

ITU Workshop on the Future of Vehicular Multimedia

23 January 2019 ,Tokyo, Japan

Intelligent Transport Systems standardization in ITU



Stefano Polidori

Advisor, ITU Telecommunication Standardization Bureau



: international organization with global presence



5 Elected Officials

~750 Staff from ~80 Countries

Membership driven (193 M.S., +700 private entities, +150 Academia)

6 UN Official Languages: Arabic, Chinese, English, French, Russian, Spanish

Headquarters in Geneva with Liaison Office in New York

Regional offices in Addis Ababa, Bangkok, Brasilia, Cairo

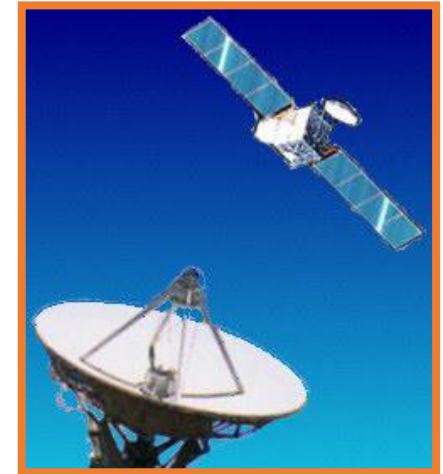
Area offices in Bridgetown, Dakar, Harare, Jakarta, Moscow, Santiago, Tegucigalpa, Yaoundé



Three Sectors (ITU-T, ITU-R, ITU-D): Standards, Radiocommunications & Development



ITU-T Standardization



ITU-R Radiocommunication



ITU-D Development



**Committed
to Connecting
the World**

Standardization on Intelligent Transport Systems (ITS): Multiple Study Group approach

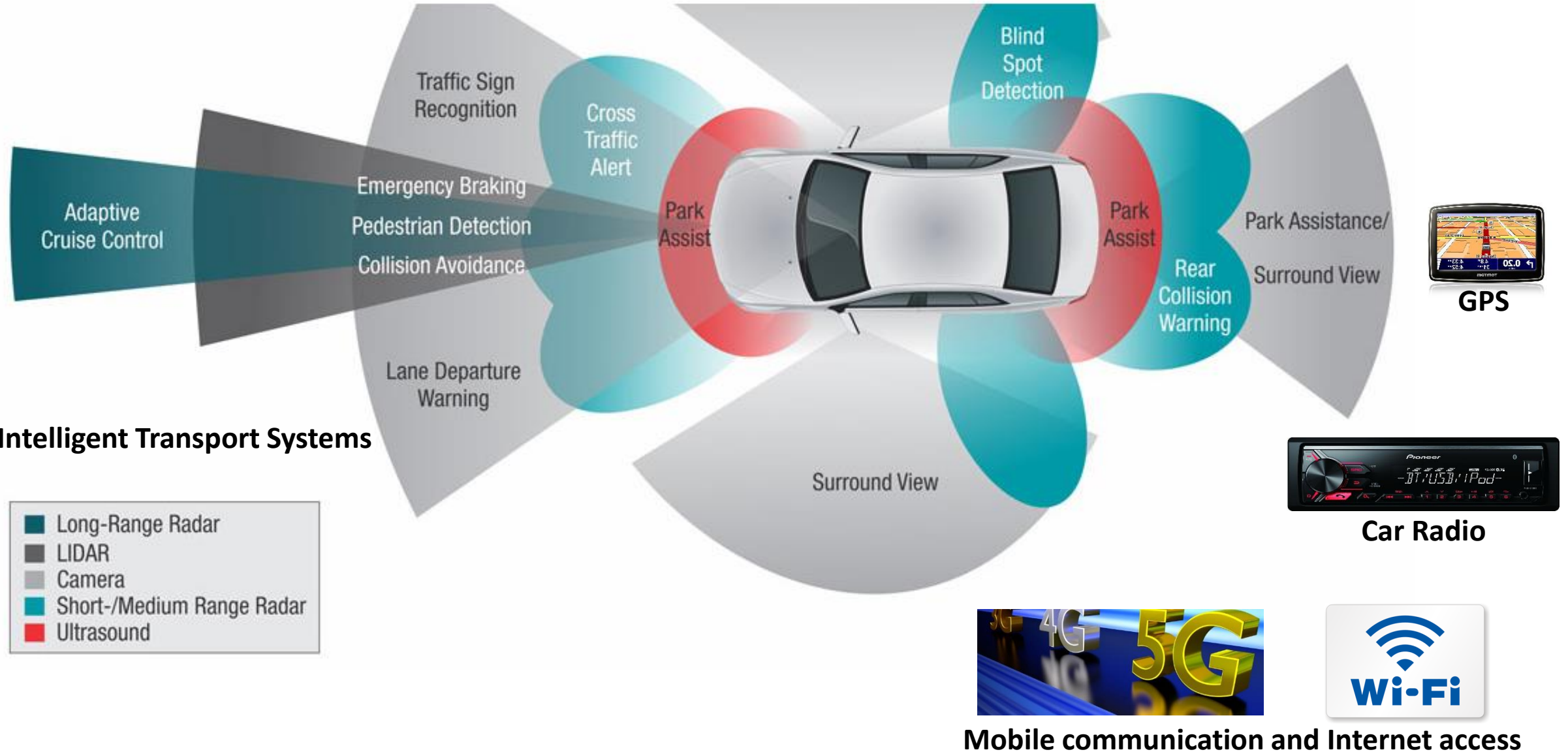
Radiocommunication Sector (ITU-R)

- Working Party 5A (spectrum allocation & harmonization, automotive radar)

Telecommunication Standardization Sector (ITU-T)

- Study Group 17 : ITS and automotive cybersecurity (remote SW update)
- Study Group 12 : Quality of Service of speech and audio in vehicles
- Study Group 2 : Numbering for In Car Emergency Communication (ICEC)
- Study Group 20 : ITS and Internet of Things and Smart Cities
- Study Group 16 : Vehicle gateway and in car multimedia platforms
 - *ITU-T Focus Group on Vehicular Multimedia (FG-VM)*

ITU allocates spectrum for vehicles



ITU-R: Radiocommunication and ITS

- Techniques to transfer data over short distances between roadside infrastructure and mobile units (V2V and V2X) - [M.2084-0](#)
- Technologies and characteristics for Dedicated Short Range Communications (DSRC) - 5.8 GHz - [M.1453-2](#)
- System characteristics and applications for Automotive radar in various frequency bands) - [M.1452](#), [M.1453](#), [M.1890](#), [M.2057](#)
- System requirements for Millimeter wave radiocommunication (including Collision avoidance radar) ~ 60-80 GHz- [M.1452-2](#)
- Automotive Radar technologies and possible interference with incumbent services – 78 GHz - [M.2322-0](#)
- Usage of ITS technologies, frequency bands, status of standardization, and related applications and deployments in ITU Member States [M.\[ITS_USAGE\]](#)
- Studies on harmonisation of frequency bands for ITS services [M.\[ITS_FRQ\]](#)
- Currently working on studies in preparation of WRC-19: Plans to consider possible global or regional harmonized frequency bands for evolving ITS

Standardization on Intelligent Transport Systems (ITS): Multiple Study Group approach

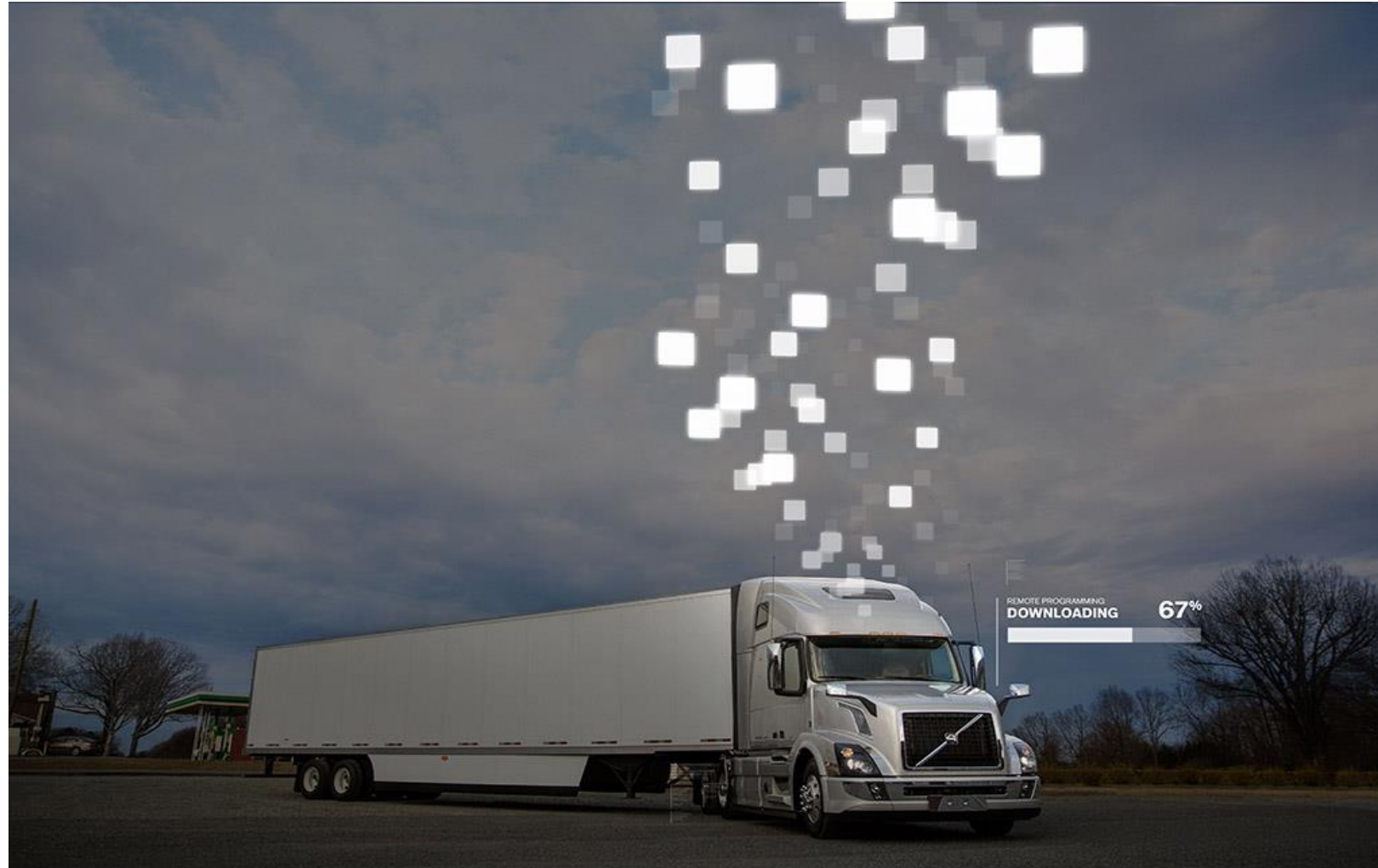
Radiocommunication Sector (ITU-R)

- Working Party 5A (spectrum allocation, automotive radar)

Telecommunication Standardization Sector (ITU-T)

- Study Group 17 : ITS and automotive cybersecurity (remote SW update)
- Study Group 12 : Quality of Service of speech and audio in vehicles
- Study Group 2 : Numbering for In Car Emergency Communication (ICEC)
- Study Group 20 : ITS and Internet of Things and Smart Cities
- Study Group 16 : Vehicle gateway and in car multimedia platforms
 - *ITU-T Focus Group on Vehicular Multimedia (FG-VM)*

SG17: ITU standards secure over-the-air software updates for vehicles



**ITU-T X.1373
(2017-03)**

A successful future automated driving car must ensure security and safety through cybersecurity mechanisms and secure over-the-air software updates

SG17: Ongoing ITS Security standards work

- **X.itssec-2**: Security guidelines for V2X communication systems; (2018-09)
- **X.itssec-3**: Security requirements for vehicle accessible external devices; (2019-09)
- **X.itssec-4**: Methodologies for intrusion detection system on in-vehicle systems; (2020-03)
- **X.itssec-5**: Security guidelines for vehicular edge computing; (2020-03)

In ITS environment a vehicle may act as router to transmit to other vehicles. So the vulnerability of a vehicle can be propagated to the other vehicles

→ **Security is very important**

ITU-T SG17 collaborate actively with **UNECE WP.29**

[\[UN Task Force on Cyber Security and OTA Issues \(CS/OTA\)\]](#)

Regulations for cyber security and over-the-air updates in progress

SG12: ITU standards improve quality of hands-free communication in vehicles

<https://www.youtube.com/watch?v=x4dtjvLHXds>

ITU Telecom World 2017 Busan

ITU Telecom World 2016 Bangkok

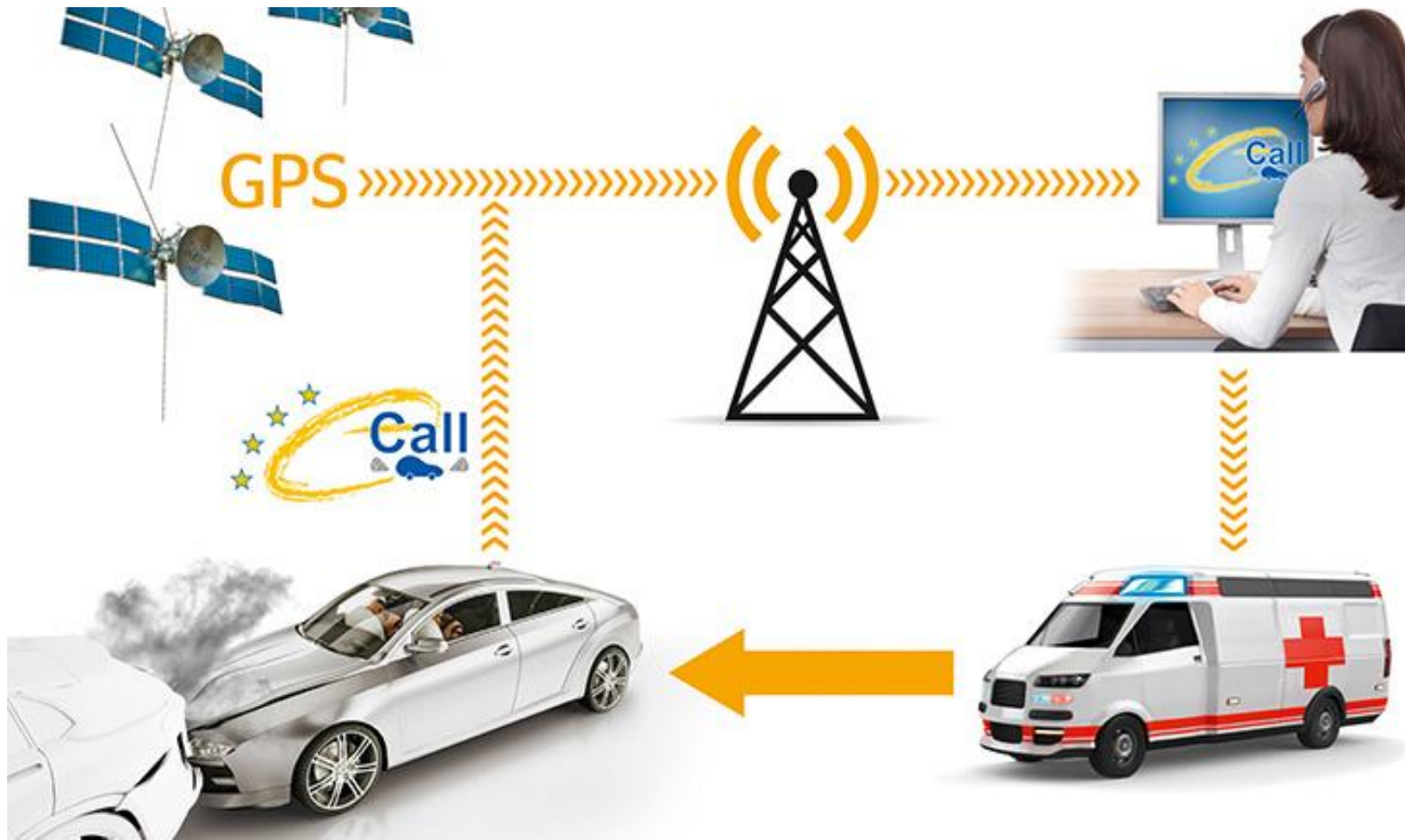


ITU-T P.1100
ITU-T P.1110
ITU-T P.1120
ITU-T P.1130



ITU conducts test events of mobile phones and vehicle hands-free systems

SG12: ITU standards make e-calls intelligible

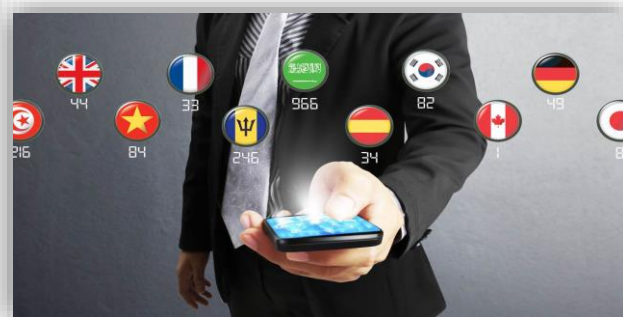


Source: [Continental](#) - Automatic Emergency Call

**ITU-T P.1140 - Speech communication requirements for emergency calls originating from vehicles
Referenced in new UN regulation on automatic emergency call system for road traffic accidents (UNECE WP.29)**

SG2: Numbering for In Car Emergency Communication (ICEC) calls

- Global numbering resources used for ICEC calls is under consideration.



MSD – Minimum Set of Data
PSAP – Public Safety Answering Point

SG20: Standards for IoT and Smart Cities

Managing data in the connected car

- Today's cars are already connected and smart
- Built-in cameras, radars and lidars can be used for real-time analysis of the vehicle's environment (lots of data)
- Need solutions to processing the data efficiently.
- Data transmitted from the infrastructures or from vehicle to vehicle enables both the vehicles and remote systems to manage potential dangers and issue warnings.
- Thanks to these warnings (road accidents, weather changes, faults in the road or blockages) the vehicles will be able to reduce their speed prior to reaching them, which will increase safety and improve traffic flow).



ITU-T SG20 - IoT and Smart Cities & Communities - develops international standards to enable the coordinated development of IoT technologies in smart cities, including related big data.

Completed standards work

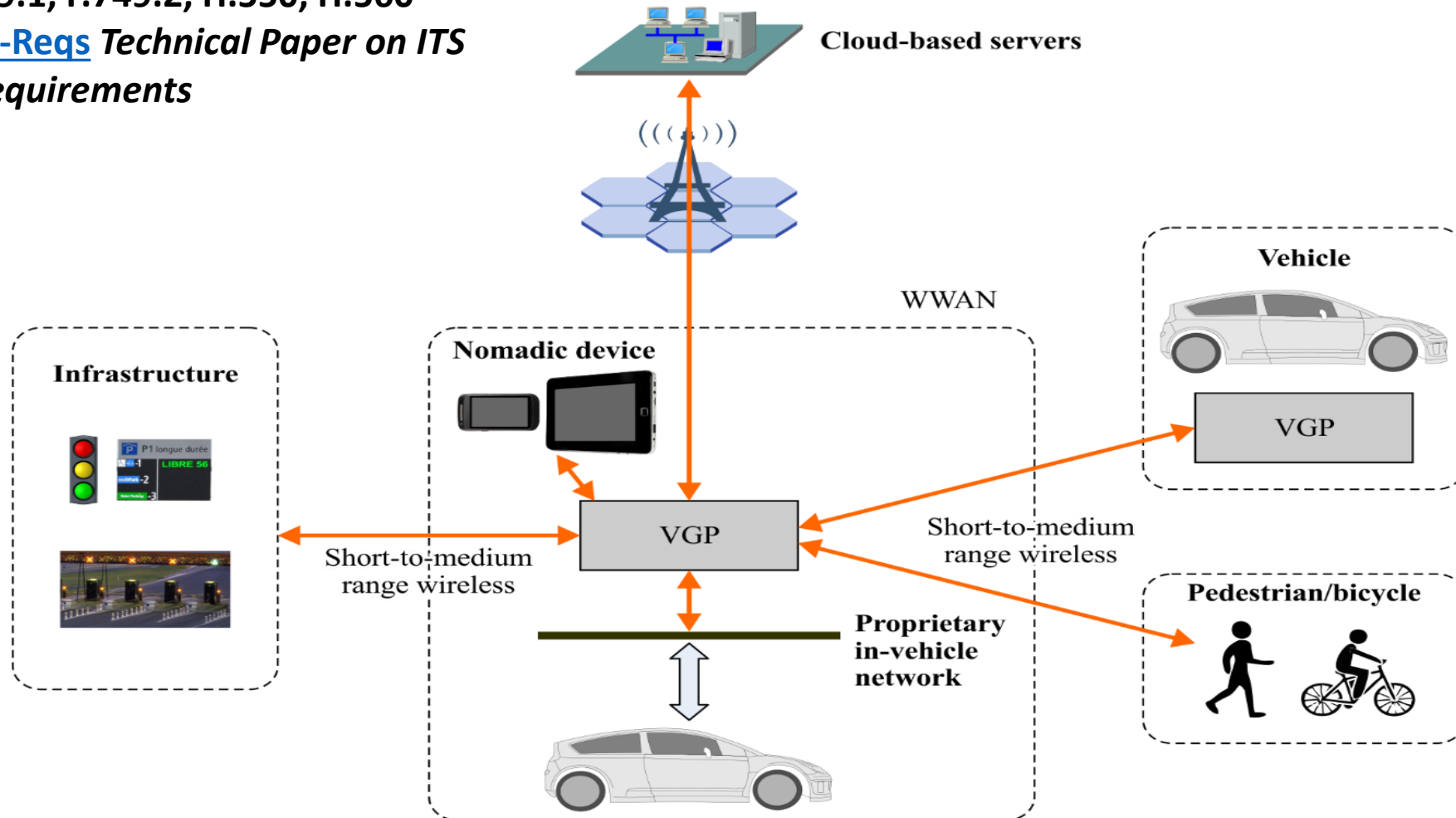
- [ITU-T Y.4116](#): Requirements of transportation safety services including use cases and service scenarios.
- [ITU-T Y.4119](#) - Requirements and capability framework for IoT-based automotive emergency response system

Ongoing standards work:

- [Y.IoT-ITS-framework](#): Framework of Cooperative ITS based on the IoT
- [Y.IoT-UAS-Reqts](#): Use cases, requirements and capabilities of unmanned aircraft systems for IoT
- [Y.AERS-mtp](#): Minimum set of data structure for automotive emergency response system
- [Y.AERS-mtp](#): Minimum set of data transfer protocol for automotive emergency response system
- [Y.SSC-AISE-arc](#): Reference architecture of artificial intelligence service exposure for smart sustainable cities
- [Y.TPS-afw](#): Architectural framework for providing transportation safety service
- [Y.FW.IC.MDSC](#): Framework of identification and connectivity of Moving Devices in Smart City

SG16: Vehicle gateway platform (VGP) functional and service requirements

- ITU-T F.749.1, F.749.2, H.550, H.560
- [HSTP-CITS-Reqs Technical Paper on ITS Comms Requirements](#)



ITU-T SG16: ITS Standards for vehicle gateway platform (VGP)

Vehicle gateway platform (VGP) Standards:

- **ITU-T F.749.1** "Functional requirements for vehicle gateways"
- **ITU-T F.749.2** "Service requirements for vehicle gateway platforms"
- **ITU-T H.550** "Architecture and functional entities of vehicle gateway platforms"
- **ITU-T H.560** "Communications interface between external applications and a vehicle gateway platform"

ITS Technical Paper:

- [HSTP-CITS-Reqs \(2014\) "Global ITS Communication Requirements"](#)

New ITU-T Focus Group on “Vehicular Multimedia” (FG-VM)

1/3

Vehicular multimedia system

- 4th screen after *TV, PC & Mobile Phone*
- 3rd infotainment space after *home, office*

Aim of FG-VM

- Integration of Terrestrial and Satellite networks
- Integration of Broadcasting and Internet services
- Reduce costs using converged networking
- Provide wide area coverage

Challenges

- Integration and compatibility with mobile communication: 3, 4, 5G and beyond
- Software protocols and hardware specifications standardization and adoption
- Harmonization of Transport regulations
- Involve international experts and stakeholders



Source: <https://www.hlmediacomms.com>

New ITU-T FG-VM “Vehicular Multimedia” 2/3

FG-VM Established on 20/07/2018 → Proposed by



TiAA

FG-VM Management

- Chairman: Jun (Harry) Li (TIAA, China)
- Vice chairmen: Gaëlle Martin-Cocher (Blackberry, Canada); Kaname Tokita (Honda, Japan)
- Interested candidates to join the management team as vice-chairs are requested to contact TSB at tsbfgvm@itu.int. Those candidatures will be evaluated and agreed by the FG-VM and announced at their meetings.

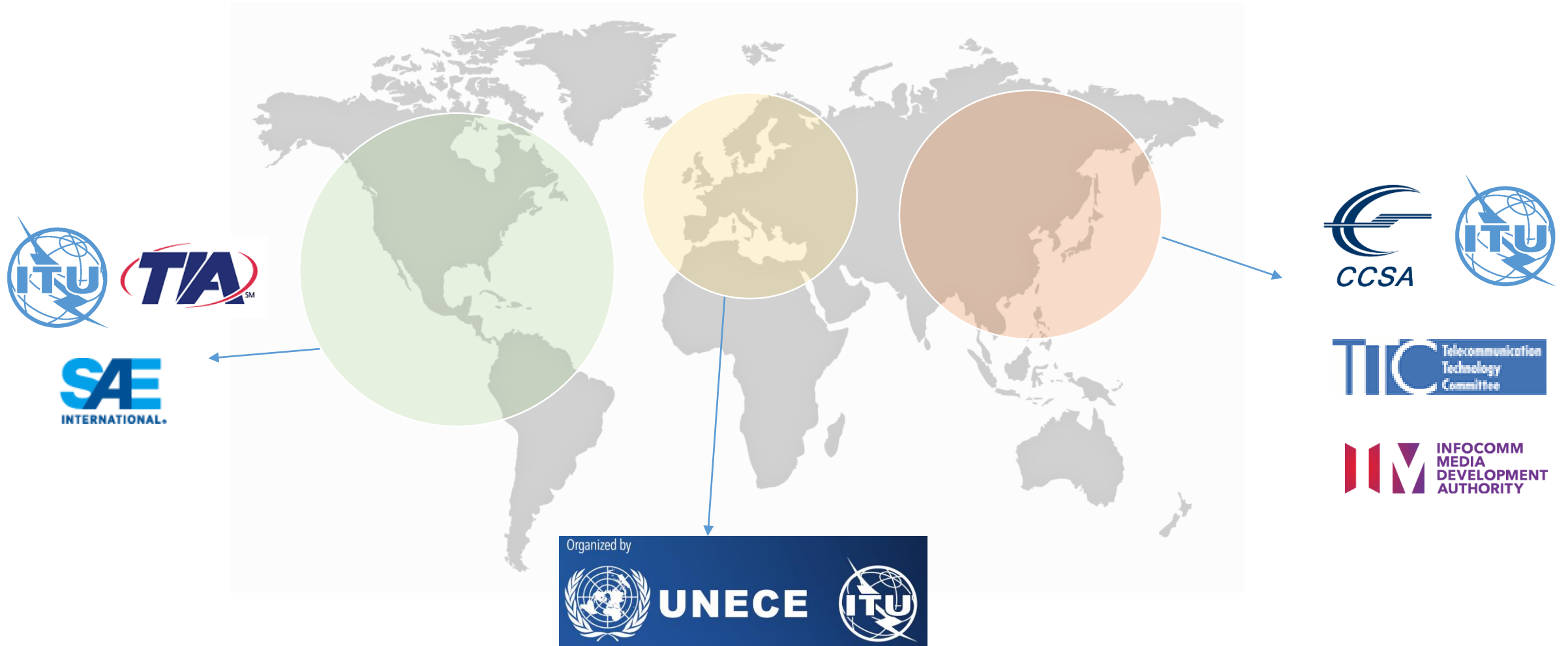
FG-VM Meetings

- Plans to meet 4 times a year with extensive use of remote meetings
- 1st meeting: 11 October 2018, Ottawa, Canada (hosted by Blackberry)
- 2nd meeting: 23-25 January 2019, Tokyo, Japan (hosted by TTC)
- 3rd meeting: 18-19 March 2019, Geneva, Switzerland (Hosted by ITU)

New ITU-T FG-VM “Vehicular Multimedia” (3/3)

- **Results** from [1st ITU FG-VM meeting](#):
- A [Mini-Workshop](#) was organized to kick-off the FG meeting.
- Agreed working structure
 - WG1: Vehicular Multimedia use cases and Requirements
 - WG2: Vehicular Multimedia Architecture
 - WG3: Implementation aspects of Vehicular Multimedia
- Started work on a Technical Report on:
“Use cases and requirement for the Vehicular Multimedia system”.
- Interested stakeholders are invited to join and contribute!
- More info: <https://itu.int/en/ITU-T/focusgroups/vm>
- Contact: tsbfgvm@itu.int

ITU and Vehicle Connectivity: Yearly Events (EUROPE, ASIA, AMERICA)



Future Networked Car Symposium

7 March 2019
Geneva, Switzerland

Geneva International
Motor Show

#ConnectedCar

<https://www.itu.int/en/fnc/2019>
tsbcar@itu.int



Organized by



UNECE



ITUEvents

AI for Good Global Summit

*Accelerating progress
towards the SDGs*

28-30 May 2019
Geneva, Switzerland

#AIforGood

In partnership with

XPRIZE



Organized by



Opportunities for Collaboration

Collaboration on ITS Communication Standards (CITS)

- Established by the ITU to provide a Platform to share knowledge and coordinate ITS standardization
- Attended by worldwide SDOs
- Three meetings x year, back to back with the ITS-related regional events:
Asia (~July), America (~Dec.) Geneva (~March)
- Aims for a coordinated set of interoperable ITS Communication Standards



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

Subscribe to the CITS mailing list!

For more information and opportunities...



- Intelligent Transport Systems (**ITS**)
- Focus Group on Vehicular Multimedia (**FG-VM**)
- Future Networked Car Symposium (**FNC-series**)

... contact **Stefano POLIDORI** at:

tsbcits@itu.int | tsbfgvm@itu.int

