SLOVENSKI STANDARD
oSIST prEN IEC 63246-3:2021

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Multimedijski sistemi in oprema za avtomobile - Nastavljiva avtomobilska informacijska vzdrževalna storitev (CCIS) - 3. del: Okvir(TA 17)

Multimedia systems and equipment for cars - Configurable Car Infotainment Services (CCIS) - Part 3: Framework (TA 17)

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COMMITTEE DRAFT FOR VOTE (CDV)

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SECRETARIAT: Korea, Republic of	SECRETARY: Mr Ock-Woo Nam
OF INTEREST TO THE FOLLOWING COMMITTEES:	PROPOSED HORIZONTAL STANDARD: ☐ Other TC/SCs are requested to indicate their interest, if any, in this CDV to the secretary.
FUNCTIONS CONCERNED: ☐ EMC ☐ ENVIRONMENT ☐ QUALITY ASSURANCE ☐ SAFETY	
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TITLE:

Multimedia systems and equipment for cars - Configurable Car Infotainment Services (CCIS) – Part 3: Framework (TA 17)

PROPOSED STABILITY DATE: 2024

NOTE FROM TC/SC OFFICERS:

<Version history>

1	May 2019 (London)	- Initial draft text of CCIS-3 was proposed. - CCIS-3 NP ballot processing was initiated.
2	October 2019 (Shanghai)	- NP ballot was approved. - CCIS-3 CD ballot processing was initiated.
3	September 2020 (On-line)	- CD ballot was approved. - CCIS-3 CDV ballot processing will be initiated.
4		

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

MULTIMEDIA SYSTEMS AND EQUIPMENT FOR VEHICLES –

CONFIGURABLE CAR INFOTAINMENT SERVICES (CCIS) –

PART 3: FRAMEWORK

FOREWORD

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International Standard IEC 63246 has been prepared by the technical area 17: multimedia systems and equipment for vehicles, of IEC technical committee 100:

The text of this standard is based on the following documents:

FDIS	Report on voting
XX/XX/FDIS	XX/XX/RVD

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 3.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

The National Committees are requested to note that for this publication the stability date is ....

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

INTRODUCTION

It is noted that the markets on car infotainment services (as known as in-vehicle infotainment systems) have been growing rapidly, as shown in the growth of the associated industries. It is expected that a variety of car infotainment (or multimedia) devices and services will be newly developed in the future. Such devices include navigations, cameras, speakers, headrest displays, air-conditioners, thermometers and heating seats, and lights. It is also expected that some devices will be developed to provide 4-dimensional experiences for user.

Car infotainment systems typically include A/V features (such as standard radio and CD players), and two-way communications tools as well as hands-free phone connections, vehicle voice commands and other types of interactive audios or videos. The car infotainment systems will be evolved to allow passengers to watch movies and other visual media, as shown in the rear seat with DVD capability. Another distinctive feature in the future infotainment systems is the mobile device connectivity. Newer vehicles will provide a wide range of systems that allow devices (e. g., smartphones and laptops) to be connected to a variety of services embedded in the vehicle.

From this observation, there is a crucial need on the standardization to provide car infotainment users with more enhanced services so as to easily manage and control infotainment devices as well as contents within a car.

The purpose of the IEC 63246 (Configurable Car Infotainment Services, CCIS) series is to specify the general considerations, requirements, framework, and protocols so as to provide car users with the functionality of managing and controlling the device and content resources within a car.

The International Standards IEC 63246 consists of the following parts:

- Part 1: general;
- Part 2: requirements;
- Part 3: framework; and
- Part 4: protocol.

Part 1 of IEC 63246 describes the general considerations of CCIS, which includes the CCIS system model and the types of CCIS users with the associated service flows.

Part 2 of IEC 63246 describes the requirements for CCIS, which includes the CCIS functional and service requirements.

Part 3 of IEC 63246 describes the CCIS framework, which includes the information flows between CCIS functional entities, such as registration, device monitoring and control, and content delivery.

Part 4 of IEC 63246 describes the CCIS protocol, which includes the protocol messages and parameters, protocol procedures, implementation guidelines, etc.

MULTIMEDIA SYSTEMS AND EQUIPMENT FOR VEHICLES –

CONFIGURABLE CAR INFOTAINMENT SERVICES (CCIS) –

PART 3: FRAMEWORK

1. Scope

This part of IEC 63246 describes the CCIS framework, which includes the information flows for registration, device monitoring and control, and content delivery between CCIS functional entities.

2. Normative references

The following document is referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

- IEC 63246-1, Multimedia Systems and Equipment for Vehicles - Configurable Car Infotainment Services – Part 1: General (20XX)
- IEC 63246-2, Multimedia Systems and Equipment for Vehicles - Configurable Car Infotainment Services – Part 2: Requirements (20XX)

3. Definitions and terminology

For the purposes of this document, the terms and definitions given in IEC 63246-1 apply.

4. Reference functional architecture

4.1. CCIS Functions

CCIS functions are divided into several functional blocks: registration, authentication, device control, device monitoring, profile management, and content delivery, as depicted in Figure 1.

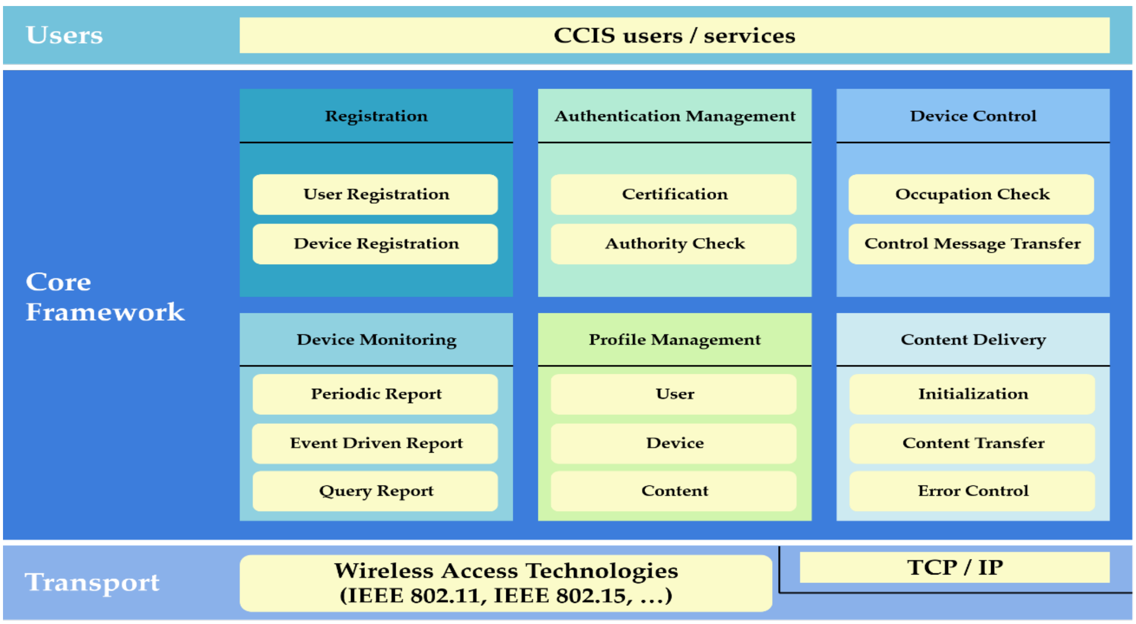

Figure 1 – CCIS functional blocks

4.1.1. Registration

There are many users and devices in the CCIS system. CCIS master performs the registration function to manage users and devices, which may include the provision of services by authority and automatic certification by storing the profile of registered users and devices.

4.1.2. Authentication management

CCIS can provide different level of services as per the authority of CCIS user. The CCIS master performs the authority check for users by using authentication key. For this purpose, a CCIS user must obtain the authentication key from the CCIS master.

4.1.3. Device control

CCIS users can control CCIS devices. To control a specific CCIS device, its occupation status needs to be checked, since a CCIS device may be occupied by the other user. When the device is available, the user can transmit a control message to the device via CCIS master.

4.1.4. Device monitoring

Each device shall report its latest profile information to CCIS master. Such status report may be generated periodically or by s specific event. The periodic report will be generated based on a timer, whereas the event-driven report will be generated when the device status is changed. In a certain case, the CCIS master can first send a query message to a device.

4.1.5. Profile management

For effective support of CCIS services, the CCIS master shall store and manage the profile information, such as meta-data of the registered users and devices. This profile information will be referred to during the CCIS functional operations.

4.1.6. Content delivery

The CCIS provides content delivery function for exchange of contents, such as multimedia data, between users and devices via CCIS master. The content delivery function may include the content delivery initialization and the content transfer. The content delivery initialization is performed to check the authority of the concerned user for the content delivery service. The error control operation can be performed to provide the reliability for content transfer between device and master, and between user and master.

4.2. Functional interworking model

Each CCIS function is performed between the CCIS functional entities by interworking with the other functions, as shown in Figure 2, in which the authentication function is interworking with the registration, device control and content delivery functions.

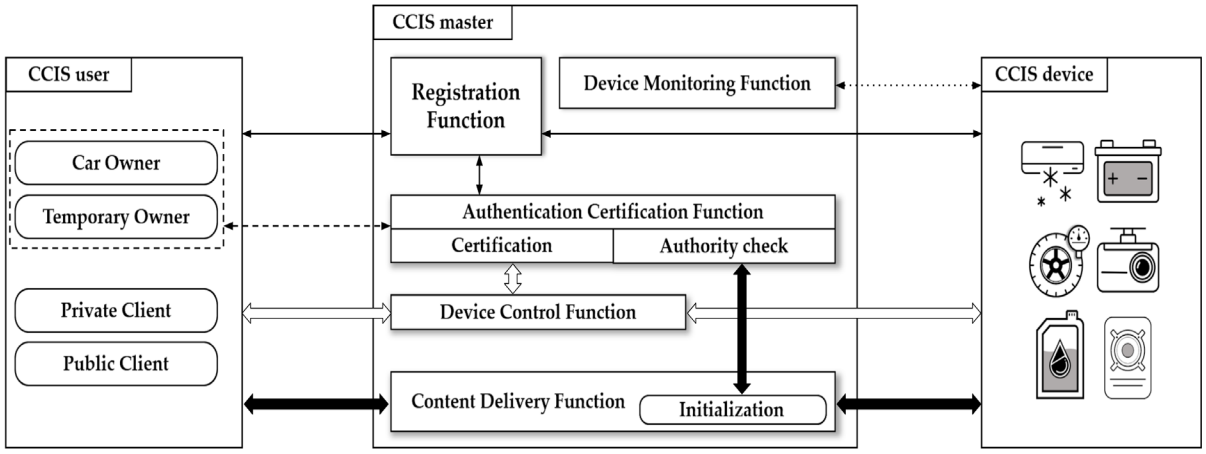

Figure 2 – Interworking of CCIS functions

The registration function is applied to users and devices. All users and devices shall be registered with CCIS master. In the registration process, the authentication/certification function is used to check the identity or authority. In particular, the registration of private/public clients and CCIS devices needs the authentication check and admission by Car Owner or Temporary Owner.

The CCIS users perform the device control and content delivery functions with the CCIS devices with the help of CCIS master, in which the authentication process with the owners will be performed. The device monitoring function is performed between devices and CCIS master.

4.3. Service level configuration

CCIS may provide different service levels for CCIS users. For this purpose, each CCIS service is categorized into Service Level High, Service Level Medium, and Service Level Low. Table 1 shows an example of the service level configurations, in which each CCIS service is classified as three levels (high, medium, low), by considering the service features (mission-critical or not) and the impact on overall CCIS system.

Table 1 – CCIS service level configuration

CCIS services	service level high	service level medium	service level low
system settings	✓		
device registration and deregistration	✓		
authority check		✓	
client registration and deregistration		✓	
usage of shared service		✓	
usage of high-level personal service	✓		
usage of medium-level personal service		✓	
usage of low-level personal service			✓

In general, Car Owner will use all services with the high, medium, and low levels. Temporary Owner can use the services with the medium and low levels, whereas Private Client and Public Client may use only the services with the low level.

5. Information flows for functional operations

5.1. Owner initialization

The CCIS owner, Car Owner and Temporary Owner, shall be registered with the CCIS master in the owner initialization operation, before the CCIS service begins. This is because all CCIS services are performed with the control of the CCIS owner.

Figure 3 shows the information flows for CCIS owner registration. The CCIS master periodically broadcasts its general information that includes its own identification or the contact address for registration. CCIS user, who wishes to be CCIS owner, transmits the registration request message to the CCIS master. Then, the CCIS master sends the owner the response message that contains the Owner ID generated at the time of registration. After that, the certification information request and response messages are exchanged between owner and master in which the certification-related information and authentication key will be exchanged.

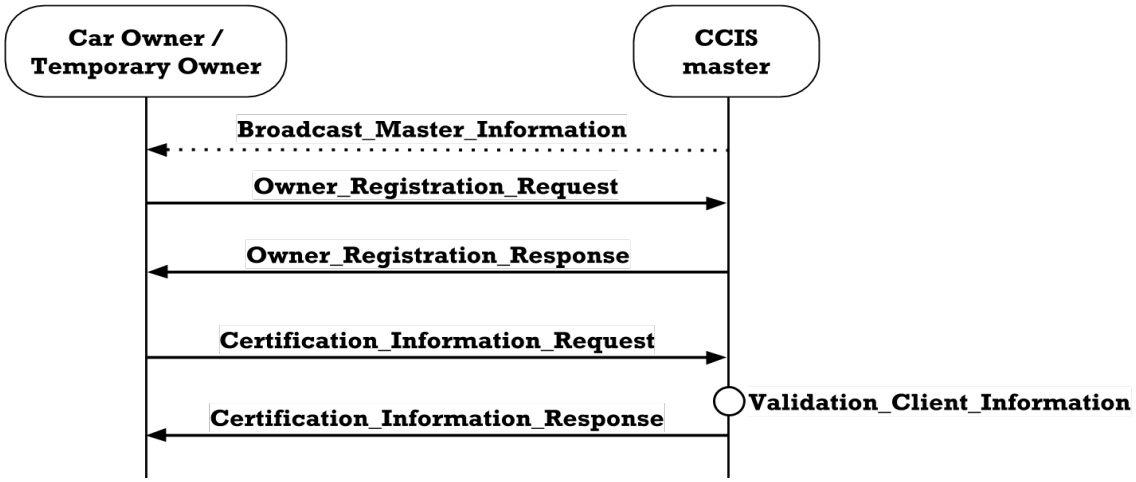

Figure 3 – Registration of CCIS Owners

5.2. Client registration

5.2.1. General

Car Owner and Temporary Owner shall be registered with the CCIS master in the Initialization operation before CCIS services begins. In the meantime, the client (Private Client or Public Client) shall be registered with the CCIS master in the registration operation after CCIS services begin, since its registration needs a permission of Car Owner or Temporary Owner.

5.2.2. Private Client registration

Figure 4 shows the information flows for Private Client registration. A CCIS user that wants to be Private Client transmits a registration request message to the CCIS master. Upon receiving the registration request, the CCIS master requests Car Owner or Temporary Owner an authority check for registration. At this time, Car Owner or Temporary Owner shall be able to communicate with CCIS master. The authority check is performed in the three-way handshaking process (request, response, and confirmation). When CCIS master obtains the authority from Car Owner or Temporary Owner, the CCIS master stores the profile of the Private Client in its own repository and transmits a response message including Client ID to the Private Client. After that, the certification information request and response messages are exchanged between client and master in which the certification-related information and authentication key will be exchanged.

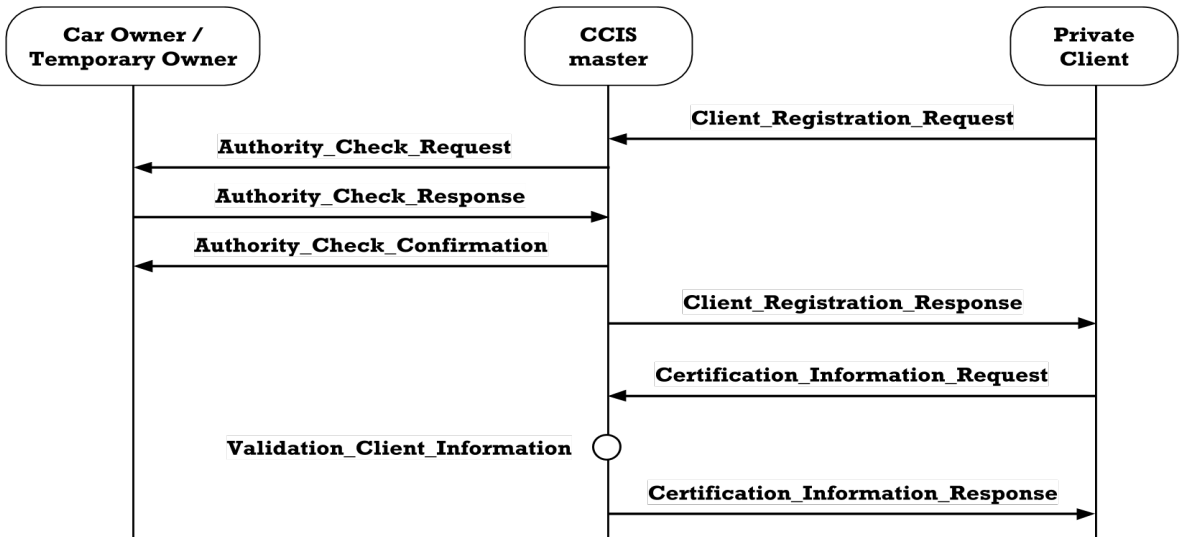

Figure 4 – Registration of Private Client