Trends in the Standardization of Connected Cars in ITU-T SG16

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1. Introduction

ITU-T is engaged in the standardization of security and applications in ITS communication, and is collaborating with various standardization organizations to this end. Specifically, studies related to security in ITS communication are being pursued by SG17 (Security), and discussions of services and applications are taking place in SG16 (Multimedia). Furthermore, for collaborative work with other organizations, ITU-T has provided a mechanism called CITS (Collaboration on ITS Communication Standards)[1] whereby we have reached out to establish collaboration and cooperation with ITU-R, ISO, IEEE, and regional standards organizations and forums in standardization efforts relating to ITS communication, where interoperability will be essential. The Focus Group on Vehicular Multimedia associated with ITS (FG-VM) was established at the SG16 meeting in July 2018, reflecting the growing interest in standardization related to ITS[2]. This article describes the positioning of FG-VM in SG16, introduces the existing ITS standards, and describes the activities of FG-VM.

## 2. The status of ITS related standardization in SG16

SG16 has been promoting standardization not only of video compression techniques such as MPEG-2, H.264 and H.265 that are used in broadcasting and Internet video services, but also of technologies related to diverse services that use these techniques. With regard to Question 27 of SG16 (denoted as Q27/16), we are formulating ITS-related recommendations centered on vehicle gateways. Meanwhile, focus groups such as FG-VM are not aiming for specific standardization targets, but are laying the groundwork for standardization, including the study of specific use cases and the shortfalls of existing standards in promoting the popularization of these use cases. For this reason, members from outside ITU-T are also able to participate. Items requiring standardization that have been brought to light through the work of FG-VM will be recommended in Q27 or another SG16 Question. For example, it is conceivable that standardization of questions related to vehicle IPTV service terminals can be pursued in Q13, which deals with IPTV terminals. Other SGs may also be consulted if it is considered to be necessary.

3. Q27/16 ITS-related Recommendations

In Q27/16, we are standardizing the requirements, functional components and communication interface of the Vehicle gateway platform (VGP). VGP is a set of ICT-related hardware and software that provides an execution environment for higher-level applications where communication is integrated using a Vehicle Gateway (VG). It is assumed that these higher-level applications include ITS, infotainment and the like. Figure 1 shows how VGP relates to external systems. VGP provides a communication

■ Figure 1: Relationship between VGP and external systems
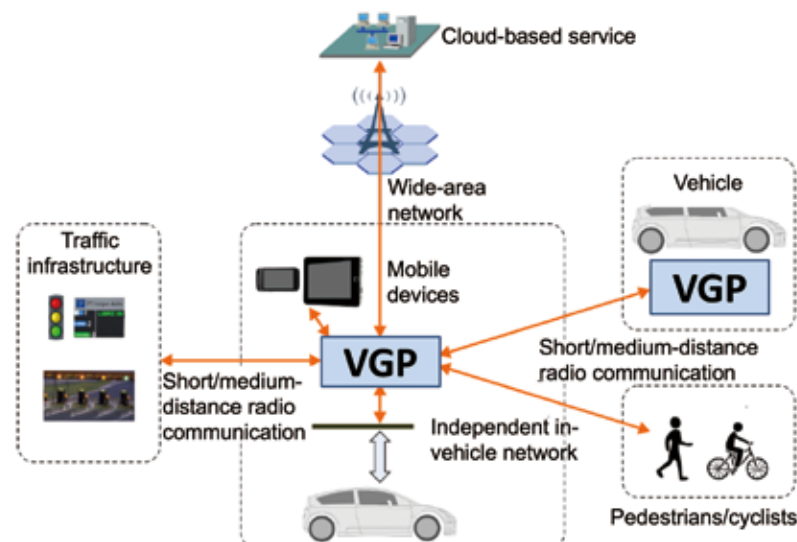
■ Figure 2: Scope of VGP
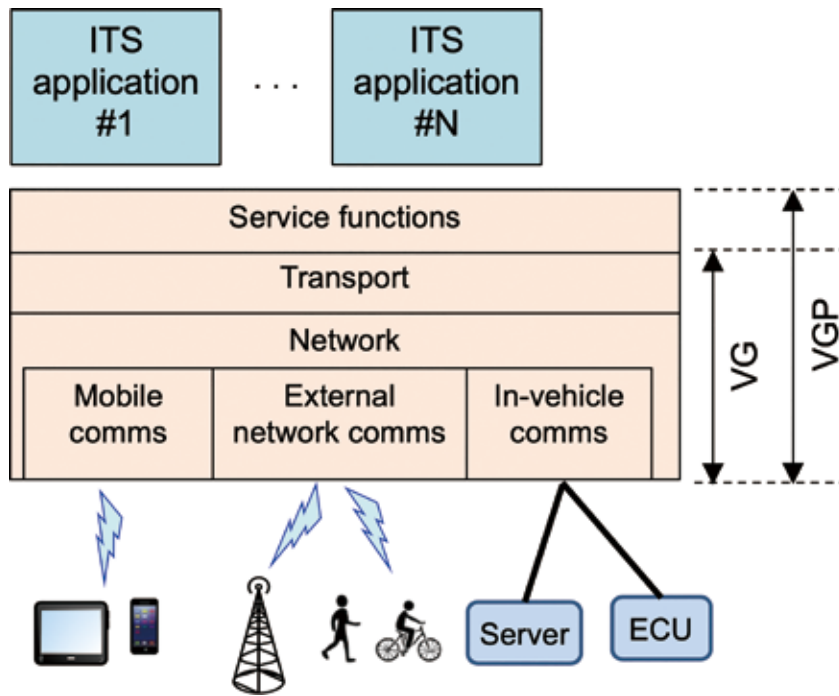
■ Table: ITS-related standard documents produced by ITU-T SG16

Document number	Title	Publication year
ITU-T F.749.1	Functional requirements for vehicle gateways	2015
ITU-T F.749.2	Service requirements for vehicle gateway platforms	2017
ITU-T H.550	Architecture and functional entities of vehicle gateway platforms	2017
ITU-T H.560	Communications interface between external applications and a vehicle gateway platform	2017
HSTP-CITS-Reqs	Global ITS communication requirements	2014

platform for in-vehicle hand-held devices, ECUs and the like, as well as for communication outside the car. Figure 2 shows the scope of VGP. The table shows a list of ITS-related standard documents in ITU-T SG16. We have already completed the standardization of VG functional requirements, VGP service requirements, VGP architecture and functional components, and the communication interfaces between external applications and VGP. A VG consists of hardware mounted in a vehicle, and provides functions for real-time bidirectional communication with equipment both inside and outside the vehicle. It is required to support not only IP but also other communication protocols that are required for ITS services.

4. Focus Group on Vehicular Multimedia (FG-VM)

With the integration of diverse means of communication and broadcast networks and advances in automatic driving technology and the like, it is thought that the car of the future will be more like a living room on wheels. Under these circumstances, FG-VM was established under SG16 in July 2018 for the purpose of clarifying the issues to be standardized in order to realize new vehicle multimedia services. The group is chaired by Jun Li of China's Telematics Industry Application Alliance (TIAA), and the vice-chairs are Gaëlle Martin-Cocher of BlackBerry (Canada) and Kaname Tokita of Honda R&D (Japan). Three WGs have been established to conduct studies relating to use cases, requirements, architecture and implementations, and are currently engaged in discussions of these issues. As the source of the proposal, TIAA is considering the development of satellite entertainment services for vehicles in China. The output of FG-VM is expected to include use cases and standardization issues of services such as these. The sixth FG-VM meeting will be held in Budapest, Hungary on September 11-12, 2019, just before the next SG16 meeting in October 2019.

References
[1] Naito: Recent standardization trends in ITS communication from the perspective of ITU-T SG16, ITU Journal Vol. 47 No. 10 (2017, 10)
[2] Yamamoto: ITU-T SG 16 3rd Meeting Report, ITU Journal Vol. 48 No. 10 (2018, 10) (in Japanese)