

Recommendation **ITU-T F.749.8 (01/2024)**

SERIES F: Non-telephone telecommunication services

Multimedia services

In-vehicle multimedia applets: Framework and functional requirements

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Recommendation ITU-T F.749.8

In-vehicle multimedia applets: Framework and functional requirements

Summary

Recommendation ITU-T F.749.8 describes the in-vehicle multimedia applet (VMMA) concept, the VMMA framework, the functional requirements, the functional APIs and the reference parameters.

Some detailed use cases and reference APIs are described in the appendix.

History *

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In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

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Recommendation ITU-T F.749.8

In-vehicle multimedia applets: Framework and functional requirements

1 Scope

This Recommendation describes the concept of in-vehicle multimedia applet (VMMA) common framework characteristics and defines functional requirements, then brings a capability framework, the application programming interfaces and the reference parameters of the VMMA.

The scope of this Recommendation includes:

- Overview of the VMMA;
- Reference framework of the VMMA;
- Functional requirements of the VMMA;
- Application programming interfaces and reference parameters of the VMMA.

In addition, the interface examples and the use cases of VMMA are provided in Appendices II and III, respectively.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

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|-----------------|--|
| [ITU-T F.746.3] | Recommendation ITU-T F.746.3 (2015), <i>Intelligent question answering service framework</i> . |
| [ITU-T H.625] | Recommendation ITU-T H.625 (2017), <i>Architecture for network-based speech-to-speech translation services</i> . |
| [ITU-T P.10] | Recommendation ITU-T P.10/G.100 (2017) <i>Vocabulary for performance, quality of service and quality of experience</i> . |
| [ECMA-262] | ECMA-262 (2023), <i>ECMA Script 2023 Language Specification</i> . |

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 vehicle multimedia system (VMS) [b-ITU-T F.749.3]: The VMS consists of vehicle multimedia system inputs (VM I/P), vehicle multimedia unit (VMU) and vehicle multimedia system outputs (VM O/P).

3.1.2 natural language processing (NLP) [ITU-T F.746.3]: A method that analyses text in natural languages through several processes such as part-of-speech recognition, syntactic analysis and semantic analysis.

3.1.3 text-to-speech synthesis (TTS) [ITU-T P.10]: A TTS process generates a speech signal from text codes. It is usually composed of the two parts:

- a language-dependent text-processing part (the high level processing part), which generates from the character string (by reading rules, vocabulary and semantic analysis) a set of phonetic, prosodic, etc., parameters which are used by:
- an acoustical signal generating part, the synthesizer itself, which generates the audible speech.

3.1.4 automatic speech recognition (ASR) [ITU-T H.625]: A system that can recognize continuous speech, often having phoneme-sized references, using lexical, syntactic, semantic, and pragmatic knowledge, and reacts appropriately (therefore having interpreted the message and found the corresponding action to be taken).

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 in-vehicle multimedia applet: In-vehicle multimedia applet (VMMA) is a new format of mobile application. VMMA not only provides a hybrid solution which relies on Web technologies (especially CSS and JavaScript) but also integrates with capabilities of native applications.

3.2.2 native applications: Software applications that are developed for a specific platform or operating system using the native programming languages and tools provided by that platform.

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

ASR	Automatic Speech Recognition
CSS	Cascading Style Sheets
HMI	Human–Machine Interface
LAN	Local Area Network
LBS	Location-Based Service
NLP	Natural Language Processing
SDK	Software Development Kit
TTS	Text-to-Speech
TTS	Text-To-Speech
UI	User Interface
URL	Uniform Resource Locator
VIN	Vehicle Identification Number
VM I/P	Vehicle Multimedia System Inputs
VM O/P	Vehicle Multimedia System Outputs
VMMA	In-Vehicle Multimedia Applet
VMS	Vehicle Multimedia System
VMU	Vehicle Multimedia Unit

5 Conventions

In this Recommendation:

- The keywords "**is required to**" indicate a requirement which must be strictly followed and from which no deviation is permitted if conformance to this document is to be claimed.
- The keywords "**is recommended**" indicate a requirement which is recommended but which is not absolutely required. Thus, this requirement need not be present to claim conformance.
- The keyword "**may**" indicates an optional requirement which is permissible, without implying any sense of being recommended. This term is not intended to imply that the vendor's implementation must provide the option and the feature can be optionally enabled by the network operator/service provider. Rather, it means the vendor may optionally provide the feature and still claim conformance with the specification.

In the tables with requirements, optionality is denoted as follows: M for mandatory, O for optional.

6 Overview of the VMMA

The in-vehicle multimedia applet (VMMA) is a new form of in-car application, leveraging both Web technologies (especially CSS and JavaScript [ECMAScript]) as well as capabilities of native applications.

Without installation, the VMMA has a dynamic loading and update mechanism and can be greatly convenient for users to use for entertainment content. Combined with the intelligent voice system, the in-vehicle application will search for contents or services seamlessly. The whole process supports voice interaction, which effectively improves the application interaction experience in the vehicle.

The VMMA enhances the service ecosystem in-vehicle, combines the scene perception, location-based service (LBS), social media etc., and provides more secure and nature scenarized services for the user. VMMA also provides uniform APIs and protocols compatible with different vehicle systems and hardware platforms.

7 Reference framework of VMMA

The VMMA is designed to be integrated into a vehicle's multimedia system. It offers a range of features and functionalities to enhance the driving experience while providing seamless connectivity with other infotainment services and platforms.

The VMMA does not need to be installed. And the mechanism of dynamic loading and updating can greatly facilitate the user's behaviour and content consumption. Combined with the intelligent voice interaction in the whole processes, the VMMA can effectively improve the application interaction experience in the car.

Figure 1 shows the reference framework of VMMA.