IRF and UNECE ITS Event

Intelligent Transport Systems standardization in ITU

Geneva, 4 December 2018

Chaesub LEE

Director, ITU Telecommunication Standardization Bureau

ITU : 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
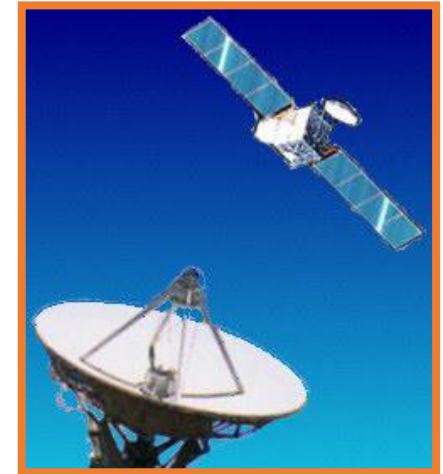**Regional offices** in Addis Ababa, Bangkok, Brasilia, Cairo
Area offices in Bridgetown, Dakar, Harare, Jakarta, Moscow, Santiago, Tegucigalpa, Yaoundé

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
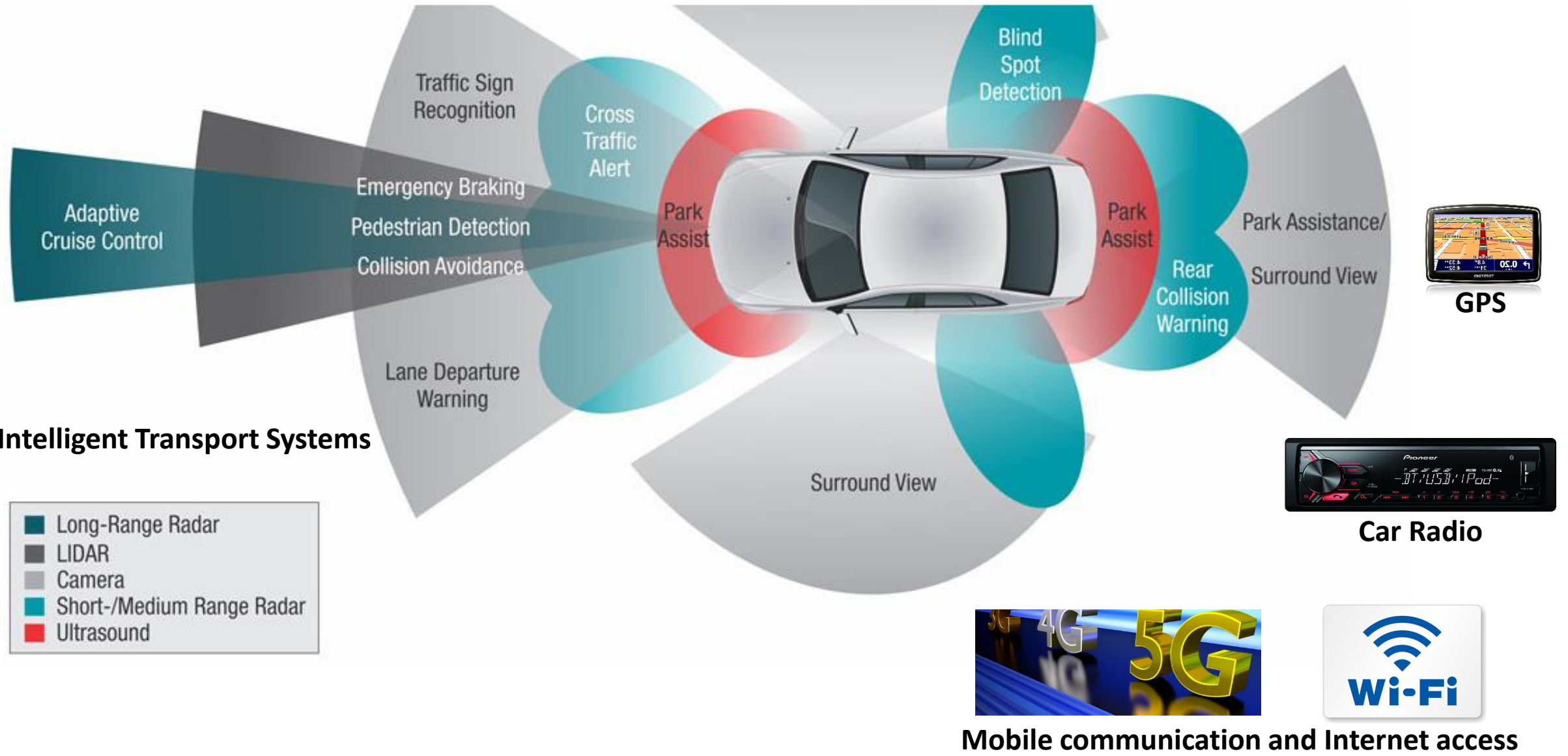
Radiocommunication Sector (ITU-R)

– 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

Traffic Sign Recognition

Cross Traffic Alert

Blind Spot Detection

Emergency Braking

Pedestrian Detection

Collision Avoidance

Adaptive Cruise Control

Park Assist

Park Assist

Park Assistance/ Surround View

Rear Collision Warning

Lane Departure Warning

Surround View

GPS

Intelligent Transport Systems

Long-Range Radar
LIDAR
Camera
Short-/Medium Range Radar
Ultrasound

Car Radio

4G 5G

Wi-Fi

Mobile communication and Internet access

ITU-R: Radiocommunication and ITS

- Techniques to transfer data over short distances between a 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 Millimetre 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

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SG17: ITU standards secure over-the-air software updates for vehicles
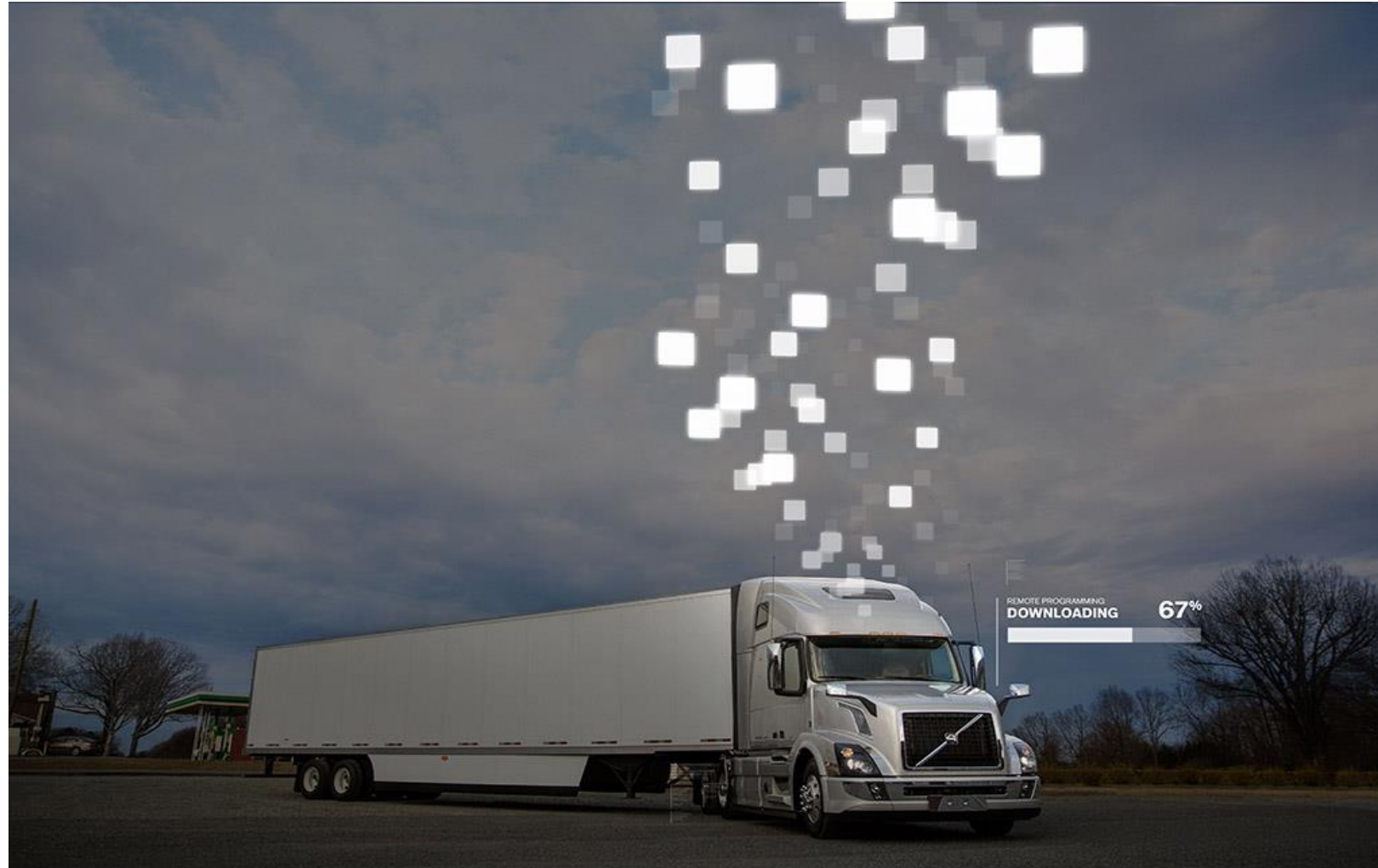
ITU-T X.1373 (2017-03)

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

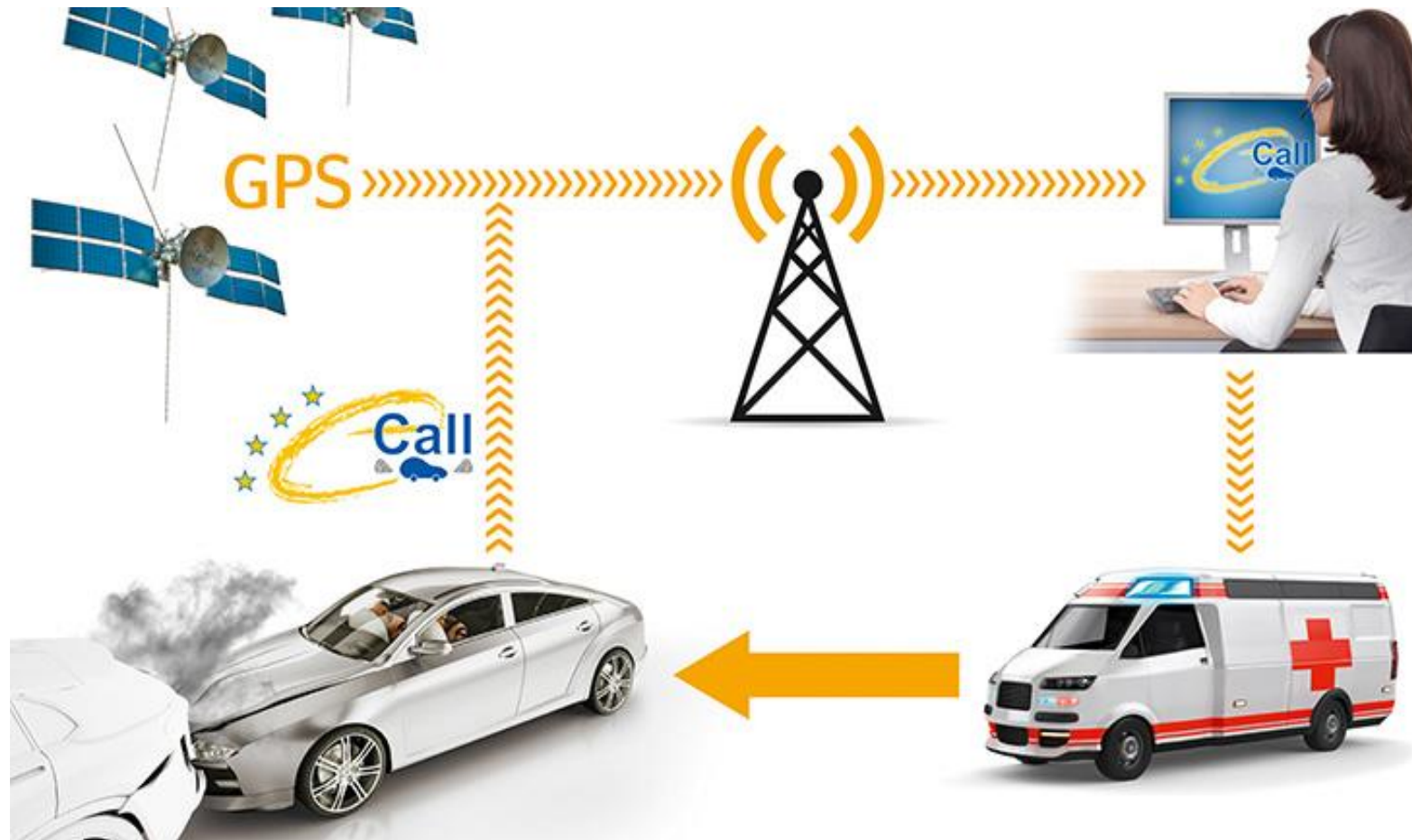ITU Telecom World 2016 Bangkok

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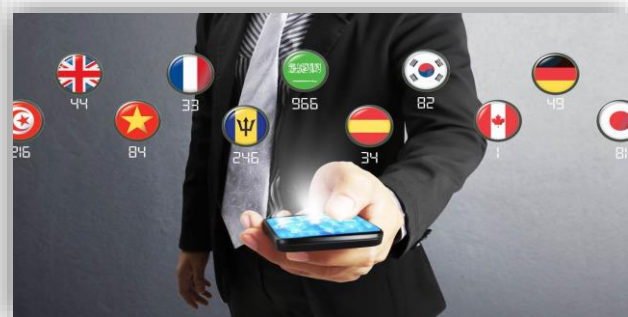
ITU-T SG20 - IoT and Smart Cities & Communities - develops international standards to enable the coordinated development of IoT technologies in smart cities, including related big data.

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

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"**

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

Source: https://www.hlmediacomms.com

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

New ITU-T FG-VM "Vehicular Multimedia" 2/2
(established on 20/07/2018) (Proposed by TIAA TiaA)

FG-VM Management

– Chairman: Jun (Harry) Li (TIAA, China)

– Vice chairmen: Gaëlle Martin-Cocher (Blackberry, Canada)

– 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.
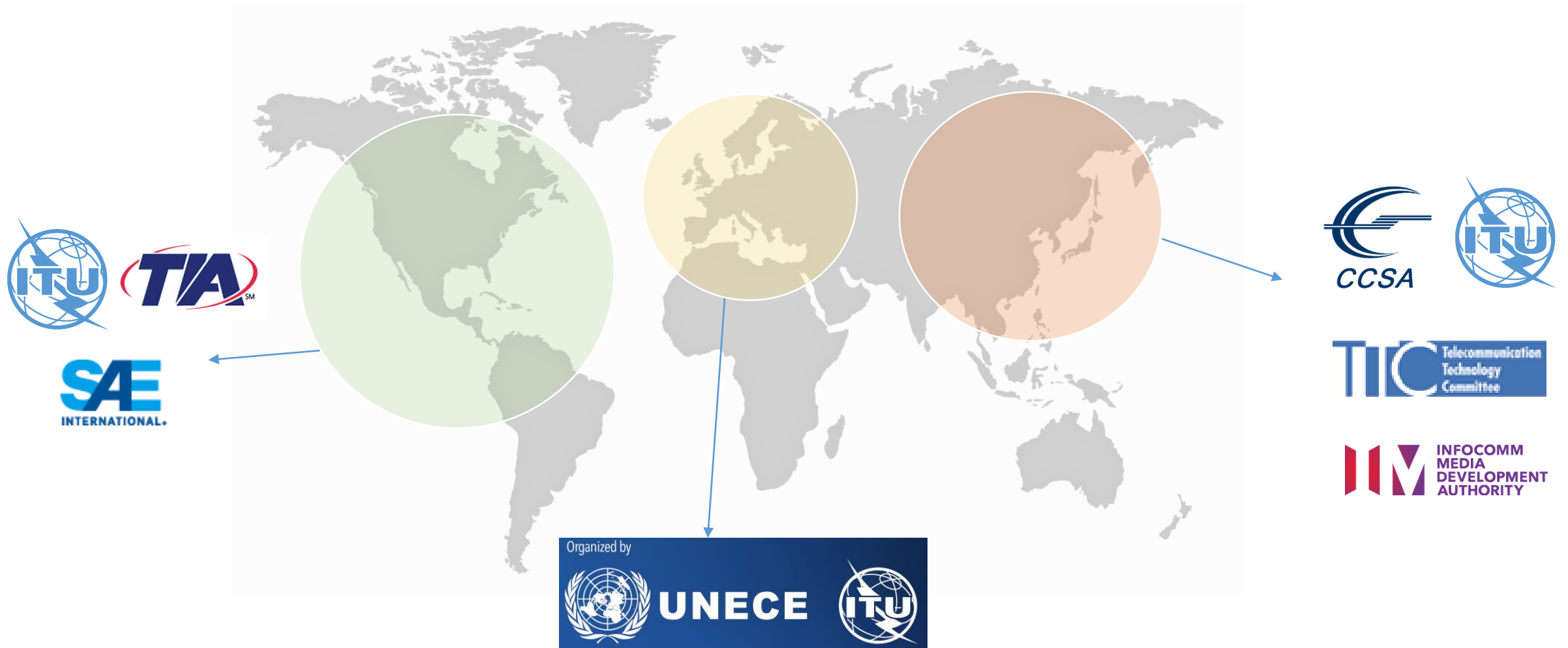
FG-VM Meetings

– Plans to meet 4 times a year

– Extensive use of remote meetings

– First meeting held on 11 October 2018, Ottawa, Canada (hosted by Blackberry)

– Second meeting planned on 23-25 January 2019, Tokyo, Japan (hosted by TTC)

https://www.itu.int/en/ITU-T/focusgroups/vm   ←→   tsbfgvm@itu.int

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

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!

Please contact Stefano POLIDORI (Advisor at the ITU) for more information and opportunities for collaboration on:
- **Intelligent Transport Systems (ITS)** and
- **Future Networked Car activities**

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