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

***(17 March 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 17 March 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/WWl5oohWYzefWsl1o6c8tUyCRQRsM8m_JNkRLe1PkQVL4QRZBQZ0llCWelleV0lX.l1sIyfUegQD_NsB7?startTime=1679038832000) 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.

**61** participants joined the meeting representing many SDOs and other stakeholders. The list of participants is available in [[Doc 38](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/38_List_of_participants.pdf)].

**38** meeting documents were submitted. This meeting report was posted after the meeting as Doc 39. 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-20230317-e-meeting&FolderCTID=0x0120008D91490DA7927C4D8A0BB5A73929B07D&View=%7b73BE16B3-22C9-43D5-A9FD-D8BC067A87FF%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-20230317-e-meeting/01R3_CITS_Chair_draft_agenda.docx)] was adopted.

# 3 Status of ITS communications work in SDOs

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

[[Doc 11](https://staging.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/11_TTC_Connected_Car_WG_status_report.pdf)] was submitted by Masatoshi Mano *(TTC-Telecommunication Technology Committee)* and presented by Hideki Yamamoto *(TTC-Telecommunication Technology Committee)*. The presentation provided a brief introduction to the TTC as an association that contributes to standardization in the domain of ICT, based in Japan.

One of the aspects focussed on is connected car. The WG on Connected-Car was established to discuss standards issues relating to this topic. It contributes to the local as well as regional and international standardization (APT and ITU-T).

With respect to the work, the conceptual architecture of V-Hub is being dealt with through a new work item on the topic at ASTAP.

This Recommendation was approved in 2018. A Japan specific guideline for V-Hub was established in cooperation with Communications and Information network Association of Japan.

TTC-WG on Connected Car is exploring new items to be studied within the remit of SG16, SG17 and Focus Groups.

## 3.2 [ISO TC22](https://www.iso.org/committee/46706.html)

[[Doc 20](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/20_ISO_TC22_status_report.pdf)] was submitted and presented by Valérie Maupin *(BNA, Committee Manager ISO TC22).*

The presentation highlighted the ISO/TC-22 structure. It has 992 publications with 254 projects underway.

There are standards under development on data communications, e/e components systems, ergonomics.

The presentation underscored the following as megatrends:

* CO2 neutral mobility
* Connected vehicles
* Self-driving for improving driving comfort and safety

Ongoing projects (related to Vehicle Dynamics and Chassis Components and driving automation systems testing) include

* ISO 34501 to ISO 34505 “Test scenarios for automated driving systems”
* ISO 19206 series “Test devices for target vehicles, vulnerable road users and other objects, for assessment of active safety functions" - 9 parts (4 parts published)
* ISO/DTS 22133 "Test object monitoring and control for active safety and automated/autonomous vehicle testing —Functional requirements, specifications and communication protocol”
* ISO/AWI PAS 11585 "Road vehicles --Partial driving automation — Technical characteristics of conditional handsfree driving systems"
* ISO/DIS 22733-2 "Road vehicles — Test method to evaluate the performance of autonomous emergency braking systems — Part 2: Car to pedestrian"

It also has the Automated Driving Coordination Group (ADCG), whose activities include:

* Presentation of activities (SCs, WG14, SAE and CATARC) on AD
* Coordination between structure, when needed
* Develop a map of AD standards, including categorization
* Strengthen links to UNECE/GRVA regulations (presentation of key AD projects/standards).

## 3.3 [5GAA](http://5gaa.org/)

[[Doc 30](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/30_5GAA_status_report.pptx)] was 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. 5GAA consists of 119 members and recently celebrated their 6th year anniversary in October 2022. 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, standards, advocacy, and innovation. The presentation briefly highlighted the market developments on V2X connectivity, V2X deployment systems.

In terms of ongoing work, 5GAA is working on:

* C-V2X Roadmap – Phase III
* V2X via cellular networks
* Use-case implementation profiles
* Non-terrestrial networks for automotive
* VRU protection
* Automated valet parking
* 5G Market Pull

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

[[Doc 27](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/27_SAE_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: 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.

In terms of SAE Cybersecurity various committees are underway:

* Vehicle Cyber-security systems engineering
* Truck and Bus Controls Communications
* Vehicle Electrical Systems Security

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.

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

[[Doc 25](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/25_CATARC_status_report.pptx)] was submitted and presented by Jiajie Wu *(CATARC, China).*

This presentation provided an introduction to the SAC/TC114 and subcommittee 34, which was described as the largest professional technical committee under the SAC. There are 29 specialized subcommittees with more than 1000 members. Development status of the ICV (Intelligent and Connected Vehicle) industry in China was introduced.

For current ICV standard system construction in China, the presentation highlighted these aspects:

* Overall 4-layer legal structure for ICV in China
* Variety kinds of the standards are involved in ICV development
* Industry standard system of Connected Vehicles in China
* Standard system for intelligent and connected vehicles
	+ Overall plan for connected functions and application standards
	+ Standards of Application of Products and Technologies

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

[[Doc 14](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/14_ARIB_status_report.zip)] 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.

In the report, following ARIB Standards and the Forum Guidelines are highlighted:

* DSRC (Dedicated Short-Range Communication)
* Millimetre-wave Radars
* 700 MHz band ITS (Advanced Driver Assistance Systems)
* Cooperative and Automated Driving Communication
* Vulnerable Road Users

ARIB’s recent activities are mentioned as the Review of Technical Requirements for the 76 GHz Radar.

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

[[Doc 19](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/19_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 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.

Recent work in the area of ITS:

* TSDSI has published a report [DCS Report] capturing the India specific flight requirements during take off, in-flight and post-flight operations
* TEC has included the Vehicle Tracking Device as part of the Mandatory Testing and Certification for Telecom Equipment (MTCTE)
* ARAI: AIS-140: Intelligent Transportation Systems (ITS) - Requirements for Public Transport Vehicle Operation [AIS-140]
* BIS: Indian Product Standards related to Intelligent Transport Systems area available from BIS under Transport Engineering Department (TED) 28 on Automotive Tracking Device (ATD) and Integrated Systems and ITS: Reverse Parking Alert System (RPAS)

## 3.8 [TIAA](https://www.tiaa.org.cn/)

[[Doc 24](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/24_TIAA_status_report.pdf)] was submitted and presented by Feng Yuan *(BOE, China)* on behalf of TIAA.

This presentation highlighted the work on intelligent cockpit pioneered by BOE, which was presented to show recent developments in this field in China.

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

[[Doc 15](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/15_CSAE_status_report.pdf)] was submitted and presented by Yunjia Ji *(Standard Engineer, C-SAE).*

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

CSAE main services include academic communication, automotive policy research, collaborative innovation, talent training and technical standards establishment.CAICV and IMT2020 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:

* V2X Application Scenario TF
* Telematics Test TF
* System Architecture & Technical Requirements TF
* Business Model TF

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

[[Doc 32](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/32_IEEE_1609_WG_status_report.pptx)] was submitted and presented by Justin McNew *(IEEE 1609 Chair)*

Through the presentation, it was noted that the IEEE 1609.2 WAVE Security Services revision was just published.

Additionally, the Corrigendum is to be published this year (minor error corrections) for the1609.2.1 Certificate Management Interfaces for End Entities.

A new project is also underway on the IEEE 1609.2.2 Multi-Jurisdictional Interoperability Using Security Credentials Originating in Disparate Policy Domains.

Furthermore, the FCC rules regarding C-V2X are to be updated along with the WG considering 1609.3 revision after FCC rulemaking.

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

[[Doc 23](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/23_ISO_TC241_WG6_status_report.pptx)] was submitted and presented by Dave Conway *(Convenor WG6)*.

The presentation highlighted the following standard:

## Road Traffic Safety (RTS) — Guidance on ethical considerations relating to safety for autonomous vehicles

It also underscored the importance of the liaison established between ISO TC241 and FG-AI4AD during the latter’s lifetime.

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

[[Doc 34](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/34_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.

In terms of its main areas of work, ETSI TC ITS is focused on:

* Cooperative Intelligent Transport Systems
* MirrorLink in collaboration with Connected Car Communication Consortia

During the presentation, the current status of standards has been presented as follows:

* TR 101 607 ver. 1.2.1 provides and overview of relevant ETSI standards
* The specifications separate access layer dependent parts and access layer agnostic parts
* Specifications available for support of ITS G5 and LTE-V2X PC5 as access layer for short range communication

For the Release 2, other aspects such as collective perception service, misbehaviour detection and multi-channel operation.

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

[[Doc 35](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/35_Car2Car_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 main objectives include:

* Support the V2X 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, C2C is working on the following in relation to functionality:

* Guidance for Day-2-3-4
* Apps to Messages Matrix
* Vulnerable Road Users - VRU 2.0
* C2C-CC Position on connected and cooperative automated driving
* 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
* Use Cases & Test Cases for PTW (MAI/MAW)

In terms of technical work, the following work is underway:

* Multi-Channel Operation (MCO)
* C2C-CC Participation and Contribution to ECC / CEPT
* Position and Time improvement
* Technical Functional Safety Concept
* Post quantum cryptography for C-ITS
* Study on co-channel coexistence between ITS-G5 and C-V2X for future applications
* White Paper IEEE 802.11bd as fully backward compatible evolution of 11p (Published)
* Communication capabilities for advanced use cases

In the context of deployment, the following work is conducted:

* Requirement Harmonization Framework
* Release Management Tailoring
* Configuration Management
* Improve Implementation Requirements of SPATEM and MAPE
* Update of Gateway PP
* "Evaluation and certification of Gateway (VCS) PP
* Misbehaviour Detection
* Road Configuration information for inclusion in DENMs
* Support of Aftermarket Equipment
* E-bike Profiling and GTM (Go to Market)

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

[[Doc 10](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/10_CCSA_TC10_status_report.pptx)] 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 information exchange system for 5G enabled remote driving
* Technical requirements of information exchange system for 5G enabled remote driving Remote driving of logistics-related vehicles
* Technical requirements of 5G enabled remote driving information exchange system Remote operation in port
* Test Evaluation Methods of information exchange system for 5G enabled remote driving
* Technical Requirements of Information Exchange System for 5G enabled Remote Driving in Audio Video Transmission

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

[[Doc 13](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/13_ISO_TC_204_status_report.pptx)] *[*[*Doc 04*](https://staging.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/04_ISO_TC_204_ITS_standards_activities.zip)*]* were provided by Koorosh Olyai for information and presented by Jennifer Collins *(Committee Manager ISO TC204)*

The ISO TC204 committee was presented in detail.

The following ongoing work was underscored:

* ISO/TC 204/AG3 “Operational improvement group (OIP)”: Work completed, presented and approved by TC 204 at the 60th Plenary meeting in October 2022.
* ISO/TC 204/AG4 “Program coordination”: Work is ongoing.
* ISO/TC 204/AG5 “Publication and marketing review”: Work is ongoing.

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

[[Doc 17](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/17_IEEE_802-11_TGbd_status_report.pdf)] was submitted and presented by Bo Sun.

The main achievements highlighted include:

* IEEE P802.11bd successfully passed SA Ballot with final revision D8.0, and was officially published with editorial amendment
* The IEEE 1609 experts provided valuable comments and deeply participated in the comment resolution discussion through WG Letter Ballots and SA Ballots
* The TGbd has completed majority of its tasks
* IEEE 802 has sent IEEE P802.11bd D8.0 to ISO/IEC JTC1 SC6 for PSDO process

## 3.17 [W3C](https://www.w3.org/)

[Doc 26] was provided by Carine Bournez for information. (not presented).

W3C doesn't have new work to report on yet. The W3C Automotive Working Group is still working on standardization of VISS 2, and some effort is resuming on ontologies (no new publication since our last report).

Links to the ongoing work was provided as follows:

* [VISS 2 Core and Transport specifications](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.w3.org%2FTR%2F2023%2FWD-viss2-core-20230117%2F&data=05%7C01%7Cstefano.polidori%40itu.int%7C990f142d825b4bd4179408db25fe448d%7C23e464d704e64b87913c24bd89219fd3%7C0%7C0%7C638145546256422481%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=h43FLIQIA3V998%2F%2BaQe6%2BXpj2OJHTKOqkOF2VxRwdVQ%3D&reserved=0)
* [VSSo: Vehicle Signal Specification Ontology](https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.w3.org%2FTR%2F2022%2FWD-vsso-20220303%2F&data=05%7C01%7Cstefano.polidori%40itu.int%7C990f142d825b4bd4179408db25fe448d%7C23e464d704e64b87913c24bd89219fd3%7C0%7C0%7C638145546256422481%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=GSK2K93nt9Oy651frWDm8gbmt07XX9ZqYaN7fDBz9iY%3D&reserved=0)

There are still ongoing joint discussions with COVESA on other pieces of work. The W3C Automotive Working Group charter expires at the end of May. For the next renewal, discussion is already open for future work around the Web and Automotive (with or without connections to other fields like smart cities, Web of Things, etc.).

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

[[Doc 29](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/29_WWRF_Connected_Car_status_report.pdf)] was submitted by Seshadri Mohan *(Chair, WWRF VIP CV WG)* for information (not presented).

The presentation draft contains 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 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”.

* Connected Vehicles Sessions were organized at the following meetings:
* In conjunction with WWRF 5G Huddle in Ottawa, Canada, May 12, 2022
	+ As part of WWRF 47 in Bristol, UK, during June 21‐23, 2022
	+ As part of WWRF 48 in Abu Dhabi, UAE, November 7‐9, 2022
	+ A workshop on connected vehicles as part of 2022 IEEE ANTS

# 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 36](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/36_UNECE_WP29_status_report.pdf)] was submitted and presented by Francois Guichard *(Secretary, UNECE WP.29 GRVA)*.

A task force was established to follow up on a proposal from China to address V2V. The TF was established in the framework of the informal group on ITS. Mr Shields will act as Secretariat.

SC.3 (RIS, automation & smart shipping)

WP.15 (Telematics in the field of dangerous goods)

WP.1 (Adopted a Resolution on […] activities other than driving […])

WP.29 (Adopted a significant update to UN Regulation No. 157-ALKS)

GRVA (2 technical WS on A.I., Discussion of China’s prop. to address v2v, 8 WS on the implementation of cyber security requirements)

WP.24 (WS on information and document digitalization in intermodal transport, WS on Automation)

WP.5 (Activities on cyber security threats to electrical vehicle charging stations)

SC.2 (Creation of a new innovation platform to identify key ITS areas for competitiveness)

## 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 33](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/33_ITU-R_status_report.pdf)] was submitted and presented by Uwe Loewenstein, Counsellor, ITU-R WP5.

The presentation underscored the ITS-related work in ITU-R WP 5A and WP 5D.

Under WP 5A, the following work is underway:

* Revision ongoing (finalization in 9/23)
* Rec. M.2121 (01/19) - Harmonization of frequency bands for ITS in the mobile service (PDNR)
* Report M.2444 (11/18) - Examples of arrangements for ITS deployments under the mobile service (PDNR)

Within WP 5D, the following is underway:

* Rec. M.1036-6 (10/19) – IMT Frequency arrangements: The current revision shall include the bands identified at WRC-19 still stalled due to diverging views

Additionally, ITU-R SG 5 approved new Reports (11/2022):

* “Use of the terrestrial component of IMT for the Cellular-Vehicle-to-Everything” (ITU-R M.2520)
* “Future Technology Trends Report” (ITU-R M.2516)

The following new reports are also being developed:

* New Report “The use of the terrestrial component of IMT for the Cellular-Vehicle-to-Everything”
* New (Draft) Report ITU-R M.[CAV] – Connected Automated Vehicles

## 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 16](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/16_ITU-T_SG16_status_report.pptx)] *[*[*Doc 05*](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/05_SG16_LS34.zip)*][*[*Doc 06*](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/06_SG16_LS33.zip)*][*[*Doc 07*](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/07_SG16_LS20.zip)*]* were submitted and presented by Hideki Yamamoto *(Vice-chairman, SG16)*.

The presentation briefly provided an overview of the activities of FG-VM and FG-AI4AD, as these Focus Groups were established by ITU-T Study Group 16.

Three new work items were agreed:

* H.VM-VMIA: Implementation of vehicular multimedia systems
* F.VSAI-ARCH: Functional architecture of multimedia communication enabled vehicle systems using artificial intelligence
* H.ADSDP-spec: Automated driving safety data protocol: Specification

A status update was also provided for the work items under Q27/16.

## 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=-1,1,3,7,2&details=0&field=acdefghijo))

[[Doc 18](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/18_ITU-T_SG17_status_report.pdf)] *[*[*Doc 12*](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/12_SG17_LS51.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.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 Approved
* X.1382 – Framework of security threat information sharing for connected vehicles
* X.1383 – Security requirements for categorized data in V2X communication Approved

## 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 37](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/37_FG-AI4AD_status_report.pdf)] was submitted and presented by Bryn Balcombe, FG-AI4AD Chair. The FG-AI4AD was established in October 2019 and completed its activities in September 2022.

The presentation provided an overview of the Molly Problem:

*A young girl called Molly is crossing the road alone and is hit by unoccupied self-driving vehicle.*

*There are no eye-witnesses.*

*How can the AD Software explain what happened?*

In the context of the Molly Problem, three aspects are focussed on:

* Situational Awareness: Did the AD understand the circumstance and situation?
* Hazard awareness: Did the AD understand the hazards?
* Mitigating Action: Did the AD execute the risk mitigating action for the hazards successfully?

The presentation also highlighted the link between FG-AI4AD Technical Report 01 – Automated driving safety data protocol – Specification, and the proposed H.ADSDP-spec, which is under development by ITU-T SG16 to further the work of the FG-AI4AD which is now concluded.

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

[[Doc 09](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/09_ITU-T_SG20_status_report.pdf)] was submitted by Marco Carugi (*ITU-T Q2/20 Rapporteur and SG20 co-representative to CITS*).

Within SG20, the following work-items are under development:

* Y.DRI-reqts: Requirements for autonomous urban delivery robots interworking
* Y.dt-ITS: Requirements and capability framework of digital twin for intelligent transport system
* Y.dt-ITS: Requirements and capability framework of digital twin for intelligent transport system
* Y.IoT-RTPS: Use cases, requirements and capabilities of IoT infrastructures in roadside traffic perception system
* Y.EV-charging: Requirements of smart charging service for electric vehicles
* Y.RMDFS-arch: Functional architecture of roadside multi-sensor data fusion systems for autonomous vehicles
* Y.Smart-SBS: Requirements and functional architecture of smart sharing bicycle service
* Y.Highway-KPI: Key performance indicators of ICT based highway traffic safety assessment
* Y.STR.HTSAoverview: Technical Report Overview of ICT

## 4.8 [ITU-T SG5](https://www.itu.int/en/ITU-T/studygroups/2017-2020/05/Pages/default.aspx)

[[Doc 28](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/28_ITU-T_SG5_status_report.pptx)] was submitted and presented by Paolo Gemma (*ITU-T WP2/5 Chairman*). The relevant standards and work of ITU-T Study Group 5 on EMF, environment, climate action, sustainable digitalization, was presented.

In ITU, the international standards on Sustainable Digital Transformation are focussed on the following:

* E-waste
* Circular economy
* Energy Efficiency, Green Network and Data Centres
* GHG Emissions and ICT Sector

Some examples of the standards presented include:

* L.1023 – Assessment method for circular scoring
* L.1033 – Guidance for institutions of higher learning to contribute in the effective life cycle management of e-equipment and e-waste
* L.1031 – Guideline for achieving the e-waste targets of the Connect 2030 Agenda
* L.1304 – Procurement criteria for sustainable data centres
* L.1450 – Methodologies for the assessment of the environmental impact of the information and communication technology sector
* L.1410 – Methodology for environmental life cycle assessments of information and communication technology goods, networks and services
* L.1470 – Greenhouse gas emissions trajectories for the information and communication technology sector compatible with the UNFCCC Paris Agreement

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

– [FG-VM](https://www.itu.int/en/ITU-T/focusgroups/vm/Pages/default.aspx)

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

– [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)

– [TIA](https://tiaonline.org/)

– [IMDA](https://www.imda.gov.sg/)

## 6 Incoming Liaison Statements

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

• [Doc 05](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/05_SG16_LS34.zip): LS/i on the initiation of new work item ITU-T H.ADSDP-spec "Automated driving safety data protocol: Specification" [from ITU-T SG16]
*Abstract:* This LS informs ETSI TC ITS, UNECE WP29/GRVA, ITU-T CITS on the creation of new work item ITU-T H.ADSDP-spec "Automated driving safety data protocol: Specification".

• [Doc 06](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/06_SG16_LS33.zip): LS/i on the initiation of new work item on ITU-T F.VSAI-ARCH "Functional architecture of multimedia communication enabled vehicle systems using artificial intelligence" [from ITU-T SG16]
*Abstract:* This LS informs ITU-T SG17, SG20, CITS, ISO TC204, ISO/IEC JTC1/SC42, ISO TC 22/SC 32 on the creation under Q27/16 of new work item F.VSAI-ARCH "Functional architecture of multimedia communication enabled vehicle systems using artificial intelligence".

• [Doc 07](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/07_SG16_LS20.zip): LS/i on new work item ITU-T H.AMR-ARCH "Requirements and architecture for multimedia functions for autonomous mobile robots connected with network" [from ITU-T SG16]
*Abstract:* This liaison statement is an information of new work item on the requirements and architecture of multimedia functions on autonomous mobile robot connected with network.

• [Doc 08](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/08_FG-AN_LS10.zip): LS/i on Autonomous Networks deliverables from ITU FG-AN [from ITU FG-AN]
*Abstract:* This liaison statement informs the relevant bodies of the approval of the second batch of deliverable of ITU-T FG-AN, “ITU-T Technical Specification Architecture framework for Autonomous Networks,” and “ITU-T Technical Specification Trustworthiness evaluation for autonomous networks including IMT-2020 and beyond”.

• [Doc 12](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/12_SG17_LS51.docx): LS/i on the initiation of new work items on ITU-T F.VSAI-ARCH and H.ADSDP-spec (reply to SG16-LS33) [from ITU-T SG17]
*Abstract:* This liaison statement responds to ITU-T SG16 on the initiation of new work items on ITU-T F.VSAI-ARCH and H.ADSDP-spec and informs ITU-T SG16 and CITS on the initiation of a new work item X.ota-sec “*Implementation and evaluation of security functions to support over-the-air (OTA) update capability in connected vehicles*”

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 Outgoing Liaison Statements

• [Doc 21](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/21_LS_CITS-SG.docx): Draft LS on provision of inputs to the online ITS communication standards database
*Abstract:* Through this liaison statement, the Collaboration on ITS communication standards (CITS) would like to continue inviting inputs from ITU Study Groups to populate the ITS Communication Standards online database. CITS would also like to inform about the recent advancements made on the online database of ITS standards

• [Doc 22](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20230317-e-meeting/22_LS_CITS-SDOs.docx): LS on provision of inputs to the online ITS communication standards database
*Abstract:* Collaboration on ITS communication standards (CITS) continues to invite inputs from relevant standards developing organizations (SDOs) to update the ITS Communication Standards online database.

These outgoing liaison statements were agreed and will be sent by TSB accordingly.

# 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/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.

# 9 Next meeting

The next CITS meeting is planned in September/October 2023. 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 recognized that the Future Networked Car Symposium ([FNC-2023](https://fnc.itu.int)) took place virtually from 13th to 16th March 2023 as the Geneva International Motor Show 2023 was cancelled. The Symposium was a great success, it was well attended as in previous editions, the full program and recording of the sessions is available at: <https://fnc.itu.int/programme>

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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