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| TITU logo | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATIONSTANDARDIZATION SECTOR**STUDY PERIOD 2022-2024 | **DOC 27** |
| **Collaboration on Intelligent Transport Systems Communication Standards** |
| **Original: English** |
|  | E-meeting, 22 September 2023 |
| **DOCUMENT** |
| **Source:** | Chairman, Collaboration on ITS Communication Standards |
| **Title:** | Draft Report (CITS meeting, 22 September 2023) |
| **Purpose:** | Admin |
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**Draft Report – Meeting of Collaboration on ITS Communication Standards**

***(22 September 2023, 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 22 September 2023. T. Russell Shields (United States) chaired the meeting supported by Stefano Polidori (ITU/TSB Counsellor), Mythili Menon (ITU/TSB Project Officer) and Bohan Leng (ITU/TSB ITS Support Officer).

The [recording](https://itu.zoom.us/rec/share/S3b4VHgjkD1PeJiEIZQj0yI5vcTOglXILWiQl81wWCBfmKO4ImtDpbBlOgVv8xmL.QhfJ936YYXMsV2zM?startTime=1695360325000) 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](https://www.itu.int/itu-t/landscape/?topic=tx21&group=g&search_text=) will be continuously updated with relevant standards from Standards Development Organizations (SDOs) and other relevant entities.

**47** participants joined the meeting representing many SDOs and other stakeholders. The list of participants is available in [[Doc 26](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/26_List_of_participants.pdf)].

**26** meeting documents were submitted. This meeting report was posted after the meeting as [[Doc 27](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/27_Report_CITS_meeting_September_2023.docx)]. All related meeting documents are openly accessible on the CITS site [here](https://www.itu.int/en/ITU-T/extcoop/cits/Pages/meeting-documents.aspx?RootFolder=/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting&FolderCTID=0x0120008D91490DA7927C4D8A0BB5A73929B07D&View=%7b73BE16B3-22C9-43D5-A9FD-D8BC067A87FF%7d). The meeting was recorded and is available from the [CITS webpage](http://www.itu.int/go/ITScomms) online.

The draft agenda as contained in [[Doc 01R2](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/01R2_CITS_Chair_draft_agenda.docx)] was adopted.

# 3 Status of ITS communications work in SDOs

## 3.1 [5GAA](http://5gaa.org/)

[[Doc 18](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/18_5GAA_status_report.pptx)] was submitted and presented by Johannes Springer *(Deutsche Telekom AG)*.

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. 5GAA consists of 125 members. In principle, 5GAA, serves as a pre-standardization mechanism for the development of standards in this field.

5GAA has five strategic pillars related to:

* Deployment: Enabling deployment to lift barrier and accelerate time-to-market
* Standards: Contributing to standards for planning pre-standardization of automotive connectivity with a multi-release perspective
* Advocacy: This involves pro-actively addressing opportunities and threats and positioning 5GAA around strategic ecosystem
* Innovation: Leveraging innovation solutions together to advance connected mobility

In 2023, 5GAA had the following publications:

* Revolutionising the Future of Mobility: 5GAA Annual Report (White Paper, 5GAA)
* Predictive Edge Analytics and Network Slicing Enabling Mobility-as-a-Service in Global MEC Scenarios (Technical Report, WI gMEC4AUTO)
* Automated Valet Parking Technology Assessment and Use Case Implementation Description (Technical Report, WI AVP and WI UCID II)
* MEC System Interoperability and Test Framework (Technical Report, WI gMEC4AUTO)
* Cybersecurity for Edge Computing (Technical Report, WI gMEC4AUTO)
* Moving towards federated MEC demos/trials (global MEC) (Technical Report, gMEC4AUTO)
* Accelerate the understanding and adoption of VRU protection services enabled by C-V2X (Technical Report, WI VRU\_PRO)
* Use Case Implementations for Sensor Data Sharing (Technical Report, WI UCID)
* Evolution of Vehicular Communication Systems Beyond 5G (Technical Report, WI 5GEB)

Ongoing work in 5GAA includes:

* 5GAA C-V2X Roadmap – Phase III
* 5.9 GHz Band for 5G-V2X Deployment in Europe
* Non-Terrestrial-Networks for Automotive
* Vulnerable Road Users Protection Demonstration
* Trust Assessment for Resilient CCAM
* Vehicle 2 Network 2 Everything - V2X via Cellular Networks
* LTE-V2X “Day 1” Deployment Guidance in North America
* 5G-V2X Use Case Profiles Development

Topics for future work include V2X Advanced applications, edge compute for automotive, V2N2X, vulnerable road users, satellite communication, automated valet parking, V2X and ADAS Architecture, positioning as a service.

In terms of upcoming meeting, the 28th Meeting is scheduled to take place in Detroit, United States and 29th Meeting in Tokyo, Japan.

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

[[Doc 20](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/20_SAE_status_report.pdf)] 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: Some of the foundational documents are oriented towards terms and definitions, security, safety, interoperability, driving interface/human factors, vehicle system and performance requirements, guidelines and recommended practices.

The presentation drew the attention to the following in this context:

* Vehicle Cyber Security Systems Engineering Committee
	+ J3061™: Cybersecurity Recommended Practice for Cyber-Physical Vehicle Systems
* Truck and Bus Controls and Communications Network Committee
	+ J1939™: Serial Control and Communications – Heavy Duty Vehicle Network
* Vehicle Electrical Systems Security
	+ J2101 WIP: Requirements for Hardware Protected Security for Ground Vehicle Applications
	+ J1939™, J1979™, J3005™ & J2534™: OBD II for Telematics, Vehicle Health Management, Data Access, Vulnerabilities & Cyber Threat Analysis, OTA Updates

The presentation also provided an overview of the V2X/CDA Standards along with their status including but not limited to:

* J3161 – LTE Vehicle-to-Everything (LTE-V2X) Deployment Profiles and Radio Parameters for Single Radio Channel Multi-Service Coexistence
* J3161/1 – On-Board System Requirements for LTE-V2X V2V Safety Communications
* J3287 – V2X Misbehavior Reporting

## 3.3 [CATARC](https://www.catarc.ac.cn/)

[[Doc 12](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/12_CATARC_status_report.pdf)] was submitted and presented by Jingjing Hao *(CATARC, China).*

China Automotive Technology and Research Center (CATARC) is a central enterprise directly under the State- owned Assets Supervision and Administration Commission of the State Council

It also serves a comprehensive technology enterprise group with extensive influence in the domestic and foreign automotive industry.

The top-level design and the implementation steps for China’s Intelligent and Connected Vehicle (ICV) industry development are clear. After the accumulation of data from testing and demonstration, the development of China’s ICV has entered the phase of product access. Cities such as Shanghai and Shenzhen have introduced laws and regulations or implementation plans that are applicable to different phases, and the overall blueprint of ICV industry policies is being drawn up.

The working group of connected function and application (CFA) of ICV has been established in 2018.It is mainly responsible for the formulation of standards related to automotive connected functions and applications. It has built a roadmap according to the ICV standard system.

There are several standards that have been launched and published:

* Technical specifications for automotive digital key systems
* Intelligent and Connected Vehicle Technical specification for information assistance systems based on connected technology
* GB/T 41901-2022 Road Vehicles -- Extended vehicle (ExVe) methodology—Part 2: Methodology for designing the extended vehicle
* GB/T 41901-2022 Road Vehicles -- Extended vehicle (ExVe) methodology -- Part 1: General information

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

[[Doc 05](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/05_ARIB_status_report.pptx)] was submitted and presented by Takahiro Yokoyama *(*[*ARIB*](http://www.arib.or.jp/english/index.html)*, Japan)*. The Association of Radio Industries and Businesses (ARIB) is an incorporated association that promotes the development and diffusion of new radio systems and serves as a Standards Development Organization (SDO) to advance radio industries and businesses in Japan.

ARIB cooperates with the ITS Info-communications Forum to develop standards for ITS radio systems. The Forum prepares proposals of draft standards and submits them to the ARIB. The Forum also issues guidelines. The collaboration between ARIB and ITS Info-communications Forum is introduced in the report.

The presentation highlighted the following standards:

* Dedicated Short-Range Communication System
* DSRC Application Sub-Layer
* DSRC Basic Application Interface
* Guideline for Installing DSRC Roadside Units
* DSRC Basic Application Interfaces Specification Guideline
* Experimental Guideline for Inter-Vehicle Communications System using 5.8GHz-Band
* ITS Application Sub-layer Specification Guideline
* Millimeter-Wave Radar Equipment for Specified Low Power Radio Station
* 79 GHz Band High-Resolution Radar

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

[[Doc 13](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/13_TSDSI_status_report.docx)] was submitted by Vishnu Ram and presented by Prof. Sam Darshi. Telecommunications Standards Development Society, India (TSDSI) is an autonomous, membership based, SDO for Telecom/ICT products and services in India. It develops standards for next generation networks for enabling ITS, 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.

Through the presentation, it was highlighted some topics that are of utmost importance to study in the lead up to WTSA-24. These include: Multiple Access, Seamless V2V communication and networking, Joint communication and sensing in ITS, Cooperative ITS, VRU protection: Emergency ride sharing, mm-Wave integrated C-RAN and Underwater ITS:

## 3.6 [C-SAE](http://en.sae-china.org/)

[[Doc 11](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/11_C-SAE_status_report.pdf)] was submitted and presented by Yunjia Ji *(Standard Engineer, C-SAE).*

China Society of Automotive Engineers (China-SAE or C-SAE), a national academic organization, was founded in 1963, the secretariat is set up in Beijing.

C-SAE main services include academic communication, automotive policy research, collaborative innovation, talent training and technical standards establishment. CAICV has more than 614 members, including companies, universities, and institutes from the automotive, telecommunication, transportation, and internet industries. Currently, CAICV has 13 working groups and one independent task-force.

CAICV and IMT-2020 build a cross-industry collaborative testing and verification platform and carry out application demonstration for 5 consecutive years.

The current work plan of C-SAE V2X WG includes:

* T/CSAE 53-2020 Cooperative intelligent transportation system—Vehicular communication application layer specification and data exchange standard（Phase I）
* T/CSAE 158-2020 Data exchange standard for high level automated driving vehicle based on cooperative intelligent transportation system
* T/CSAE 159-2020 LTE-based vehicular communication—Direct communication system roadside unit technical requirements
* T/CSAE 246-2022 Test and evaluation methods for V2X system warning application function of intelligent and connected vehicles
* T/CSAE 297-2023 Technical requirement of scenario database and specification of simulation testing for V2X warning application
* T/CSAE Cooperative intelligent transportation system-Technical requirements for application layer interaction-Part1: intention sharing and cooperation
* T/CSAE Cooperative intelligent transportation system-Technical requirements for application layer interaction-Part2: Sensor Data Sharing
* T/CSAE Reliability evaluation of unmanned driving in specific application scenarios Series of Standards

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

[[Doc 25](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/25_IEEE_1609_WG_status_report.pptx)] was submitted and presented by Justin McNew *(IEEE 1609 Chair)*

Through the presentation, it was noted that IEEE 1609 WG VT/ITS has published the following:

* IEEE 1609.2 WAVE Security Services (Published)
* IEEE 1609.2.1 Certificate Management Interfaces for End Entities (Published)

The draft of the following is expected to be review at the upcoming meeting:

* IEEE 1609.2.2 Multi-Jurisdictional Interoperability Using Security Credentials

With regard to IEEE 1609.3, it is anticipated that the corrigendum will be developed to update WAVE Service Advertisement Security Profile, with possible uses beyond 5.9 GHz / C-V2X.

The next meeting will take place on 3 October 2023.

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

[[Doc 04](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/04_ISO_TC241_WG6_status_report.pptx)] was submitted and presented by Dave Conway *(Convenor WG6)*.

The presentation elaborated on the scope of ISO 39003: 2023– Road Traffic Safety: Guidance on Ethical Considerations relating to safety for autonomous vehicles, which was published in July 2023.

The presentation highlighted the eleven core principles related to ethics:

* P1 Transitoriness, reverence and sustainability (“people are only guests on earth and not masters”)
* P2 Reciprocity and caring (“because first and foremost we are humans”)
* P3 Cooperation and coordination (“it is not a competition”)
* P4 Human autonomy (“freedom should not be taken away”)
* P5 Equity and fairness (“what someone does to their neighbour, they do to themselves”)
* P6 Non-maleficence (“first, do no harm” -- “primum non nocere”)
* P7 Non transgression and no coercion of others (“one must not take what is not designated as theirs”)
* P8 Respect for intimacy (“one must not enter into a space where one is not welcomed”)
* P9 Beneficence (“try to do good”)
* P10 Explicability to occupants and other road users (“what is not made transparent is concealed”)
* P11 Justice and responsibility (“justice is the goal; everyone has responsibility for the world”)

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

[[Doc 23](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/23_ETSI_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.

This group is focussed on the maintenance of Standards, Specifications and other deliverables to support the development and implementation of ITS Service provision across the network, for transport networks, vehicles and transport users, including interface aspects and multiple modes of transport and interoperability between systems, but not including ITS application standards, radio matters, and EMC.

Scope includes communication media, and associated physical layer, transport layer, network layer, security, lawful intercept and the provision of generic web services.

In term of status updates, the following was noted:

* TR 101 607 ver 1.2.1 provides and overview of relevant ETSI standards
* Release 1 is completed and entering maintenance mode
* Release 1 of Standard has to be reworked to allow for supporting multiple access layer technologies ETSI ITS-G5 (IEEE 802.11p based) LTE-V2X (3GPP Based)
* Release 1 is aligned with European Security and Certificate policies
* TR 101 607 v 1.2.1 has been updated to reflect current set of Release 1 specifications. The TR will be updated periodically to reflect updates of the Release 1
* The standards that are supposed to be finalized by March 2024 are the following: TS 103 900 (CAM), TS 103 831 (DENM), TS 102 894-2 (CDD), TS 103 836-4-1/2/3 (GN), TS 103 301 (Infrastructure services), TS 103 882 (AVP), TS 103 916 (PAS/POI) plus release 2 versions of all referenced specifications as well as the access layer specifications..

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

[[Doc 24](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/24_C2C_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 in 2002 by European vehicle manufacturers.

The vision for C2C-CC is focussed on increasing road safety and traffic efficiency towards the Vision Zero (zero accidents), while reducing the environmental footprint. This will be achieved through fully interoperable cooperative applications for all users. These applications will have free access and availability throughout product lifetime.

* Identify and specify C-ITS requirements including road-maps
* Coordinate requirement amongst all actors in C-ITS
* Drive internal and external research into the supporting technologies for fulfilling the requirements
* Provide of relevant specifications for C-ITS for realisation and maintain a compliance scheme
* Contribute to the relevant standardisation organisations
* Promote availability of policies, regulatory and technical measures that ease deployment
* Create awareness within and outside the C-ITS community to accelerate deployment across Europe
* Ensure availability of problem resolution processes for operational aspects

The presentation highlighted the Guidance for day 2 and beyond roadmap which is publicly available.

Ongoing work includes:

* Guidance for Day-2-3-4
* Apps to Messages Matrix
* Vulnerable Road Users - VRU 2.0
* Automotive Requirements on IVIM
* Extended Weather Information
* Maintenance and extension of the SRTI List
* CAM day 2 for PTW
* Initial processing of V2I and I2V use cases
* Description of Lane Layout

## 3.11 [CCSA](http://www.ccsa.org.cn/)

[[Doc 19](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/19_CCSA_TC10_status_report.pdf)] was submitted and presented by Yuming Ge.

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
* TC13：Industry Internet

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
* High Level Autonomous Driving Data Interaction Content based on Vehicle Infrastructure Cooperation

## 3.12 [ISO TC204](https://www.iso.org/committee/54706.html)

[[Doc 14](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/14_ISO_TC_204_status_report.pptx)] was provided by Koorosh Olyai for information. In the absence of the Mr Olyai, it was not presented.

The presentation underscored that a total of 448 projects were active. It noted the appointment of Mr. Koorosh Olyai (USA) as the new Chairman for a term of 3 years in 2023.

ISO/TC 204’s three Advisory Groups continue to improve its operation and management:

* ISO/TC 204/AG3 “Operational improvement group (OIP)” (Completed)
* ISO/TC 204/AG4 “Program coordination”
* ISO/TC 204/AG5 “Publication and marketing review”

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

[[Doc 22](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/22_WWRF-CVWG_status_report.pptx)] was submitted by Seshadri Mohan *(Chair, WWRF VIP CV WG)* for information (not presented).

The presentation underscored the scope of WWRF VIP WG as follows:

* Develop future vision of the wireless world
* Inform and educate on trends and developments
* Enable and facilitate the translation of the vision into reality
* Bring a wide range of parties together to identify and overcome significant roadblocks to the vision

The current outputs include:

* WWRF Outlook – published version of White Paper
* WWRF Library – proceedings of each meeting
* WWRF – Wiley and River book series

Currently, the document related to the following are underway:

* 5G business models
* 5G and the water industry
* Millennial users in a 5G context
* Cybersecurity challenges in the Wireless World
* Ehealth enabled by 5G and machine learning
* Network slicing
* High speed rail services and 5G
* Thz communications and system architectures
* 6G/Beyond 5G
* AI/ML-enabled Connected Vehicles

A second white paper on connected vehicles is underway on the topic of ‘AI/Machine Learning Based Connected Vehicles in the Era of 5G, 6G, and Beyond.’

A special issue of Wireless Personal Communications journal is scheduled for publication in the last quarter consisting of selected papers from IEEE ANTS 2022.

## 3.14 3GPP/SSIG

[[Doc 16](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/16_SSIG_status_report.pptx)] was submitted and presented by Alexandre Petrescu.

The presentation highlighted that the SSIG was established on 8 January 2018 as a special interest group for standardization within the ALIX project led by Thales Alenia Space - France and sponsored by the European Space Agency (ESA). It was established with the vision for global connectivity services integrating towards unification of satellite and terrestrial networks with common technology standards. A broad range of stakeholders can exchange information on satellite-related standardization activities for the integration of satellites into the evolving 3GPP ecosystem.

Multiple organisations within SSIG contributed to prioritize the items grouped into: NR-NTN (Non-Terrestrial Networks), IoT-NTN.

NTN/TN mobility is just one item in the list of many items considered by the SSIG.

# 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 15](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/15_UNECE_status_report.pptx)] was submitted and presented by Francois Guichard *(Secretary, UNECE WP.29 GRVA)*.

This presentation highlighted the AI related activities at WP.29/GRVA including the AI related definitions, requirement to be considered and general principles for the use of AI including those related to lifecycle, and training data. The regulatory activities for ADS are also in progress. ADAS will continue for a while as bridging technology -- UN Regulation on DCAS.

WP.29 established the Vehicular Communication Task Force under its ITS group led by Japan, UK and United States. Additionally, cybersecurity and software updates guidelines and regulations are in place and being reviewed/extended. Existing vehicle regulations will be made fit for ADS

The connectivity of vehicles and artificial intelligence are under discussion for the next steps.

## 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-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 21](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/21_ITU-T_SG16_status_report.pptx)] *[*[*Doc 08*](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/08_SG16_LS72.zip)*]* were submitted and presented by Hideki Yamamoto *(Vice-chairman, SG16)*.

Within ITU-T SG16, Q27/16 – Vehicular multimedia communications, systems, networks, and applications, deals with ITS.

ITU-T SG16 served as the Parent Group for the ITU-T Focus Group on AI for autonomous and assisted driving (FG-AI4AD) and ITU-T Focus Group on Vehicular Multimedia (FG-VM), both of which have completed their work and transferred their deliverables to ITU-T SG16.

Currently, the following work items are underway in Q27/16:

* F.DVMSF-Edge – Distributed vehicular multimedia services framework for V2X based edge computing
* F.PB-ADS-DV – Functional requirements of universal interfaces for purpose-built ADS-DV
* F.VG-DS – Framework and requirements of the data sharing service platform for electric vehicle charging
* F.VGP-RDSreqs – Requirements for remote driving service based on vehicle gateway platform
* F.VG-VRU – Requirements for vulnerable road users service using vehicle gateway
* F.VMS-HANS – Functional requirements and architecture of vehicle multimedia system for heterogeneous access network selection
* F.VSAI-ARCH – Functional architecture of multimedia communication enabled vehicle systems using artificial intelligence
* H.ADSDP-spec – Automated driving safety data protocol: Specification
* H.MVIS – Functional architecture of multimodal enabled vehicular voice interaction system
* H.VMMA-FCR – In-vehicle multimedia applets: Framework and capability requirements
* H.VM-VMIA – Implementation of vehicular multimedia systems

The next ITU-T Q27/16 meeting is expected to take place online on 16-19 October 2023 and 24-25 October 2023.

## 4.4 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 17](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/17_ITU-T_SG17_status_report.pptx)] *[*[*Doc 07*](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/07_SG17_LS71.docx)*]* were submitted and presented by Sang-Woo Lee (*ITU-T Q13/17 Rapporteur)*.

ITU-T Study Group 17 in ITU Telecommunication Standardization Sector (ITU-T) 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) as the lead Study Group on Security in ITU-T.

Within ITU-T Study Group 17, Question 13 in Study Group 17, a lead Question for developing Recommendations regarding security aspect for ITS including road transport, railway, maritime and air transport as well.

Some of the recently approved Recommendations include:

* 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 misbehavior detection mechanism for connected vehicles
* X.1379 – Security requirements for road-side units in intelligent transportation systems
* X.1377 – Guidelines for an intrusion prevention system in connected vehicles
* X.1380 – Security guidelines for cloud-based data recorders in automotive environments
* X.1381 – Security guidelines for Ethernet-based In-Vehicle networks
* X.1382 – Framework of security threat information sharing for connected vehicles
* X.1383 – Security requirements for categorized data in V2X communication

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

– [W3C](https://www.w3.org/)

– [IEC SEG11](https://www.iec.ch/dyn/www/f?p=103:186:0::::FSP_ORG_ID,FSP_LANG_ID:23128,25) (Replaced by SyC SET, Systems Committee Sustainable Electrified Transportation)

– [ITU-R SG5](https://www.itu.int/en/ITU-R/study-groups/rsg5/Pages/default.aspx)

– [ITU-T SG5](https://www.itu.int/en/ITU-T/studygroups/2022-2024/05/Pages/default.aspx)

– [ITU-T SG20](https://www.itu.int/en/ITU-T/studygroups/2022-2024/20/Pages/default.aspx)

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

– IETF IPWAVE WG

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

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

– [ITU-T SG12](https://www.itu.int/en/ITU-T/studygroups/2022-2024/12/Pages/default.aspx)

– [IMDA](https://www.imda.gov.sg/)

*–* [TTC Connected Car WG](http://www.ttc.or.jp/e/organization/wg/connectedcar/)

– UNECE TF CS/OTA

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

– TIAA

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

*–* [TTC Connected Car WG](http://www.ttc.or.jp/e/organization/wg/connectedcar/)

## 6 Incoming Liaison Statements

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

• [Doc 06](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/06_SG13_LS94.zip): LS/i on information about the progress of draft Recommendation ITU-T Y.AN-Arch-fw “Architecture Framework for Autonomous Networks” [from ITU-T SG13]
*Abstract:* This liaison statement informs about the progress of draft Recommendation ITU-T Y.AN-Arch-fw "Architecture Framework for Autonomous Networks".

• [Doc 07](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/07_SG17_LS71.docx): LS/i on ITS security works in SG17 [from ITU-T SG17]
*Abstract:* This liaison statement informs ITU-T SG16 and CITS on its new work items on security aspects of intelligent transport system (ITS) and seeks continuing collaboration. It will be used to update our database.

• [Doc 08](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/08_SG16_LS72.zip): LS/i on the introduction of Consented work item ITU-T F.749.6 (ex F.VG-AD-Reqs) "Requirements of vehicle information for automated driving in vehicle gateway platform" (New) [from ITU-T SG16]
*Abstract:* This LS informs the ISO/TC 22, ISO/TC 204, and ITU-T CITS on the Consent of draft new Recommendation ITU-T F.749.6 (ex F.VG-AD-Reqs) "Requirements of vehicle information for automated driving in vehicle gateway platform" and invites continued collaboration. It will be used to update our database.

• [Doc 09](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/09_FGAN_LS11.zip): LS/i on ITU FG AN Build-a-thon 2023 [from ITU-T FG-AN]
*Abstract:* This liaison statement informs the relevant bodies of the launch of the third consecutive edition of ITU-T FG-AN Build-a-thon in 2023. Build-a-thon is a PoC development activity, to build upon a key concept in FG AN, especially intended to prove the concept practically with code, test setup and demo setup. Build-a-thon is hosted in collaboration with ITU AI/ML 5G Challenge and is open to anyone.

The 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 Establishment of Expert Group on Communications Technology for Automated Driving

The Establishment of Expert Group on Communications Technology for Automated Driving was discussed and agreed to. The group also reviewed the content provided by [Doc 10](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/10_CITS-Chair_Proposal_Expert_Group.zip) which would be used for future reference and will be sent as a Liaison Statement to various SDOs for information. In particular the terms of reference for the group, as detailed in Doc 10/Annex3 were reviewed and agreed to. They are reported in **Annex** to this Report.

**7.1 Outgoing Liaison Statement**

• [Doc 10](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230922-e-meeting/10_CITS-Chair_Proposal_Expert_Group.zip): Proposal to establish an Expert Group on Communications Technology for Automated Driving and related liaison statement to inform relevant bodies to [ITU-R SG 5, ITU-T SG 16, SG 12, SG 17, SG 20, UNECE WP.29, ARIB, CCSA, CEN TC 278, ETSI TC ITS, C2C-CC, IEC SEG 11, IEEE 1609, IEEE 802.11-TGbd, IETF IPWAVE WG, IMDA, ISO TC 22, ISO TC 204, ISO TC 241, SAE International, C-SAE, TIA, TIAA, TSDSI, TTA PG905, TTC Connected Car WG, W3C Automotive WG, WWRF Connected Car VIP WG, 5GAA, 3GPP SA, CATARC, C‑Roads initiative]
*Abstract:* Through this liaison statement, the ITU Collaboration on ITS communication standards (ITU CITS) would like to inform about the establishment of an Expert Group on Communications Technology for Automated Driving.  ITU-T SG 16, ITU-R SG 5, and organizations participating in ITU CITS are invited to provide experts to participate in this Expert Group.

# 8 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/itu-t/landscape/?topic=tx21&group=g&search_text=) will be updated by ITU as soon as possible, taking into account resources availability.

# 9 Next meeting

The next CITS meeting is planned on 15 March 2024. The final date will be announced via email list.

# 10 Closure of the meeting

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

It was announced in the meeting that the upcoming [ITU/UNECE Future Networked Car Symposium](https://fnc.itu.int/) (**spin-off in Qatar, 6 October 2023, Doha, Qatar**) will co-locate with two major events:

* the [Geneva International Motor Show spinoff in Qatar (5-14 October 2023)](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fgenevamotorshow.com%2Fqatar-2023%2F&data=05%7C01%7Cstefano.polidori%40itu.int%7Ce4b00ba5ea3f4089f61c08dbb4714ac4%7C23e464d704e64b87913c24bd89219fd3%7C0%7C0%7C638302170899137508%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=7DTwmAYlMYHcHAHL78zk34sLPReDRMaGclv521EG2JA%3D&reserved=0)
* the [Formula 1 race in Qatar (6-8 October 2023)](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.formula1.com%2Fen%2Fracing%2F2023%2FQatar.html&data=05%7C01%7Cstefano.polidori%40itu.int%7Ce4b00ba5ea3f4089f61c08dbb4714ac4%7C23e464d704e64b87913c24bd89219fd3%7C0%7C0%7C638302170899137508%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=BU23piMOpm0jU8HzmntUfXzFB%2BYASdAXdwRbZic8sWU%3D&reserved=0).

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 Mr Leng) for organizing the CITS meetings and building of the ITS communication standards database. The meeting closed at 17h00 hours local Geneva time.

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**ANNEX**

Terms of Reference for the Expert Group on Communications Technology for Automated Driving

The “Expert Group on Communications Technology for Automated Driving” of the ITU Collaboration on ITS Communications Standards (the “Expert Group”) is chartered to explore the communications technologies for automated driven vehicles, including the communications technology to be equipped in all new vehicles to achieve the required volume of equipped vehicles to enable reliable automated merging.

The working methods of the Expert Groups will be in accordance with the ITU CITS, which is its parent group.

Participation in the Expert Group is open to ITU CITS participants, which include experts from ITU members, UNECE WP.29 participant entities, and SDOs participating in the ITU CITS.

The Expert Group management will be composed of experts from different and mutually-complementary professional backgrounds.  An initial composition might be two co-Chairs, one from the automotive industry and one from the wireless communications industry.

The Expert Group will analyse the current vehicle communications technology for automated driven vehicles, recommend solutions that need international standardization, and identify areas that need further work.

The Expert Group will identify the related timelines necessary to allow installation in vehicles, possibly as early as 2030, of the vehicle communications technology for automated driving including to support the determined‑reliable merging by vehicles with ADS active into congested lanes.

NOTE:  Although there are many important communications applications to support road safety, the determined‑reliable merging by vehicles with ADS active is the most complex.  It is expected that vehicles equipped with the communications technology for automated merging will be able to support the other communications-based road safety applications, including collision avoidance and vehicle cooperation.

The Expert Group will identify application areas that need international standardization.  Its members will report related findings to ITU-T SG 16 for possible actions.

Based on the identified application approach, the Expert Group will identify spectrum needs, as appropriate, and interested Member States will make appropriate requests to ITU-R SG 5 for possible actions.

*NOTE: Additional spectrum would need modifications to the frequency allocation (e.g. ITU‑R Radio Regulations) which requires studies that in return need a prior WRC Agenda Item and a subsequent WRC decision.  When applying the timing desired by the automotive industry, it must be taken into consideration, that an according Agenda Item must be available for WCR-27 to get a decision at WRC-31.  This means, that ITU-R SG 5 might address vehicle technology for automated driving in the ITU-R study period 2023-2027 as part of its proposed Question “Future-ITS-CAV/5”.  How to meet the timing needed by the vehicle industry will need to be considered by ITU-R SG 5.*