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| ITU logo | INTERNATIONAL TELECOMMUNICATION UNION  **TELECOMMUNICATION STANDARDIZATION SECTOR**  STUDY PERIOD 2017-2020 | | **DOC 34** | |
| **Collaboration on Intelligent Transport Systems Communication Standards** | |
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**Draft Report – Meeting of Collaboration on ITS Communication Standards**

***(10 September 2021, E-meeting)***

**<http://www.itu.int/go/ITScomms>**

**1 Introduction**

The meeting of the Collaboration on ITS Communication Standards (CITS) took place virtually on 10 September 2021. T. Russell Shields (RoadDB) chaired the meeting supported by Stefano Polidori (ITU/TSB Advisor), Mythili Menon (ITU/TSB Project Officer) and Carolina Lima (ITU/TSB Study Group Assistant).

**2 Opening, meeting participants and adoption of the agenda**

**T. Russell Shields**, Chair of CITS, kickstarted the meeting and welcomed the participants. In line with its scope, CITS continues to facilitate the coordination of internationally accepted, harmonized 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.

**41** participants joined the meeting representing many SDOs and other stakeholders. The list of participants is available as [[DOC 33](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/33_List_of_participants.docx)].

33 meeting documents were submitted. This meeting report was posted after the meeting as Doc34. 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=%2Fen%2FITU%2DT%2Fextcoop%2Fcits%2FDocuments%2FMeeting%2D20210910%2De%2Dmeeting&FolderCTID=0x0120008D91490DA7927C4D8A0BB5A73929B07D&View=%7B73BE16B3%2D22C9%2D43D5%2DA9FD%2DD8BC067A87FF%7D#InplviewHash73be16b3-22c9-43d5-a9fd-d8bc067a87ff=). 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-20210910-e-meeting/01R3_Chair_draft_Agenda.docx)] was adopted.

**3 Status of ITS communications work in SDOs and the ITU**

**3.1** [**UNECE WP.29 TF CS/OTA**](https://wiki.unece.org/pages/viewpage.action?pageId=40829521)

[[Doc 19](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/19_UNECE_TF_CS-OTA_status_report.pptx)] was submitted and presented by Darren Handley (*UNECE WP.29 TF CS/OTA*).

This presentation covered the Cybersecurity Management System, which has regulations for vehicle manufacturers (at an organisational level), which includes:

* Processes to identify and manage cyber security risks in the design of a vehicle
* Processes to verify that the risks are managed, including testing
* Processes to ensure that risk assessments are kept current
* Processes to monitor for cyber attacks
* Processes to assess if cyber security measures remain effective in light of new threats or vulnerabilities identified
* Processes to respond to attacks
* Processes to support analysis of successful or attempted attacks

The presentation also covered the Software Update Management System, which includes:

* Processes for configuration control for recording the hardware and software versions relevant to a vehicle type, including integrity validation data for the software
* Processes for identifying the software and hardware on a vehicle relevant to a specific UN regulation and tracking if that software changes (the RxSWIN concept)
* Processes for verifying the software on a vehicle component is what should be there
* Processes for identifying interdependencies of systems, particularly with respect to software updates
* Processes for identifying target vehicles and verifying their compatibility with an update
* Processes to assess if a software update will affect type approvals or other legally defined parameters for a given target vehicle (including adding or removing functionality)
* Processes to assess to assess if an update will affect the safety or safe driving of a vehicle
* Processes to inform vehicle owners of updates
* Processes to document all of the above and make it available for inspection at an audit
* Processes to ensure the cyber security of software updates before they are sent to a vehicle

No additional work items of future meetings have been planned for the UNECE Taskforce CS/OTA.

**3.2** [**IETF-IPWAVE**](https://datatracker.ietf.org/wg/ipwave/about/)

[[Doc 22](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/22_IETF_IPWAVE_WG_status_report.pptx)] was submitted and presented by Alexandre Petrescu.

This presentation describes the IP Wireless Access in Vehicular Environments (IPWAVE) as a Working Group of the Internet Engineering Task Force (IETF). Through this presentation, a status update was provided on RFC 8691 “Basic Support for IPv6 Networks Operating Outside the Context of a Basic Service Set over IEEE Std 802.11” and its implementation. The presentation also provided an outline of the topologies for using IPv6 for vehicle networks (namely vehicle-to-vehicle IP network topology, and vehicle-to-Internet IP network topology).

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

[[Doc 21](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/21_SAE_International_status_update.pdf)] was submitted and presented by William (Bill) Gouse *(SAE International)*.

The main focus areas include: mobile devices, roadside equipment, traffic information management, systems and data back haul, message security, road weather, traveller information, platooning, and vulnerable road users.

As foundation documents, SAE has the V2X Communication Standards for:

* J2735 Message Set Dictionary
* J2945 SEP Guidance for J2945/X Documents

In the context of latter foundational documents, one of the standards presented was the SAE J2945/2 Performance Requirements for V2V Safety Awareness, which covers applications relating to emergency vehicular alerts, safety awareness, adverse road conditions, among others.

Documents under development include:

* J2945/6 - Cooperative ACC Performance Requirements: This defines requirements to enhance Adaptive Cruise Control with V2X communications. Phase 2 will include platooning.
* J2945/- Map/SPaT Message Recommended Practice: This provides guidance on usage of applications intended for developers as well as users
* J2945/B - Signal Preemption Recommended Practice: This provides guidance on usage and applications for signal request & pre-emption messages
* J2945/C Traffic Probe Use and Operation Recommended Practice: This provides guidance on automated vehicle probe data collection and distribution
* J2945/8 - Cooperative Perception Systems (WIP): This standard describes methods for a V2X device to broadcast perception information of other road users/objects nearby. It also aims to define use cases, performance and security requirements
* J3224 V2X Sensor-Sharing for Cooperative and Automated Driving (WIP): This aims to provide requirements for a sensor-sharing message suitable for V2Xentities (RSUs, vehicles, VRUs) to describe detected road users, road obstacles and road impairments

SAE has also developed safety and human factors standards related to connected and automated vehicles:

* J2395: ITS In-Vehicle Message Priority
* J2830: Process for Comprehension Testing of In-Vehicle Symbols
* J2831: Development of Design & Engineering Recommendations for In-Vehicle Alphanumeric Messages
* J2988: Guidelines for Speech Input & Audible Output in Driver Vehicle Interface
* J2944: Operational Definitions of Driving Performance Measures & Statistics

**3.4** [**5GAA**](http://5gaa.org/)

[[Doc 32](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/32_5GAA_work_programme_overview.pdf)] submitted and presented by Maxime Flament *(CTO, 5GAA)*. 5GAA continues to serve as a bridge between the automotive and telecommunications industries. Accordingly, it continues to address topics relating to connected mobility and road safety needs with applications such as automated driving, ubiquitous access to services, integration into intelligent transportation and traffic management. Currently, there are 28 active work items on a diverse range of topics including (but not limited to): digital roads, C-V2X Roadmap, 5G Evolution, vehicular antenna test methodology, among others.

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

[[Doc 30](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/30_ETSI_TC_ITS_status_report.pptx)] was submitted and presented by Niels Peter Skov Andersen *(Chair ETSI TC ITS)*. ETSI TC ITS focuses on the development and maintenance of standards, specifications as well as other deliverables relating to cooperative ITS, ITS services, architecture for misbehaviour detection, interface aspects and multiple modes of transport, and interoperability between systems. The group is also making progress on ITS - Vulnerable Road Users (VRU) Draft Release 2. ETSI TC ITS has also been expanding its ASN.1 repository.

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

[[Doc 31](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/31_Car_2_CC_status_report.pptx)] was submitted and presented by Niels Peter Skov Andersen *(General Manager C2C-CC)*. C2CC supports V2X deployment. The Car2Car Communication Consortium re-emphasized on its key objectives including:

* Developing guidelines for a Car2Car communication system
* Development of realistic deployment strategies
* Establishment of open European standards for a Car2Car communication system
* Facilitating the harmonisation of C2C communications standards worldwide
* Encouraging the use of free of charge European wide exclusive frequency band (5.9 GHz)
* Establishment of the necessary profiling of standards

The new publications developed by the consortium include:

* Technical Report on CPM Object Quality
* Safety related message sets – Selection of DATEX II Situations, DENM and TPEG2-TEC Causes and TMC Events for EC high level Categories
* Study of vulnerable road user awareness
* White paper on ITS-G5 and Sidelink LTE-V2X Co-Channel Coexistence Mitigation Methods

Within the domain of ITS functionality, the work being conducted is:

* Automotive requirements for IVIM
* Extended weather information
* Traffic jam
* Maintenance and extension of the SRTI list
* Initial processing of V2I and I2V use cases
* Use cases & test cases for PTW (MAI/MAW); and
* Description of lane layout

In the context of ITS deployment, the ongoing work is:

* Requirement harmonisation framework
* Configuration management
* Improve implementation requirements of SPATEM and MAPE
* Evaluation and certification of Gateway (VCS) PP
* Potential alternative assurance / certification approach; and
* Misbehaviour detection

**3.7** [**WWRF VIP WG The Connected Car**](http://www.wwrf.ch/vip-wg-the-connected-car.html)

[[Doc 28](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/28_WWRF_CV_WG_update.pptx)] was submitted and presented by Seshadri Mohan *(Chair, WWRF VIP CV WG)*. It highlighted WWRF’s role as a platform for exploring technological capabilities from wide-area networks to short-range communications, machine-to-machine communications, sensor networks, wireless broadband access technologies and optical networking, along with increasing intelligence and virtualization in networks. In this context, Vertical Industry Platform (VIP) Connected Vehicles delves into the usage scenarios, requirements and enabling technologies to achieve the targets of future vertical industry communications in 5G and beyond. It has accordingly developed:

* WWRF Outlook 24 - Artificial Intelligence in the Wireless Arena
* WWRF Outlook 25 - Connected vehicles (2019); revised 2021

Additionally, a white paper on connected vehicles on the topic of ‘The Role of AI/Machine Learning in Connected Vehicles’ is being developed. The next WWRF46 will take place in Paris (France) in December 2021.

**3.8** [**UNECE WP.29**](https://www.unece.org/trans/main/wp29/introduction.html)

François Guichard (*UNECE WP.29/GRVA, Secretary*) provided a brief oral update on UNECE WP.29 activities. In January 2021, the following entered into force:

* UN Regulation 157 (Automated Lane Keeping System)
* UN Regulation 155 (Cyber-security); and
* UN Regulation 156 (Software Update)

These regulations can be used by the manufacturers and technical authorities within their respective countries.

A new regulation was also adopted on Event Data Recorder (EDR).

**3.9** [**IEEE VTS Standards**](https://vtsociety.org/member-resources/standards/)

[[Doc 25](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/25_IEEE_1609_WG_status_report.pptx)] was submitted by Justin McNew *(IEEE 1609 Chair)*. The presentation highlighted the revision of 1609.2 on “IEEE Standard for Wireless Access in Vehicular Environments (WAVE) - Security Services for Applications and Management Messages”, which describes secure message formats and processing for use by WAVE-based devices, including methods to secure WAVE management messages and methods to secure application messages. It also presents administrative functions necessary to support the core security functions.

The current revision process is focussed on the use of SAE Road Authority ID in Certification, security profile updates, encrypted data, payload type etc.

The next meeting will take place on 28 September 2021. Furthermore, the list of IEEE VT/ITS Standards were provided in [[Doc 16](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/16_IEEE_VT_ITS_Standards_Listing.docx)].

**3.10 CEN TC278**

[[Doc 18](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/18_CEN_TC_278_Liaison_Report.pptx)] was submitted by Hans Nobbe *(Ministry of Infrastructure and Water, The Netherlands)*. The presentation elaborated on the CEN individual and joint Working Groups in collaboration with ISO. The main joint Working Groups include:

* Electronic fee collection and access control (EFC)
* Traffic and traveller information
* Cooperative ITS
* Mobility integration

In line with its work, CEN TC278 continues to contribute to the EC ICT Rolling plan 2021 within the domain of ITS. The subsequent meeting schedule is:

* 15-16 September 2021, Norway/Zoom
* 16-17 March 2021, United Kingdom/Zoom

**3.11 W3C**

[[Doc 12](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/12_W3C_Automotive_WG_status_update.docx)] was submitted but not presented during the meeting. It elaborates on:

* *Automotive Working Group* continues to learn from real-world experiences from the first Vehicle Information Service Specification (VISS), a service in production vehicles and used elsewhere. The group published a W3C First Public Working Draft of Vehicle Information Service Specification -version 2 (VISS 2).
* *Automotive and Transportation Business Group* has a role in fostering and advancing the adoption and continued development of W3C Automotive Working Group's standards including coordinating with the broader transportation information space and acting as an incubator for future standards work. The group also works with the data architects from ISO.

**3.12** [**C-SAE**](http://www.csaeconf.org/)

[[Doc 13](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/13_C-SAE_status-report.pptx)] was submitted and presented by Chen Guihua *(Senior Manager C-SAE)*. Through this presentation, the role of China Industry Innovation Alliance for the Intelligent and Connected Vehicles (CAICV) was underscored. It has over 500 members (including companies, universities, institutes from automotive, telecommunication, transportation and electronics industries) and 12 Working Groups. It was noted that in September 2020, CAICV published the Guideline for the Construction of ICV Group Standard System. The presentation also listed V2X related standards:

* T/CSAE 53-2020 - Cooperative intelligent transportation system – vehicular communication – application layer specification and data exchange standard Phase I
* T/CSAE 157-2020 - Cooperative intelligent transportation system – vehicular communication – application layer specification and data exchange standard Phase II
* 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

The application layer standards Phase I and Phase II define different scenarios, including basic application scenarios and enhanced application scenarios. These scenarios can be divided into four types, such as safety, efficiency, information service and traffic management.

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

[[Doc 15](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/15_ISO_TC204_status_report.pptx)] was submitted but not presented The presentation highlights the work of ISO/TC 204 committee Review Ad Hoc Group in terms of improvement options for operational and organizational changes. Consensus on this is still to be reached.

ISO/TC 204 plans to continue the discussion about the committee improvements at its October 2021 Plenary. Additionally, ISO/TC 204 AG1 is preparing an internal report to perform an analysis of external big data and artificial intelligence (AI) related standards, draft standards, standardisation roadmaps and other related relevant documents.

[[Doc 14](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/14_ISO_TC22_TC204_TC241_work_program.zip)] provides an overview of the active work program in terms of the items covered under ISO TC22, TC204, and TC241.

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

[[Doc 09R1](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/09R1_TTC_Connected_Car_WG_activity_report.docx)] was submitted and presented by Hideki Yamamoto *(TTC-Telecommunication Technology Committee)*. The presentation briefly elaborated on the role of TTC as an incorporated association that contributes to standardization activities in the field of ICTs by developing and disseminating standards for information and communication networks in Japan. Within TTC, the Working group on connected car (WG-Connected car) in TTC was established to discuss standardization issues on connected car. This report describes the recent activities of TTC WG-Connected car. In line with its mandate, TTC WG-Connected car contributes to standardization at the local, regional and international levels. The presentation provided brief updates on the Japan-specific guideline for using vehicles during disaster referred to as the V-HUB system, which has two types of interfaces (wireless network interface for devices and application interface for applications). The presentation highlighted the uses of V-HUB during the advent of disasters (and in the event that electric power line and fixed communication networks are disconnected). The presentation also highlighted TTC’s contribution to the Technical Paper ITUT-T FSTP.SS-OTA “Standardization survey for over-the-air updating in vehicles” within ITU-T SG16.

**3.15** [**TSDSI**](https://tsdsi.in/)

[[Doc 29](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/29_TSDSI_status_report.docx)] was submitted and presented by Vishnu Ram (Consultant – Services and Solutions, TSDSI). The presentation highlighted the role of TSDSI as an autonomous, membership based SDO for Telecom/ICT products and services in India. Accordingly, it develops standards for access, back-haul, infrastructure systems, solutions and services to best meet India specific Telecom/ICT needs, based on research and innovation in India. The current work of TSDSI includes:

* A Report on the India-specific flight requirements during take-off, in-flight and post-flight operations
* A Vehicle Tracking Device is being operated as a part of the Mandatory Testing and Certification for Telecom Equipment (MTCTE)

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

[[Doc 20](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/20_ISO_TC_241_status_report.pdf)] was submitted and presented by Peter Hartzell *(Committee Manager, ISO/TC241*). This presentation briefly provided a status update on the relevant standards relating to road traffic management systems, including:

* ISO 39001:2012 Road traffic safety (RTS) management systems – Requirements with guidance for use
* ISO 39002:2020 Road traffic safety – Good practices for implementing commuting safety management
* ISO 39003:20xx Road traffic safety (RTS) – Guidance on safety ethical considerations for autonomous vehicles

The future work in this domain will revolve around sustainability reporting and self-declaration with reference to ISO 39001, UN Agenda 2030 (SDGs) and GRI – Global Reporting Initiative (global standards for sustainability reporting).

The presentation also elaborated on the benefits of the liaison between ISO TC 241 WG6 and ITU -FG-AI4AD in the context of autonomous vehicles and overall road safety.

Additionally, Andrew Dryden (ISO TC 22) also submitted the active work program of ISO TC22, ISO TC204, and ISO TC241, (as contained in [[Doc 14](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/14_ISO_TC22_TC204_TC241_work_program.zip)]) for information to the CITS meeting.

**4 Status of ITS communications work in ITU**

**4.1** [**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.

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

[[Doc 17](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/17_ITU-R_SG5_status_report.pdf)] was submitted and presented by Uwe Loewenstein, Counsellor, ITU-R SG5.

He presented the key highlights of the new work within the study cycle (2019 – 2023), including:

* New Report ITU-R M.[CAV] on “Connected Automated Vehicles”: This reports aims to cover the radiocommunication elements for CAVs, radiocommunication systems supporting CAV, while examining spectrum harmonization and spectrum needs for CAVs. This report is expected to be finalized in 2023.
* New Report on “Application of the Terrestrial Component of IMT for Cellular-V2X”: This report aims to explore C-V2X as specific ITS application supported by IMT technology, along with the relationship characteristics of IMT and C-V2X. It will also examine the required technical capabilities of C-V2X supported by IMT. The report will conclude with a series on case studies on the topic.

The work on ITS within ITU-R WP 5A and WP 5D is:

WP5A:

* Rec. M.2121 (01/19) - Harmonization of frequency bands for Intelligent Transport Systems in the mobile service
* Rec. M.2444 (11/18) - Examples of arrangements for Intelligent Transport Systems deployments under the mobile service

WP5D:

* Rec. M.1036-6 (10/19) – IMT Frequency arrangements

Rec. M.2150 (02/21) – Terrestrial Radio interface standards for IMT-2020

**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 10R1](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210326-e-meeting/12_ITU-T_SG16_Status-Update.pptx)] was submitted and presented by Hideki Yamamoto *(Vice-chairman, SG16)*. This presentation provided brief highlights of the ITU-T Focus Groups established by ITU-T SG16 within the domain of ITS:

* Focus Group on Vehicular Multimedia ([FG-VM](https://www.itu.int/en/ITU-T/focusgroups/vm/Pages/default.aspx)): See section 4.3 for additional details.
* Focus Group on AI for Autonomous and Assisted Driving ([FG-AI4AD](https://www.itu.int/en/ITU-T/focusgroups/ai4ad/Pages/default.aspx))

The ongoing activities relating to the following new work items were also touched upon during this presentation:

* F.VM-VMA - Architecture of vehicle multimedia system
* F.VGP-RDSreqs - Requirements for remote driving service based on vehicle gateway platform
* H.VMMA-FCR - In-Vehicle Multimedia Applet - Framework and Capability Requirements
* F.DVMSF-Edge - Distributed vehicular multimedia services framework for V2X based Edge computing
* H.Sup.ITS-SD - Requirements for intelligent traffic sensing devices in roadside

The next meeting of ITU-T SG16 will take place virtually on 17-28 January 2022

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

[[Doc 23](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/23_FG-VM_status_report.docx)] was presented by Mythili Menon *(Project Officer, TSB/ITU)*.

Within the remit of FG-VM’s work, the following deliverables are being or have been finalized:

* “Use cases and requirement for the Vehicular Multimedia system”: This Technical Report was finalized at the Focus Group as [FGVM-01R2](https://www.itu.int/en/ITU-T/focusgroups/vm/Documents/FGVM-01R2.pdf?csf=1&e=uVY5lV) (also available as a [Flipbook](https://www.itu.int/en/publications/Documents/tsb/2020-FG-VM-Use-cases-and-requirements-for-the-vehicular-multimedia-networks/index.html#p=1)) and subsequently, it was transferred to the parent Study Group 16, where it was updated and endorsed as Recommendation [ITU-T F.749.3](https://www.itu.int/rec/T-REC-F.749.3-202008-I/en).
* The second Technical Report on “Architecture of Vehicle Multimedia” has been finalized and submitted to ITU-T SG16. Based on this FG-VM/TR02, ITU-T SG16 has Determined (through the TAP Process) Draft Recommendation [H.551](https://www.itu.int/ITU-T/workprog/wp_item.aspx?isn=17062).
* “Implementation aspects of Vehicular Multimedia”: This FG-VM/TR03 is being developed within FG-VM Working Group 3.

The next FG-VM meeting will be held on 29 September 2021 to advance the work on FG-VM/TR03.

**4.5 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&details=0&field=acdefghijo)**)**

[[Doc 11](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/11_ITU-T_SG17_status_report.pdf)] was submitted and presented by Sang-Woo Lee *(ITU-T Q13/17 Rapporteur)*. Within ITU-T, Study Group 17 is the lead Study Group working on security aspects including generic security architecture, mechanisms and management guidelines, ITS security including V2X communications. Within ITU-T Study Group 17, Question 13 serves as the lead Question for developing Recommendations regarding security aspect for ITS including road transport, railway, maritime and air transport as well.The approved Recommendation under this Question includes:

* 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

Ongoing work-items include those on:

* Software update capability for ITS communications devices
* Security guidelines for vehicular edge computing
* Security requirements for categorized data in V2X communication
* Methodologies for intrusion prevention system in connected vehicles
* Framework of security threat information sharing for connected vehicles
* Security guidelines for an electric vertical take-off and landing (eVTOL) vehicle in an urban air mobility environment

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

[[Doc 26](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/26_FG-AI4AD_activities_update.pdf)] was submitted and presented by Bryn Balcombe, FG-AI4AD Chair. This presentation provided a brief overview of the 5th -7th Meeting of FG-AI4AD:

* Fifth FG-AI4AD Meeting was organized on 2-3 March 2021. It was collocated with a AI for Good Webinar on “[A Regulatory Framework for Automated Driving: The Value of in-use Data for Creating a no-blame Culture of Safety](https://aiforgood.itu.int/event/a-regulatory-framework-for-automated-driving-the-value-of-in-use-data-for-creating-a-no-blame-culture-of-safety/)”
* Sixth FG-AI4AD Meeting was scheduled on 2-3 June 2021. This meeting was collocated with the Webinar on “[AI policy, standards and metrics for automated driving safety](https://aiforgood.itu.int/event/ai-policy-standards-and-metrics-for-automated-driving-safety/)”

The upcoming 7th meeting of FG-AI4AD will be collocated with the Webinar on “[AI for Road Safety](https://aiforgood.itu.int/event/ai-for-road-safety/)” under the umbrella of the AI for Good. This Webinar will also serve as the launch event of the new initiative on “[AI for Road Safety](https://aiforgood.itu.int/about/ai-ml-pre-standardization/ai4roadsafety/)”, which will be coordinated by the ITU, the UN Secretary-General’s Special Envoy for Road Safety and the UN Envoy on Technology. This initiative intends to harness the potential of AI in enhancing the safe system approach to road safety. It will also focus on several key areas including road safety data, regulatory frameworks, improved road infrastructure as well as generating post-crash response

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

[[Doc 27R1](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/27R1_ITU-T_SG20_status_report.pptx)] was submitted by Marco Carugi (*ITU-T Q2/20 Rapporteur*). There are seven approved Recommendations developed by ITU-T SG20:

* Y.4116 - Requirements of transportation safety services including use cases and service scenarios
* Y.4119 - Requirements and capability framework for IoT-based automotive emergency response system
* Y.4211 - Accessibility Requirements for Smart Public Transportation Services
* Y.4467 - Minimum set of data structure for automotive emergency response system
* Y.4468 - Minimum set of data transfer protocol for automotive emergency response system
* Y.4471 - Functional architecture of network-based driving assistance for autonomous vehicles
* Y.4457 - Architectural framework for providing transportation safety services

Currently, there are three work items underway within Q2/20:

* Y.IoT-UAS - Reqts - Use cases, requirements and capabilities of unmanned aircraft systems for Internet of Things
* Y.dt-ITS - Requirements and capability framework of digital twin for intelligent transport system
* Y.RMDFS-arch - Functional architecture of roadside multi-sensor data fusion systems for autonomous vehicles

**4.8 Organizations that did not send a progress report at this meeting**

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

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

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

– [IEC SEG11](https://www.iec.ch/dyn/www/f?p=103:186:0::::FSP_ORG_ID,FSP_LANG_ID:23128,25)

– [IMDA](https://www.imda.gov.sg/)

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

– ITU-T SG12 ([Q4/12](https://www.itu.int/itu-t/workprog/wp_search.aspx?isn_sp=3925&isn_sg=3931&isn_qu=4155&isn_status=-1,1,3,7&details=0&field=acdefghijo))

– [TIA](http://www.tiaonline.org/all-standards/committees/tr-48)

– [TTA PG905](http://www.tta.or.kr/English/new/standardization/Committee_newEngList.jsp)

– [TIAA](http://www.tiaa.org.cn/EN/)

**4.9 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-20210910-e-meeting/04_LS_FG-AI4AD.zip): LS/i/r on draft Recommendation ITU-T Y.4471 (ex Y.NDA-arch) “Functional architecture of network-based driving assistance for autonomous vehicle” (reply to SG20-LS195) [from FG-AI4AD]

*Abstract:* Through this Liaison Statement, FG-AI4AD provides comments to SG20 on the draft Recommendation ITU-T Y.4471 “Functional architecture of network-based driving assistance for autonomous vehicle”.

* [Doc 05](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/05_LS_ITU-T_SG16-LS246.zip): LS/i on Consent of ITU-T F.749.4 (ex F.VS-AIMC) "Use cases and requirements for multimedia communication enabled vehicle systems using artificial intelligence" (New) [from ITU-T SG16]

*Abstract:* This liaison statement informs about the Consent of F. 749.4 "Use cases and requirements for multimedia communication enabled vehicle systems using artificial intelligence" from the ITU-T Q27/SG16.

* [Doc 06](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/06_LS_ITU-T_SG20-LS226.zip): LS/i on initiation of new work item on draft Recommendation ITU-T Y.RMDFS-arch “Functional architecture of roadside multi-sensor data fusion systems for autonomous vehicles” [from ITU-T SG20]

*Abstract:* This liaison statement informs the relevant organizations about the initiation of a new work item on draft Recommendation ITU-T Y.RMDFS-arch “Functional architecture of roadside multi-sensor data fusion systems for autonomous vehicles” within ITU-T Study Group 20.

* [Doc 07](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/07_LS_ITU-T_SG16-LS247.docx): LS/i on Approval of FSTP.SS-OTA "Standardization survey for over-the-air updating in vehicle" [from ITU-T SG16]

*Abstract:* This LS from ITU-T SG16 informs about the work item FSTP.SS-OTA on "Standardization survey for over-the-air updating in vehicle", which has been approved within ITU-T Study Group 16.

* [Doc 08](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/08_LS_ETSI_TC_ITS.zip): LS on open contribution or review of the general C-ITS architecture (EN 302 665) update related to MCO, stable draft ETSI TS 103 696 from ETSI TC ITS - "Intelligent Transport Systems (ITS); C-ITS architecture; Multi-Channel Operation (MCO); Release 2" [from ETSI TC ITS]

*Abstract:* This LS from ETSI seeks feedback on STF858 work realizing the Multi-Channel Operation (MCO) specifications for ITS with specific operation in the 5.9 GHz spectrum band with current focus on the MCO study mature document TR 103 439. ETSI TC ITS kindly asks the recipients to review the stable draft of TS 103 696 and to provide feedback and comments preferably by 20 August 2021.

Most of the incoming LS were referred to CITS for information. Accordingly, these LSs were noted. However, the relevant information provided in the LS will be utilized to update the database as required. An outgoing Liaison Statement was sent on behalf of CITS to reiterate the invitation for inputs from relevant standards developing organizations (SDOs) to furnish the ITS Communication Standards online database. The draft LS was as discussed in [[Doc 24](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20210910-e-meeting/24_CITS_draft_outgoing_LS.zip)].

**5 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.

As a part of suggested action, the relevant inputs from the presentations will be incorporated into the ITS database.

**6 Next meeting**

The next CITS meeting will be on 18 March 2022. This meeting is expected to be collocated with the Future Networked Car Symposium (FNC – 2022). Based on the feedback received, details on the upcoming CITS and FNC-2022 will be circulated via email list. Participants were also invited to attend the [*AI for Road Safety*](https://aiforgood.itu.int/event/ai-for-road-safety/)webinar on 6 October 2021, during which the [initiative](https://aiforgood.itu.int/about/ai-ml-pre-standardization/ai4roadsafety/) of the [same name](https://aiforgood.itu.int/about/ai-ml-pre-standardization/ai4roadsafety/) will be launched, together with Office of the UN Secretary-General’s Envoy on Technology and UN Secretary-General’s Special Envoy for Road Safety.

**7 Closure of the meeting**

The Chair, Russ Shields, thanked ITU for remotely hosting the CITS meeting and having supported its organization. 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 17h48 hours local Geneva time.

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