|  |  |  |
| --- | --- | --- |
| ITU logo | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATIONSTANDARDIZATION SECTOR**STUDY PERIOD 2017-2020 | **DOC 42** |
| **Collaboration on Intelligent Transport Systems Communication Standards** |
| **Original: English** |
|  | E-meeting, 23 September 2022 |
| **DOCUMENT** |
| **Source:** | Chairman, Collaboration on ITS Communication Standards |
| **Title:** | Draft Report (CITS meeting, 23 September 2022) |
| **Purpose:** | Admin |
| **Contact:** | T. Russell ShieldsQualcomm AutomotiveUnited States | Email: russell.shields@outlook.com  |

**Draft Report – Meeting of Collaboration on ITS Communication Standards**

***(23 September 2022, E-meeting)***

[***http://www.itu.int/go/ITScomms***](http://www.itu.int/go/ITScomms)

# 1 Introduction

The meeting of the Collaboration on ITS Communication Standards (CITS) took place virtually on 23 September 2022. T. Russell Shields (Qualcomm Automotive) chaired the meeting supported by Stefano Polidori (ITU/TSB Advisor), Mythili Menon (ITU/TSB Project Officer) and Carolina Lima (ITU/TSB Study Group Assistant).

The [recording](https://itu.zoom.us/rec/share/bFBwshIwQTMkTXcbthimfOE3UFGlPkOK9_SYbRZyGCf4xqoMcy_nBDdUqCLj2M61.xEufD3htCu71HqbW) of the meeting was made available from [CITS webpage](http://www.itu.int/go/ITScomms).

# 2 Opening, meeting participants and adoption of the agenda

**T. Russell Shields**, Chair of CITS, started the meeting and welcomed the participants. In line with its scope, CITS continues to facilitate the coordination of internationally accepted, harmonised set of ITS communication standards of the highest quality in the most expeditious manner possible to enable the rapid deployment of fully interoperable ITS communication-related products and services in the global marketplace.

Mr Shields thanked the representatives for providing updates to this meeting and for facilitating the exchange of information related to ITS communications standards from their respective organizations to the database being maintained by CITS. Based on the presentations and related discussions at the CITS meetings, the ITS Communication Standards Database will be continuously updated with relevant standards from Standards Development Organizations (SDOs) and other relevant entities.

**64** participants joined the meeting representing many SDOs and other stakeholders. The list of participants is available in [[DOC 41](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/41_List_of_participants.pdf)].

**41** meeting documents were submitted. This meeting report was posted after the meeting as Doc 42. All related meeting documents are openly accessible on the CITS site [here](https://www.itu.int/en/ITU-T/extcoop/cits/Pages/mdocs.aspx?Paged=TRUE&p_SortBehavior=0&p_FileLeafRef=27%5fITU%2dR%5fSG5%5fstatus%5freport%2epdf&p_ID=820&RootFolder=%2fen%2fITU%2dT%2fextcoop%2fcits%2fDocuments%2fMeeting%2d20220923%2de%2dmeeting&PageFirstRow=31&&View=%7b0A39776B-5FED-4F48-94DB-F05F290ECE45%7d). The meeting was recorded and is available from the [CITS webpage online](http://www.itu.int/go/ITScomms).

The draft agenda as contained in [[Doc 01R3](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/01R3_CITS_Chair_draft_agenda.docx)] was adopted.

# 3 Status of ITS communications work in SDOs

## 3.1 [SAE International/SAE C-V2X](http://profiles.sae.org/tevcsc2/)

[[Doc 34](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/34_SAE_International_status_report.pptx)] was submitted and presented by William (Bill) Gouse *(SAE International)*.

In terms of ongoing standards activity, SAE is engaged with the development of the following:

* J3234/2 ™ WIP: Active Safety Roadside Concrete Divider Surrogate Recommendation
* J3240™ WIP: Passenger Vehicle Lane Departure warning and Lane Keeping Assistance Systems Test Procedure
* J3262 ™ WIP: Active Safety Systems Sensor Calibration Terms and Definitions
* J3063 ™ WIP: Active Safety Systems Terms and Definitions (\* Document Update)
* J3029 ™ WIP: Forward Collision Warning and Mitigation Vehicle Test Procedure - Truck and Bus
* Safety and Human Factors Standards Related to ADAS
* J3045™: Truck & Bus Lane Departure Warning Systems Test Procedure
* J3048™: Driver-Vehicle Interface Considerations for Lane Keeping Assistance Systems
* J2400™: Human Factors in Forward Collision Warning Systems Operating Characteristics & User Interface
* J2972™ WIP: Definition of Hands-Free Operation of a Person-to-Person Wireless Communication System or Device
* J2399™: Adaptive Cruise Control Operating Characteristics & User Interface
* J2808™: Road/Lane Departure Warning Systems: Information for the Human Interface
* J3077™: Definitions and Data Sources for the Driver Vehicle Interface (DVI)
* J3265™WIP: Naming Methodology for Driver Assistance and Automation
* J2802™: Blind Spot Monitoring System Operating Characteristics and User Interface

SAE has also involved in additional Committee Activity for developing automation standards including:

* Driving Automation Systems
* ADS Logger Task Force
* ADS Lamps Task Force
* Driving Skills Committee

## 3.2 [5GAA](http://5gaa.org/)

[[Doc 38](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/38_5GAA_status_report.pdf)] submitted and presented by Maxime Flament *(CTO, 5GAA)*.

5GAA bridges the automotive and telecommunication industries in order to address society’s connected mobility needs bringing inclusive access to smarter, safer and environmentally sustainable services and solutions, integrated into intelligent road transportation and traffic management. The two pillars of its work include: automotive industry and telecommunications

The latest publications include:

* 5GAA Whitepaper on Misbehavior Detection
* V2X Direct communication
* Report on automated valet parking
* Conformity Assessment Strategy Evaluation

## 3.3 [ETSI TC ITS](https://www.etsi.org/committee/1402-its)

[[Doc 35](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/35_ETSI_TC_ITS_status_report.pptx)] was submitted and presented by Niels Peter Skov Andersen *(Chair ETSI TC ITS)*.

The presentation delved into the scope of ETSI TC ITS which includes communication media, and associated physical layer, transport layer, network layer, security, lawful intercept and the provision of generic web services.

The main areas of focus of ETSI TC ITS are:

* Cooperative Intelligent Transport Systems. This includes:
* Maintenance of existing standards
* Further elaboration of standards
* Test specifications for the developed standards
* Test specification from European Fee Collection
* MirrorLink in collaboration with Connected Car Communication Consortium

The presentation also contained information on TR 102 607 ver. 1.2.1 provides and overview of relevant ETSI standards. The specifications have been updated to separate access layer dependent parts and access layer agnostic parts. The specifications available for support of ITS G5 and LTE-V2X PC5 as access layer for short range communication.

## 3.4 [Car2Car Communication Consortium](https://www.car-2-car.org/)

[[Doc 36](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/36_Car2Car_Communication_Consortium_status_report.pptx)] was submitted and presented by Niels Peter Skov Andersen *(General Manager C2C-CC)*. C2CC supports V2X deployment.

The C2C-CC is a non-profit organization initiated and formed 2002 by European vehicle manufacturers. The main objectives include:

* Support the Vehicle2X deployment
* Develop guidelines for a Car2Car communication system
* Develop realistic deployment strategies
* Establish open European standards for a Car2Car communication system
* Push harmonisation of C2C Communication Standards worldwide
* Use of Free of charge European wide exclusive frequency band (5.9 GHz)
* Establish the necessary profiling of standards

Currently, Car2Car Communication Consortium is involved in the following:

* Requirement Harmonization Framework
* Release Management Tailoring
* Configuration Management
* Improve Implementation Requirements of SPATEM and MAPE
* Update of Gateway PP
* "Evaluation and certification of HSM PP"
* Evaluation and certification of Gateway (VCS) PP
* Potential alternative assurance / certification approach
* Tooling update: Issue tracking and test data basis (Bugzilla and TestLink)
* Misbehaviour Detection
* event\_History
* Support of Aftermarket Equipment

## 3.5 [WWRF VIP WG The Connected Car](https://wwrf.ch/)

[[Doc 32](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/32_WWRF_Connected_Car_VIP_WG_status_report.pptx)] was submitted and presented by Seshadri Mohan *(Chair, WWRF VIP CV WG)*.

VIP CV WG on The Connected Vehicle focuses on research that looks five to ten years ahead in order to meet the requirements of the automotive and transport industries based on the next generation wireless technology. It also is aimed at the identification of use cases for these industries. The CV White Paper (WWRF Outlook 25), already published, is being considered for possible inclusion as a book chapter in a suitable publication. A second white paper on connected vehicles is underway on the topic of ‘The Role of AI/Machine Learning in Connected Vehicles.’ Members of Telecommunications Standards Development Society, India (TSDSI), and other organizations have formed a team to partner with WWRF CV VIP working group to develop the white paper.

The WWRF 48 will be held in UAE, 6 – 9 November 2022.

## 3.6 [C-SAE](http://www.csaeconf.org/)

[[Doc 19](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/19_CSAE_status_report.pdf)] contains the status update from China SAE. The presentation highlighted that China Industry Innovation Alliance for the Intelligent and Connected Vehicles (CAICV) was initiated by China SAE and the China Association of Automobile Manufacturers (CAAM), with the support of MIIT. CAICV has more than 500 members, including companies, universities, and institutes from the automotive, telecommunication, transportation, and internet industries. CAICV has 13 working groups for different technical fields.

The published standards from C-SAE include:

* Cooperative Intelligent Transportation System—Vehicular Communication Application Layer Specification and Data Exchange Standard (Phase I and Phase II)
* Data Exchange Standard for High Level Automated Driving Vehicle Based on Cooperative Intelligent Transportation System
* LTE-Based Vehicular Communication—Direct Communication System Roadside Unit Technical Requirements
* Test and Evaluation Methods for V2X System Warning Application Function of Intelligent and Connected Vehicles
* Collaborative Intelligent Transportation Systems—Application Layer Interaction Technical Requirements Part 1: Intention and Cooperation

## 3.7 [TTC WG on Connected Car](https://www.ttc.or.jp/e)

[[Doc 26](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/26_TTC_Connected_Car_WG_status_report.pptx)] was submitted and presented by Hideki Yamamoto *(TTC-Telecommunication Technology Committee)*.

The presentation highlighted the role of TTC or in other words Telecommunication Technology Committee as an incorporated association that contributes to standardization activities in the field of ICT in Japan.

Within TTC, the Working Group on Connected car (WG-Connected Car) was established to discuss standardization issues related to the domain of connected cars. It was noted that WG-Connected car is contributing to not only local standardization but also regional and international standardization (APT & ITU-T).

During the presentation, the V-Hub System was also underscored as the entire information and communication system during disasters. V-HUB vehicles have engine or motor, battery, and communication unit. In this context, V-HUB will be useful when disaster occurs and, in the scenario, wherein both electric power line and fixed communication network are disconnected.

The conceptual architecture of V-HUB was also presented consists of wireless network interface and application interfaces.

In the context of standardization, TTC proposed to establish the new work item for V-HUB in – Asia Pacific Telecommunity Standardization Program (ASTAP) in 2014. ASTAP has approved the recommendation on V-HUB.

The presentation also provided an overview of the standardization of the V-HUB in Japan. A Japan-specific guideline for V-HUB was established in close cooperation with Communications and Information network Association of Japan (CIAJ). In terms of current activities, TTC is introducing this guideline through related events and seminars.

TTC will continue to explore new themes within this domain, as engaged in SG16, SG17, SG20.

## 3.8 [TSDSI](https://tsdsi.in/)

[[Doc 37](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/37_TSDSI_status_report.docx)] was submitted and presented by Hemant Jeevan Magdum. Telecommunications Standards Development Society, India (TSDSI) is an autonomous, membership based, SDO for Telecom/ICT products and services in India. It develops standards for access, back-haul, infrastructure systems, solutions and services that best meet India specific Telecom/ICT needs, based on research and innovation in India. It works closely with global SDOs to reflect Indian requirements into International telecom/ICT standards.

In terms of ongoing work, TSDSI is engaged in the following activities:

* The TSDSI Study Group – Services and Solutions is working towards a pilot to study the use cases of a connected ambulance for monitoring of patients over 5Gi [5Gi ITU Press] video and “Emergency Road Green channel” using C-V2X in phases.
* Bureau of Indian Standards (BIS) is working on the standardization of information, communication and control systems in the field of urban and rural surface transportation, including intermodal and multimodal aspects thereof, traveller information, traffic management, public transport, commercial transport, emergency services and commercial services in the intelligent transport systems under TED 28 on Intelligent Transport Systems. In addition, standardization related to Unmanned Aerial Vehicles (UAV) including
* CDAC – Intelligent transportation and networking section launched three products Onboard Driver Assistance and Warning System (ODAWS), Bus priority Application for isolated signalised intersection and oneM2M based common service layer (Common service iot connective- CoSMiC). Also, CDAC is working on following products which are planned for realization are:

 Traffic estimation based on Wi-Fi sensor

* + Departure Time Planner mobile app
	+ Personalized Transit Route Guidance mobile app
	+ Web based Operational Software tool for managing Headway Reliability of public transport Fleet Management System
	+ Sugar crystal characterization using CMOS camera - Industrial Application
	+ Traffic detection using thermal camera – Road traffic application
	+ Image Vision Development Tool,
	+ Desktop based Driving simulator software and
	+ Universal AI compatible traffic controller.

## 3.9 [ISO TC241](https://www.iso.org/committee/558313.html)

[[Doc 20](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/20_ISO_TC_241_status_report.pptx)] was submitted and presented by Dave Conway *(Convenor WG6)*.

The presentation underscored the scope of ISO 39003 – Road Traffic Safety (RTS) — Guidance on ethical considerations relating to safety for autonomous vehicles.

ISO39003 standard will address:

* Methodology for Identification and Evaluation of aspects
* Those aspects that should be considered,
* Possible outcomes of those decisions

## 3.10 [CEN TC278](https://www.itsstandards.eu/)

[[Doc 28](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/28_CEN_TC_278_status_report.pptx)] was submitted and presented by Hans Nobbe.

The main focus areas of CEN TC278 include:

* Automated and connected vehicles
* Automated emergency call
* Electronic fee collection
* Mobility

## 3.11 [ARIB](http://www.arib.or.jp/english/index.html)

[[Doc 18](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/18_ARIB_status_report.zip)] was submitted and presented by Takahiro Yokoyama.

Through this presentation a brief introduction was provided about ARIB. It serves as a forum for standardization, research and development and promotion of ITS.

The main standards being developed relate to:

* 700 MHz Band Intelligent Transport Systems
* Dedicated Short-Range Communication System Test Items and Conditions for Mobile Station Compatibility Confirmation
* Operation Management Guideline for Driver Assistance Communications System
* Security Guidelines for Driver Assistance Communications System
* Extended Functions Guideline
* Test Items and Conditions for Mobile Station Interoperability Verification Guideline
* Experimental Guidelines for Infrastructure-to-Infrastructure Communications
* Experimental Guidelines for Infrastructure-to-Infrastructure Communications
* Experimental Communication Messages Guidelines of Bicycle/Pedestrian Accident Prevention Support System

## 3.12 [IEEE 1609 WG VT/ITS](https://standards.ieee.org/project/1609_2_1.html)

[[Doc 33](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/33_IEEE_1609_WG_status_report.pptx)] was submitted and presented by Justin McNew *(IEEE 1609 Chair)*.

Through the presentation, it was highlighted that the revision of1609.2. No other document revisions are currently planned as the group is still awaiting the updated Federal Communications Commission (FCC) rules regarding C-V2X.

Additionally, WG will consider 1609.3 revision after FCC rulemaking

## 3.13 [IEEE 802.11 TGbd](https://www.ieee802.org/11/Reports/tgbd_update.htm)

[[Doc 24](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/24_IEEE_802-11_TGbd_status_report.pdf)] was submitted and presented by Bo Sun.

Through this presentation, it was underscored that IEEE 802.11 has resumed in-person meeting from May 2022

IEEE P802.11bd had a 75% support ratio for the first draft IEEE P802.11bd amendment standard – D4.0.

The TGbd CRC has resolved over 150 comments received during SA Ballots till Sep. The IEEE 1609 experts provided valuable comments and participated actively in the comment resolution discussion through WG Letter Ballots and SA Ballots • IEEE 802 has sent IEEE P802.11bd D4.0 to ISO/IEC JTC1 SC6 for PSDO process liaison.

Additionally, the TGbd has updated its timeline as in following slide to accommodate the potential milestone change in the future

## 3.14 [CCSA](http://www.ccsa.org.cn/english/tc.php?tcid=tc10)

[[Doc 29](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/29_CCSA_TC10_status_report.pdf)] was submitted and presented Ge Yuming.

CCSA comprises of the following Technical Committees:

* TC1: Internet and application
* TC3: Network
* TC4: Communication power supply &
* station operational environment
* TC5: Wireless communication
* TC6: Transport and access network
* TC7: Network management & operation support
* TC8: Network & information security
* TC9: Electromagnetic environment &protection
* TC10: IoT
* TC11: Mobile internet application and terminal technical
* TC12: Aerospace Communication Technology

The main standards developed by CCSA include:

* Technical Requirements of Message Layer of LTE-based Vehicular Communication
* Test Method of Message Layer of LTE-based Vehicular Communication
* The Requirements Standard for Enhanced V2X Application Layer Data Interaction
* Application Identity Assignment and Mapping of LTE-based Vehicle Wireless Communication Technology
* High Level Autonomous Driving Data Interaction Content based on Vehicle Infrastructure Cooperation
* Use Case and Technical Requirements of V2X based on Mobile Internet

## 3.15 TIAA

[[Doc 22](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/22_Changan_Automobile_on_behalf_of_TIAA_status_report.pdf)] was submitted by Sherry Li, Changan Automobile, China. This presentation focussed on the development of Intelligent and Connected Vehicles (ICVs) in China. In terms of next generation of vehicles, ICVs are gaining traction, with the incorporation of digital products.

With the adoption of the 13th Five-Year Plan to promote the standardized and orderly development of ICVs, China has accelerated the formulation of information security related laws and regulations for information network and data security. China is also actively creating state-level ICV pilot areas and demonstration areas to jointly promote the cross-industry integration of ICVs, artificial intelligence and intelligent transportation. In addition, intelligent network test and demonstration applications are also gradually carried out on expressway. Changan Automobiles is also dedicating its efforts towards ICVs, with We have 12 records with intelligent driving and were ranked first in i-VISTA China Intelligent Vehicle Index for the third consecutive years. More than 40 technologies including: ACC/IACC/AEB/FCW/APA have been mass produced. 14 industry-first technologies among Chinese brands including AEB-P, IACC,

L3 ADAS has been mass produced in March 2021. The presentation also elaborated that Changan won the Gold Prize of the World Intelligent Driving Challenge, setting the industry benchmark of intelligent driving in China.

To complement this presentation, Mr. Jinling Hu also presented the C-V2X developments in China [[Doc 25](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/25_Datang_Gohigh_on_behalf_of_TIAA_status_report.pdf)].

During the presentation, it was highlighted that the domain of C-V2X combines short-range medium-range and long-range communication to more effectively support diversified V2X. For this topic, there has been cross-industry coordination in China including active standardization and alliances being formed including: CCSA. C-V2X WG, TIAA, C-ITS/ITSC, CSAE and NTCAS. This presentation also highlighted the main ongoing work-items in this field such as (but not limited to):

* C-V2X and Driving Automation Fusion (under C-V2X WG)
* Technical Requirement of Authentication and Authorization System for C-V2X Vehicular Communication applications (CCSA)

Ministry of Industry and Information Technology (MIIT) has also been actively promoting the development of ICV pilot areas.

* Requirements and capability framework of digital twin for intelligent transport system
* Use cases, requirements and capabilities of IoT infrastructures in roadside traffic perception system
* Requirements of smart charging service for electric vehicles

## 3.16 IEC SEG11

[[Doc 12](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/12_IEC_SEG11_status_report.pdf)] was submitted and presented by Feng Ni Convenor of SEG 11. The aim of SEG11 is:

* Collect best practices and use cases of public, shared transportation for developed and
* developing economies.
* Engage with TC/SCs including ISO and other market stakeholders on status and use of existing
* standards and on the need for new standards related to Future Sustainable Transportation.
* Formulate recommendations to SMB as appropriate.
* Carry out outreach activities to attract new stakeholders for IEC’s technical work

In June 2022, a proposal for SyC on “Sustainable Electrified Transportation” was approved. This new SyC will explore various topics including smart energy in the scope of smart cities, Intelligent Transport Systems (ITS), communication, automated driving etc.

# 4 Status of ITS communications work in UNECE and ITU

## 4.1 [UNECE WP.29 GRVA](https://wiki.unece.org/pages/viewpage.action?pageId=40829521)

[[Doc 39](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/39_UNECE_WP29_GRVA_status_report.pdf)] was submitted and presented by Francois Guichard (Secretary). The presentation elaborated on the Global initiative to tackle Automated and Connected Vehicles Framework Document for Automated Vehicles (FDAV), which will focus on:

* Functional Requirements for Automated Vehicles (FRAV)
* Validation Method for Automated Driving (VMAD)
* Data Storage System for Automated Driving (DSSAD) +
* Event Data Recorder (EDR)
* Cybersecurity and (OTA) software updates

## 4.2 [Overview of all ITS work items in ITU](http://www.itu.int/en/ITU-T/extcoop/cits/Documents/ITS-work-items.xlsx)

The [spreadsheet](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/ITS-work-items.xlsx) (freely available online) contains information about all ITS related work items in ITU. Covering the work of ITU-T (Study Groups 12, 13, 16, 17, 20) and ITU-R (WP5A), the spreadsheet will be updated based on inputs received from constituent Study Groups and other relevant groups.

## 4.3 [ITU-R WP5](https://www.itu.int/en/ITU-R/study-groups/rsg5/Pages/default.aspx)

[[Doc 27](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/27_ITU-R_SG5_status_report.pdf)] was submitted and presented by Uwe Loewenstein, Counsellor, ITU-R WP5.

The ITS-related work is carried out within:

* WP 5A (Land Mobile except IMT): Currently focussed on the revision of:
* Rec. M.2121 (01/19) - Harmonization of frequency bands for ITS in the mobile service
* Rec. M.2444 (11/18) - Examples of arrangements for ITS deployments under the mobile service
* WP 5D (IMT): Currently focussed on the revision of:
* Rec. M.1036-6 (10/19) – IMT Frequency arrangements
* Rec. M.2150-1 (02/22) – Terrestrial Radio interface standards for IMT-2020

The following Reports are also being drafted:

* ITU-R M.[CAV] – Connected Automated Vehicles
* The use of the terrestrial component of IMT for the Cellular-Vehicle-to-Everything

## 4.4 ITU-T [SG16](https://www.itu.int/en/ITU-T/studygroups/2017-2020/16/Pages/default.aspx) ([Q27/16](http://www.itu.int/ITU-T/workprog/wp_search.aspx?isn_sp=3925&isn_sg=3934&isn_qu=4207&isn_status=-1,1,3,7,2&details=0&field=acdefghijo))

[[Doc 23](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/23_ITU-T_SG16_status_report.pptx)] was submitted and presented by Hideki Yamamoto *(Vice-chairman, SG16)*.

The presentation recapped that ITU-T SG16 is divided into the following Working Parties:

• WP1/16 – Multimedia content delivery

• WP2/16 – Multimedia e-services

• WP3/16 – Media coding and immersive environments

In total, fourteen Questions exist under ITU-T SG16, and working party structure will be decided in the first SG16 meeting (Geneva, 17-28 October 2022).

ITU-T SG16 established the Focus Group AI for autonomous and assisted driving (FG-AI4AD) in October 2019. FG-AI4AD supports standardization activities for services and applications enabled by AI systems in autonomous and assisted driving. It focuses on the behavioural evaluation of AI responsible for dynamic driving tasks, to ensure that performance of AI on roads meets, or exceeds, the performance of a competent and careful human driver, and, consequently, to build public trust in these technologies. FG-AI4AD has completed the deliverable on “Automated driving safety data protocol ethical and legal considerations of continual monitoring”. The next and final FG-AI4AD Meeting will take place, 28 – 29 September 2022.

Previously, ITU-T SG16 has also established the Focus Group on Vehicular Multimedia (FG-VM) in July 2018. FG-VM aimed to identify gaps in the vehicular multimedia standardization landscape and eventually draft technical reports and specifications covering, among others, vehicular multimedia use cases, requirements, applications, interfaces, protocols, architectures, and security, leveraging from previous work done by ITU in this field. FG-VM has completed the two deliverables and transferred to SG16 and subsequently, SG16 has approved two Recommendations based on these two deliverables. FG-VM concluded its activities on 1 September 2022. FGVM-03 "Implementation Aspects of Vehicular Multimedia”. This document will be treated as the last deliverable of FG-VM to SG16, the parent SG of FG-VM.

Q27/16 agreed to create the provisional new work item on Implementation Aspects of Vehicular Multimedia which is based pm third deliverable of FG-VM.

Additionally, through the presentation, it was underscored that Q27/16 progressed the work of four draft Recommendations: F.VG-AD-Reqs, “Vehicle information requirements of vehicle gateway platform to support automated driving”. It was noted that Q27/16 will be held in SG16 meeting (17-28 October 2022) in Geneva, Switzerland.

## 4.5 Focus Group on Vehicular Multimedia ([FG-VM](https://www.itu.int/en/ITU-T/focusgroups/vm/Pages/default.aspx))

[[Doc 21](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/21_FG-VM_status_report.pptx)] contains the status update from FG-VM. This presentation focussed on the activities of Working Group 3 which prepared a Technical Report on Implementation Aspects of Vehicular Multimedia. The activities within WG3, under the chairmanship of Mr Francois Fischer (Huawei) were initiated in February 2021 and was completed in September 2022. The Technical Report was approved by FG-VM on 1 September 2022. Revolving around this topic, two Workshops were organized on 27 April and 30 June, respectively. With the completion of the activities of WG3, FG-VM formally completed its mandate. The main topics for standardization explored included human-machine interface (HMI) including voice control, gesture control, motion sickness free and auditory interaction – the latter three of these topics were identified as areas where further standardization would be needed.

In the context of ASR performance for vehicles, further discussions are planned with ITU-T SG12.

## 4.6 ITU-T [SG17](https://www.itu.int/en/ITU-T/studygroups/2017-2020/17/Pages/default.aspx) ([Q13/17](https://www.itu.int/itu-t/workprog/wp_search.aspx?isn_sp=3925&isn_sg=3935&isn_qu=6705&isn_status=-1,1,3,7,2&details=0&field=acdefghijo))

[[Doc 11](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/11_ITU-T_SG17_status_report.pptx)] was submitted and presented by Koji Nakao (*ITU-T WP3/17 Chairman)*.

The presentation highlighted that ITU-T SG17 has been working on security aspects including generic security architecture, mechanisms and management guidelines for heterogeneous networks/systems/services, cloud computing, smart grid, intelligent transportation systems (ITS) including V2X communication, the 5G cellular network, software-defined networks, Big Data analytics, Internet-of-Things, protection of the personally identifiable information (PII).

Within ITU-T SG17, Q13/17 is the lead Question for developing Recommendations regarding security aspect for ITS including road transport, railway, maritime and air transport as well.

SG17 has already approved the following:

* X.1371 – Security threats in connected vehicles
* X.1372 – Security guidelines for Vehicle-to-Everything(V2X) communication
* X.1374 – Security requirements for external interfaces and devices with vehicle access capability
* X.1375 – Methodologies for intrusion detection system on in- vehicle networks
* X.1376 – Security-related misbehaviour detection mechanism for connected vehicles
* X.1379 – Security requirements for road-side units in intelligent transportation systems

ITU-T Study Group 17 is currently developing the following:

* X.itssec-5 – Security guidelines for vehicular edge computing
* X.evtol-sec – Security guidelines for an electric vertical take-off and landing (eVTOL) vehicle in an urban air mobility environment

## 4.7 Focus Group on AI for Autonomous and Assisted Driving ([FG-AI4AD](https://www.itu.int/en/ITU-T/focusgroups/ai4ad/Pages/default.aspx))

[[Doc 40](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/40_FG-AI4AD_status_report.pdf)] was submitted and presented by Bryn Balcombe, FG-AI4AD Chair. The FG-AI4AD was established in October 2019 and will complete its activities in September 2022.

The presentation provides an update of the key happens of the 9th 10th and 11th meeting of FG-AI4AD.

As a part of the latest updates, it was noted that during its last meeting FG-AI4AD is anticipated to finalize and approve the following deliverables and transfer them to SG16:

* TR01: “Automated driving safety data protocol – Specification
* TR03: "Automated driving safety data protocol – Practical demonstrators”

## 4.8 [ITU-T SG20](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx)

[[Doc 30R1](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/30R1_ITU-T_SG20_status_report.pdf)] was submitted by Marco Carugi (*ITU-T Q2/20 Rapporteur and SG20 co-representative to CITS*).

The presentation elaborated on the ongoing, under-study and discontinued work relating to ITS in SG20. It was noted that the following two work items were discontinued:

* Framework of Cooperative Intelligent Transport Systems based on the Internet of Things
* Requirements and capability framework of IoT infrastructure to support network-assisted autonomous vehicles

Ongoing work within SG20 includes:

The presentation also provided an overview of the upcoming meetings and events related to SG20 including the 4th Meeting of the ITU/FAO Focus Group on Artificial Intelligence and Internet of Things (IoT) for Digital Agriculture (FG-AI4A) on 17 – 19 October 2022. The following SG20 meeting will take place on 30 January – 10 February 2023.

## 5 Organizations that did not send a progress report at this meeting

– [ATIS](https://www.atis.org/01_strat_init/connectedcar/)

– [IMDA](https://www.imda.gov.sg/)

* [ISO TC 22](https://www.iso.org/committee/46706.html)
* [ISO TC 204](https://www.iso.org/committee/54706.html)

– [TIA](https://tiaonline.org/)

– [TTA PG905](https://www.tta.or.kr/tta/index.do)

– UNECE TF CS/OTA

– [W3C](https://www.w3.org/)

## 6 Incoming Liaison Statements

CITS received the following liaison statements, which were duly noted.

• [Doc 04](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/04_LS_3GPP_TSG_SA5.docx): LS/i/r on the first deliverable on use cases for autonomous networks from ITU FG-AN [from 3GPP TSG SA5]

 *Abstract:* Through this LS, 3GPP SA5 would like also inform ITU-T that SA5 has discussed the autonomous networks related topics including:

* TS 28.100 Management and orchestration; Levels of autonomous network
* TS 28.104 Management and orchestration; Management Data Analytics
* TS 28.535 Management and orchestration; Management services for communication service assurance; Requirements
* TS 28.536 Management and orchestration; Management services for communication service assurance; Stage 2 and stage 3
* TS 28.313 Management and orchestration; Self-Organizing Networks (SON) for 5G networks
* TS 28.312 Management and orchestration; Intent driven management services for mobile networks
* TS 28.557 Management and orchestration; Management of Non-Public Networks (NPN); Stage 1 and stage 2

• [Doc 05](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/05_LS_ETSI_TC_ITS.zip): LS/i on Multi-Channel Operations: Open contribution or Review of the MCO set of specifications consisting of the MCO architecture specification (TS 103 697), the MCO Facilities layer functionalities specification (TS 103 141), the MCO Networking & Transport layer functionalities specification (TS 103 836-4-1) and the MCO Access layer functionalities specification (TS 103 695) for C-ITS Release 2 [from ETSI TC ITS]

*Abstract:* The ETSI Specialist Task Force (STF) 585 is responsible for the "Specifications of a Multi-Channel Operational (MCO) concept and related specifications” within the domain of Intelligent Transportation Systems. The STF started its work in April 2020 under the guidance of ETSI TC ITS WG2 (Architecture and Cross Layer Working Group). The STF 585 is responsible for the development of six MCO related deliverables within the coming 2 years.

• [Doc 06](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/06_LS_5GAA.docx): LS/i/r on further input to online database for ITS Communication Standards (CITS-LS13) [from 5GAA]
*Abstract:* In response to the invitation by the Collaboration on ITS communication standards (CITS) to populate the ITS Communication Standards online database, and to keep this database as up to date as possible, 5GAA would like to provide the further input that, 3GPP SA6 developed specification TS 23.434 – “Service Enabler Architecture Layer for Verticals (SEAL); Functional architecture and information flows” is an important specification of V2X domain and should be populated in the ITS Communication Standards online database.

• [Doc 07](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/07_LS_SG17-LS15.zip): LS/i/r on provision of inputs to the online ITS communication standards database (reply to CITS-LS13) [from ITU-T SG17]
*Abstract:* ITU-T Study Group 17 thanks CITS for informing update of database on ITS related works from other SDOs and the list of contact points. During SG17 meeting, Q13/17 has reviewed the database and contact points related to Q13/17. ITU-T SG17 would appreciate if CITS could continuously collaborate with SG 17 through Question 13 on ITS security.

• [Doc 08](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/08_LS_SG17-LS16.docx): LS/i/r on Intelligent Transportation Systems (ITS) (reply to TSAG-LS49) [from ITU-T SG17]
*Abstract:* ITU-T Study Group 17 thanks TSAG and CITS for informing CITS activity reports. After the establishment of Q13/17 (Security Aspects for ITS), Q13 activity reports have been delivered to CITS consistently by sending LS and participating in CITS meetings.

• [Doc 09](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/09_LS_SG12-LS15.docx): LS/i/r on provision of inputs to the online ITS communication standards database (reply to CITS-LS13) [from ITU-T SG17]

 *Abstract:* ITU-T Study Group 12 is pleased to inform you about the creation of a new work item on performance requirements for automatic speech recognition (ASR) in vehicles. The work is undertaken by Question 4/12 on objective methods for speech and audio evaluation in vehicles (ToR). A.1 justification information is contained in Annex. Q4/12 will hold a virtual Rapporteur Group Meeting discussing this and other work on 8 November 2022, 1400-1700 CET. The next SG12 meeting is scheduled to take place in Geneva, 18-26 January 2023.

• [Doc 10](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/10_LS_SG12-LS16.docx): LS/i on draft revised Recommendation ITU-T P.1140: Speech communication requirements for emergency calls originating from vehicles [from ITU-T SG12]

 *Abstract:* ITU-T Study Group 12 is pleased to inform you about the creation of a new work item on performance requirements for automatic speech recognition (ASR) in vehicles. The work is undertaken by Question 4/12 on objective methods for speech and audio evaluation in vehicles (ToR). A.1 justification information is contained in Annex. Q4/12 will hold a virtual Rapporteur Group Meeting discussing this and other work on 8 November 2022, 1400-1700 CET. The next SG12 meeting is scheduled to take place in Geneva, 18-26 January 2023.

• [Doc 13](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/13_LS_SG20-LS17.zip): LS/i on new work items Draft Recommendation ITU-T Y.Highway-KPI “Key performance indicators of ICT based highway traffic safety assessment” and Draft Technical Report ITU-T YSTR.HTSA-overview “Overview of ICT based highway traffic safety assessment” [from ITU-T SG20]

 *Abstract:* This Liaison Statement informs IEC, ISO TC241, ISO TC204, ITU-T Study Group 5, UNECE Transport WP1, and CITS, about the new work items Draft Recommendation ITU-T Y.Highway-KPI “Key performance indicators of ICT based highway traffic safety assessment” and Draft Technical Report ITU-T YSTR.HTSA-overview “Overview of ICT based highway traffic safety assessment”.

• [Doc 14](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/14_LS_FG-VM-LS55.docx): LS/i/r on new SG12 work item P.ASR: Performance requirements for automatic speech recognition (ASR) in vehicles (reply to SG12-LS15) [from FG-VM]

 *Abstract:* This liaison statement replies to SG12-LS15 (new SG12 work item P.ASR) and informs on the conclusion of the FG-VM work after approval of its Technical Report FG VM TR03. Accordingly, SG12 is invited to continue coordination on this topic directly with ITU-T SG16, the parent group of the now closed FG-VM.

• [Doc 15](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/15_LS_SG17-LS32.zip): LS/i on ITS security work in SG17 [from ITU-T SG17]

 *Abstract:* ITU-T Study Group 17 is pleased to update ITU-T SG16, CITS, ISO TC22/SC31, ISO TC204, and UNECE WP.29 on its work on security aspects of intelligent transport system (ITS) and seeks agreement for collaboration.

• [Doc 16](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20220923-e-meeting/16_LS_FG-VM-LS54.zip): LS/i on Completion of FG-VM Technical Report 3 (TR03) for ITU-T SG16 consideration [from FG-VM]

 *Abstract:* ITU-T FG-VM is pleased to inform you that it has completed its activities and that the related vehicular multimedia work will be transferred to its parent ITU-T Study Group 16. The LS also contains the third and last Technical Report (TR03), which has been approved at the last FG-VM meeting (1 September 2022).

Majority of the incoming LS were referred to CITS for information only. These LSs were noted. Additionally, the relevant information on the standards provided in the LS will be utilized to update the database as required.

# 7 ITS Standards Online Repository

Based on the inputs received from and presentations delivered by the SDOs, the [ITS communication standards database](https://www.itu.int/net4/ITU-T/landscape#?topic=0.131&workgroup=1&searchValue=&page=1&sort=Revelance) will be updated by ITU as soon as possible, taking into account resources availability.

# 8 Next meeting

The next CITS meeting is planned in March 2022. The final date will be announced via email list.

# 9 Closure of the meeting

The Chair, Russ Shields, thanked ITU for remotely hosting the CITS meeting and having supported its organization.

It was announced that the Future Networked Car Symposium ([FNC-2023](https://fnc.itu.int)) will take place virtually in March 2023 as the Geneva International Motor Show 2023 has been cancelled.

The Chair expressed his gratitude to the representatives from the SDOs who attended the meeting and thanked them for their contributions to the meeting, which will serve as the basis for the pertinent inputs to be fed into the ITS Communication Database. He also expressed his appreciation for the ITU Staff (Mr Polidori, Ms Menon and Ms Lima) for organizing the CITS meetings and building of the ITS communication standards database. The meeting closed at 17h00 hours local Geneva time.

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