

# TECHNICAL REPORT



**Infotainment Services for Public Vehicles (PVIS) –  
Part 1: General**

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INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INFOTAINMENT SERVICES FOR PUBLIC VEHICLES (PVIS) –

## Part 1: General

## FOREWORD

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IEC TR 63479-1 has been prepared by technical area 17: multimedia systems and equipment for vehicles, of IEC technical committee 100: audio, video and multimedia systems and equipment. It is a Technical Report.

The text of this Technical Report is based on the following documents:

Draft	Report on voting
100/4032/DTR	100/4066/RVDTR

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Report is English.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at [www.iec.ch/members\\_experts/refdocs](http://www.iec.ch/members_experts/refdocs). The main document types developed by IEC are described in greater detail at [www.iec.ch/publications](http://www.iec.ch/publications).

A list of all parts in the IEC 63479 series, published under the general title *Infotainment services for public vehicles (PVIS)*, can be found on the IEC website.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under [webstore.iec.ch](http://webstore.iec.ch) in the data related to the specific document. At this date, the document will be

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## INTRODUCTION

It is noted that the markets and industries on infotainment services for vehicles (as known as in-vehicle infotainment services) have been growing rapidly. It is envisioned that a variety of infotainment (or multimedia) devices and services will be newly developed for personal and public vehicles in the future. Such devices include navigation systems, cameras, speakers, headrest displays, air-conditioners, thermometers and heated seats, and lights.

IEC TC100 have so far developed a set of standards on Configurable Car Infotainment Services (CCIS) with the IEC 63246 series. However, the CCIS standards have been basically designed for personal users, such as car owners. In the meantime, there is also a crucial need to provide a variety of infotainment services for public vehicles (PVIS), such as buses or trains.

PVISs have different requirements and features from CCISs. For user type, CCIS is targeted for one or two users (such as car owner), whereas PVIS is for a large number of guests or passengers within the public vehicle. For device type, CCIS deals with the personal devices (property or belonging) in the car, whereas PVIS will be targeted for a variety of public devices that are contained in a public vehicle. Some PVIS services can be provisioned by interworking with the external networks, as shown in the bus information service. For service duration, CCIS usually provide long-term services, whereas PVISs are intended to provide short-term service during which a guest stays within a public vehicle.

From these observations, it is noted that there are many different features and requirements between CCIS and PVIS. Accordingly, there is a need of standardization on PVISs. In particular, PVISs needs to employ a set of agents to effectively manage a large number of users or devices.

The PVIS series (IEC 63479) describes infotainment (multimedia) services for terrestrial public vehicles, such as buses, trains, or underground railways. It is not applicable to public vehicles, such as aeroplanes or ships. For this purpose, the following issues are addressed:

- 1) identification of a variety of functional requirements for provisioning of PVISs;
- 2) designing of the PVIS framework, based on the identified requirements.

The PVIS standards are expected to provide guidelines on PVIS services for a large number of users/devices, and to encourage development of new (enhanced) PVIS services (possibly by interworking with the external systems).

The IEC 63479 series consists of the following parts:

- Part 1: General,
- Part 2: Requirements, and
- Part 3: Framework.

IEC 63479-1 (this document, Technical Report) describes general considerations and system model for PVIS, with some examples of PVIS services.

IEC 63479-2 (International Standard) describes the functional requirements for PVISs.

IEC 63479-3 (International Standard) describes the framework, including the functional information flows between functional entities.



# INFOTAINMENT SERVICES FOR PUBLIC VEHICLES (PVIS) –

## Part 1: General

### 1 Scope

This Technical Report describes general considerations and system model for infotainment services for public vehicles (PVIS), with the relevant service examples.

### 2 Normative references

There are no normative references in this document.

### 3 Terms, definitions and abbreviated terms

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

#### 3.1 Abbreviated terms

PVIS infotainment services for public vehicles

### 4 Comparison of private and public vehicles

<https://standards.iteh.ai/> Table 1 shows the comparison of private vehicles and public vehicles. <https://standards.iteh.ai/standards/iec-tr-63479-1-2023>

**Table 1 – Comparison of private vehicles and public vehicles**

Category	Private vehicle	Public vehicle
<b>Users</b>	Private users (owner)	Public users (passengers)
<b>Examples</b>	Car, van	Bus, train, tram, subway
<b>Number of users</b>	(Usually) less than 20	20 (bus) to 1,000 (train)
<b>Device type</b>	Personal devices (properties, belongings)	Public devices (shared by many users)
<b>Service duration</b>	(Usually) long-term	(Usually) short-term
<b>Security/privacy</b>	Moderate	Crucial

Public vehicles for PVIS (e.g. bus, train) have different requirements and features from private vehicles (e.g. car, van). A private vehicle is usually for a small number of users, whereas a public vehicle is targeted for a large number of guests or passengers. For device type, a private vehicle deals with the personal devices (property or belonging), whereas a public vehicle is targeted for a variety of public devices that can be shared by many users in the public vehicle. Some public services can be provisioned by interworking with the external networks, as shown in bus information service. For service duration, the private vehicle usually provides long-term services, whereas the public vehicle tends to provide short-term services during which guests stay within the public vehicle. Security or privacy requirements are also strictly applied to the public vehicle, compared to the private vehicle.

As shown in Annex A of this document, most of the existing relevant standards have focused on the personal vehicle. The multimedia services for public vehicles have not been addressed so far. In particular, this document describes the system model to be considered to effectively provide the PVIS services, which includes the target environment and functional entities. Some examples of PVISs are also described.

## 5 System model

### 5.1 Functional entities

#### 5.1.1 General

PVIS functional entities are classified into the five types: content provider, PVIS master, PVIS agent, PVIS device, and passenger device.

#### 5.1.2 Content provider

The content provider represents an external server or entity to provide multimedia infotainment services for PVIS passengers, such as multimedia on-line game or over-the-top (OTT) services. Content providers may deploy their contents as PVIS services with an appropriate negotiation. Such contents include a variety of applications, such as games, utility programs, or media files for OTT services. For this purpose, a content provider may give an interworking function with the PVIS system for enhanced PVIS service provisioning.

#### 5.1.3 PVIS master

The PVIS master performs overall management and control for PVIS system and services. In initialization, the PVIS master needs to identify a set of PVIS functional entities within the public vehicle, such as PVIS agents, PVIS devices and passenger devices. For service duration, the PVIS master monitors these PVIS functional entities. The PVIS master is also responsible for content delivery from the content provider to many passengers in the public vehicle.

#### 5.1.4 PVIS agent

The PVIS agent is additionally employed for large-scale public vehicles, such as trains, to provide scalable and effective PVIS services between the PVIS master and a large number of passengers. It is expected that a PVIS agent is employed for each carriage in a large-scale public vehicle. The PVIS agent is responsible for the management of PVIS devices in its carriage. The PVIS agent is also responsible for service provisioning to PVIS passengers who are in its carriage. For this purpose, the PVIS agent may temporally store multimedia contents for passengers during communication between the PVIS master and passengers.

#### 5.1.5 PVIS device

The PVIS device represents a device that is attached and dedicated to the public vehicle, such as air conditioning, speakers, displays, lights, and sensors. The PVIS devices are used for a variety of PVIS services. Each PVIS device needs to be controlled and managed by a PVIS master or agent. PVIS devices support the interaction of users with the PVIS agent or PVIS master.

#### 5.1.6 Passenger device

A passenger device is a user device for PVIS services, such as a smartphone, for which passengers use PVIS services via the passenger device. By using such a passenger device, a passenger can request PVIS services to the PVIS device, PVIS agent, and further to the PVIS master. How to implement the passenger device is outside the scope of this document.