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| ITU logo | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATIONSTANDARDIZATION SECTOR**STUDY PERIOD 2017-2020 | **DOC 20**  |
| **Collaboration on Intelligent Transport Systems Communication Standards** |
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| Please don’t change the structure of this table, just insert the necessary information. |

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

***(6 December 2017, Arlington, USA)***

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

1. **Introduction**

The meeting of the Collaboration on ITS Communication Standards (CITS) took place on 6 December 2017 at Telecommunications Industry Association (TIA) premises in Arlington, USA, kindly hosted by the TIA. Mr T. Russell Shields (Ygomi LLC) chaired the meeting assisted by Stefano Polidori (ITU/TSB Advisor).

The meeting was held in conjunction with the **ITU/TIA Workshop on** "[***Autonomous Transportation*" – *How communications will change vehicles & transport***](http://www.tiaonline.org/autonomous-transportation)**,** held on the day before, 5 December 2017, at the same venue.



1. **Opening of meeting, introductions and adoption of the agenda**

**T. Russell Shields**, Chair of CITS, opened the meeting and provided background information on the Collaboration on ITS Communication Standards (CITS) and its role. He clarified that the CITS is not a standards-setting body, but a standards-facilitating group, mainly used for exchanging information and promoting Collaboration to support ITS communications standards.

The aim of CITS is to provide a globally recognized forum for the creation of an internationally accepted, globally 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.

The TSB Advisor explained that the Collaboration is following a yearly cycle of three meetings and three workshops: (1) March, during Geneva Motor Show; (2) summer in Asia; (3) in the Americas.

The Chair invited all participants present on site as well as those connected remotely to introduce themselves. **24** participants joined the meeting representing various Standards Development Organizations (SDOs) and other stakeholders, of which six joined remotely and 18 on site. The list of participants is available and posted as [Doc 19](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/19_list-of-participatns_CITS-final.xlsx).

A total of 19 meeting documents were submitted. This meeting report was posted as Doc 20 after the meeting. All related meeting documents were openly accessible by everyone in the CITS SharePoint site:

<https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington>

The draft agenda was adopted as in [Doc 1](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/01_Chair_draft_agenda.docx).

1. **Wrap-up of ITU/TIA Workshop (5 December 2017)**

The afternoon before the CITS meeting, a workshop on "[***Autonomous Transportation*" – *How communications will change vehicles & transport***](http://www.tiaonline.org/autonomous-transportation)was held and participants expressed appreciation for ITU and the TIA for having supported a networking reception.

The workshop explored autonomous transportation from the point of view of the technology in Session 1 and the economics in session2.

**3.1 Session 1: Advancing Autonomous Vehicle Transportation Technologies**

As autonomous vehicles begin to navigate America’s roads, the high-speed communications networks and infrastructure that TIA members build and enable are the cornerstone of these technologies. Companies have been ramping up on developing innovations that will save lives, create jobs, expand mobility options and lead to more efficient and connected communities. The U.S. House recently passed legislation that sets a clear federal testing and deployment framework to ensure safer roads, and a clearer regulatory path towards bringing this transformative technology to market. Speakers discussed the advancements, solutions and obstacles being tackled to further deploy self-driving vehicles and enable the necessary mobile broadband communications infrastructure.

**3.1.1 Panelists and moderator:**

Session 1 was moderated by:
[***Roger C. Lanctot***](http://www.tiaonline.org/autonomous-transportation-speakers#lanctot)*, Director, Automotive Connected Mobility, Strategy Analytics*

Panelists included:
[***Chris Bluemle***](http://www.tiaonline.org/autonomous-transportation-speakers#bluemle)*, Corporate Development & Strategy, Crown Castle*[***Kevin Curtis***](http://www.tiaonline.org/autonomous-transportation-speakers#curtis)*, Dist. IoT Architect Connected Cities, Verizon Smart Communities & Venues*[***Harry Lightsey***](http://www.tiaonline.org/autonomous-transportation-speakers#lightsey)*, Executive Director, Emerging Technologies Policy, GM*[***Vince Park***](http://www.tiaonline.org/autonomous-transportation-speakers#park)*, Senior Director Engineering, Qualcomm Technologies, Inc.*

**3.2 Session 2: The Economics of Autonomous Transportation**

The promise of autonomous transportation technologies present both opportunities and challenges for the automotive and communications industries, municipal planners, and stakeholders of smart communities. The ability of vehicles to travel autonomously will change how people and goods move from point a to point b, and how communities big and small are engineered for tomorrow. This panel discussed the economics of autonomous transportation, including:

– The role and design of vehicles and the supply chains involved

– The impact of autonomous transportation systems on users, infrastructure, the environment and the broader living experience

– Business models incorporating and moving beyond the sharing economy and Mobility as a Service (MaaS)

– Prospective financial efficiencies and new business opportunities

**3.2.1 Panelists and moderators:**

Session 2 was moderated by:
[***David E. Pickeral, JD***](http://www.tiaonline.org/autonomous-transportation-speakers#Pickeral)*, Strategic Advisor, Venture Capital/Private Equity/Startups*

Panelists included:[***Dr. Mark Franz***](http://www.tiaonline.org/autonomous-transportation-speakers#franz)*, Lead Transportation Analyst, CATT Laboratory, University of Maryland*[***Paul Mackie***](http://www.tiaonline.org/autonomous-transportation-speakers#mackie)*, Communications Director, Mobility Lab*[***Greg Rogers***](http://www.tiaonline.org/autonomous-transportation-speakers#rogers)*, Policy Analyst and Assistant Editor, ETW, Eno Center for Transportation*

1. **Status of ITS communications work in various SDOs**

**4.1** [**SAE International**](http://www.sae.org/)

[[Doc 16](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/16_SAE-Updates-CITS.pdf)] was submitted by SAE and provides a detailed progress report on activities related to CITS. It was presented remotely by S. William Gouse, SAE International.

See the report for details on approved standards and ongoing work.

On request on the status of SAE Autonomous transportation standards it was mentioned that it is on balloting.

It was asked what the international relations of SAE are. SAE is involved with ISO TC 22 and ISO TC 204 (SAE provides its Secretariat). They also collaborate with ISO/IEC JTC 1 and plan to join UNECE WP29 and WP1. SAE is in the middle of establishing an MoU with ITU as well.

**Action (1) ITU/TSB:**
Follow up on discussion with **SAE International leadership** on MoU and collaboration and publication of joint specifications.

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

[[Doc 11](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/11_TTC_Updates%29CITS_20171206.pptx)] was submitted by TTC and provides updates on activities related to CITS. It was presented by Yushi Naito, Mitsubishi Electric, Japan.

TTC has proposed a draft APT Specification of V-HUB at ASTAP-29 Meeting (Bangkok, 22-25 Aug. 2017) and was basically agreed on. It was clarified that that TTC works with ITU-T while RIB works with ITU-R. In addition, APT is the regional standardization committee for all Asia while ASTAP is a forum of APT to make technical discussions under APT. The Chair stressed the importance to contribute to the ITU these regional standardization efforts.

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

[[Doc 17](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/17_WWRF_CV_WG_CTIS.pptx)] was submitted by WWRF and provides a presentation on their activities related to CITS. It was presented by Seshadri Mohan, IntelliNexus LLC. It was noted that WWRF should also coordinate with 5GAA. In addition oneM2M should be identified as an SDO in the slides.

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

[[Doc 18](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/18_TC204_Status-Report_CITS.pptx)] was submitted by TC204 and provides a detailed progress report on activities related to CITS. It was presented by Adrian Guan, TC 204 Secretariat, SAE International.

The Secretariat of TC204 is now provided by SAE International. TC 204 has now a formal relationship with UNECE. Greater collaboration between ISO TC 204 and ISO TC 22 is envisaged. See the report for details on approved standards and ongoing work. The 51th Plenary of ISO TC 204 is planned in Seoul, Republic of Korea, 23-27 April, 2018.

**4.5** [**IEEE VTS Standards**](http://www.vtsociety.org/index.php?option=com_content&view=article&id=71&Itemid=73)

[[Doc 09](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/09_IEEE_presentation_to_CITS.ppt)] was submitted by IEEE and provides a detailed progress report on activities related to CITS. It was presented by Tom Kurihara, Chair IEEE 1609 WG.

It was commented that a protocol neutral specification that would allow interworking of V2X cellular-based and wifi V2V developed by IEEE would be needed.

See the report for details on approved standards and ongoing work.

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

Russ Shields briefly introduced the work of UNECE WP.29 related to ITS communications.

Three working groups under WP.29 are of particular interest to the ITS communications:

1. *Informal Working Group on ITS/Automated Driving (IWG ITS/AD)*. Reporting to WP.29. The documentation of IWG ITS/AD is available [here](https://www2.unece.org/wiki/pages/viewpage.action?pageId=2523344).
2. *UNECE Task Force on cybersecurity and over-the-air issues (CS/OTA)*. Reporting to IWG ITS/AD. The documentation of CS/OTA is available [here](https://www2.unece.org/wiki/pages/viewpage.action?pageId=40829521). ITU representatives are actively participating in this activity.
3. *Informal Working Group on Accident Emergency Call Systems (IWG AECS)*. Reporting to WP.29. The documentation of IWG AECS is available [here](https://www2.unece.org/wiki/pages/viewpage.action?pageId=14319865).

WP.29 convenes officially three times per year (March, June, and November) and entrusts informal groups with specific problems that need to be solved urgently or that require special expertise. ITU has a standing invitation to participate in WP.29 and its working groups, and is promoting the use of international standards in these activities.

1. **Status of ITS communications work in ITU**

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

Stefano Polidori pointed participants to a [spreadsheet](https://staging.itu.int/en/ITU-T/extcoop/cits/Documents/ITS-work-items.xlsx) (freely available online) collecting 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 is regularly updated.

**5.2 ITU-T** [**SG12**](https://www.itu.int/en/ITU-T/studygroups/2017-2020/12/Pages/default.aspx) **(**[**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)**)**

[[Doc 08](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/08_ITU-T_SG12_updates.docx)] was submitted by SG12 and provides a detailed progress report on activities related to CITS. It was presented by Stefano Polidori, ITU/TSB Advisor.

A new work item is being worked on by Q4/12: P.ICC “Transmission characteristics for in car communication”. Completion is envisaged during the fourth quarter of 2018.

Minor maintenance work is underway for the other work items under responsibility of Q4/12, notably on the standards addressing hands-free communication in motor vehicles.

**5.3 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)**)**

[Docs [4](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/04_ITU-T_SG16_security_privacy_and_trust_IoT.docx), [5](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/05_ITU-T_SG16_ITS_security.zip), [6](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/06_ITU-T_SG16_security_aspects_on_ITS.docx) and [7](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/07_ITU-T_SG16_automotive_emergency.docx)] were submitted by SG16. Docs 4, 5, 6 and 7 were liaison statements sent to CITS for information, they were not reviewed in detail as the Doc 10 provided also an overview of those liaisons.

[[Doc 10](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/10_ITU-T_SG16_Updates_CITS.pptx)] was submitted by SG16 representative and provides a detailed progress report on activities related to CITS. It was presented by Yushi Naito, Mitsubishi Electric, Japan, SG16 representative.

Sg16 consented two new Recommendations:

– ITU-T H.550 (ex H.VGP-ARCH) "*Architecture and functional entities of vehicle gateway platforms*" (New) [TD148-R1/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-171016-TD-PLEN-0148);

– ITU-T H.560 (ex G.V2A) "*Communications interface between external applications and a Vehicle Gateway Platform*" (New) [TD149/Plen](http://www.itu.int/md/meetingdoc.asp?lang=en&parent=T17-SG16-171016-TD-PLEN-0149).

See the report for details on approved Recommendations and ongoing work.

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

[[Doc 2](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/02_ITU-T_SG17_Results-ITS-Security-Workshop.zip)] was submitted by SG17 and provides the results on the ITS Security Workshop held by SG17. It was noted for information.

[[Doc 3](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/03_ITU-T_SG17_security_aspects_on_ITS.zip)] was submitted by SG17 and provides a liaison statement to SG16 that was copied to CITS, which noted it for information.

[[Doc 15](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/15_ITU-T_SG17-Updates-CITS.zip)] was submitted by SG17 representative and provides a detailed progress report on activities related to CITS. It was presented by Koji Nakao, NICT, SG17 representative.

New Question 13/17 “Security Aspects for ITS communications’” formally approved at the last SG17 meeting in September 2017.

Recommendation ITU-T X.1373 “Secure software update capability for intelligent transportation system communication devices” is now published.

SG17 is working on other draft recommendations (three attachments were provided). See the report for details on approved Recommendations and ongoing work.

SG17 actively participate in UN Task Force on Cyber Security and OTA Issues (CS/OTA).

ISO/TC204 and TC204/WG18 are SG17 target for collaboration on ITS security.

**5.5** [**SG20**](https://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/default.aspx) **(**[**Q2/20**](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q2.aspx)**,** [**Q4/20**](http://www.itu.int/en/ITU-T/studygroups/2017-2020/20/Pages/q4.aspx)**)**

[[Doc 14](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/14_ITU-T_SG20-ITS-activities.pdf)] was submitted by SG20 representative and provides a detailed progress report on activities related to CITS. It was presented remotely by Marco Carugi, NEC, SG20.

SG20 has approved one Recommendation: ITU-TY.4116 *“Requirements of transportation safety services including use cases and service scenarios”* and is currently working on three more draft documents: Y.AERS-reqts *“Requirements and capability framework for IoT-based automotive emergency response system”*; Y.IoT-ITS-framework *“Framework of Cooperative Intelligent Transport Systems based on the Internet of Things”*; and Y.TPS-afw *“Architectural framework for providing transportation safety services”.* . See the report for details on approved Recommendations and ongoing work.

The meeting noted that a number of work items under SG20 are also ongoing work in ISO TC 204

**Action (2) SG20:**
Exchange information and coordinate with **ISO/TC 204** as a duplication of work on ITS standards development may be ongoing among the two SDOs.

**5.6 ITU-R** [**SG5**](https://www.itu.int/en/ITU-R/study-groups/rsg5/Pages/default.aspx) **(**[**WP5A**](https://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5a/Pages/default.aspx)**)**

[[Doc 13](https://www.itu.int/en/ITU-T/extcoop/cits/Documents/Meeting-20171205-Arlington/13_ITU-R-WP5A_updates.pptx)] was submitted by SG5 representative and provides a detailed progress report on activities related to CITS. It was presented by Tom Schaffnit, USA, ITU-R WP5A representative.

WP 5A is working on potential recommendations regarding the harmonized use of spectrum for ITS, among other ITS topics. Twenty-nine input contributions related to ITS at this meeting. See the report for details on approved Recommendations and ongoing work.

1. **Next meeting**

The next Collaboration meeting will take place on **9 March 2018 in Geneva, Switzerland,** hosted by ITU. It will succeed the **ITU/UNECE** **Symposium on The Future Networked Car (**[**FNC-2018**](https://www.itu.int/en/fnc/2018/Pages/default.aspx)**) at Geneva Motor Show, 8 March 2018**.

The following CITS meeting plus workshop is planned on 6‑7 September 2018, Nanjing, China (TBC).

1. **Close of meeting**

Russ Shields thanked TIA for hosting the meeting and workshop and expressed appreciation to all participants for their inputs and the fruitful discussions. The meeting closed at 13:20 local time.

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