16 and ISO/TC22/SC31/WG8 (VDS) [[SG16-TD192/WP2](https://www.itu.int/md/T17-SG16-190614-TD-WP2-0192/en)] and agreed to propose that SG16 considers at its opening plenary the approval to create a Joint Project Team with WG8 on vehicular domain service (JVDS).

### 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) (two LSs received, [SG16-TD307/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0307) and [SG16-TD277/Gen](https://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-190319-TD-GEN-0277) respectively).

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 KawamoriEmail: masahito.kawamori@ties.itu.int |
| [W3C](http://www.w3.org/)World Wide Web Consortium (IPTV and e-health)  | Mr Masahito KawamoriEmail: 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.

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