

INTERNATIONAL STANDARD

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**Information exchange for electric vehicle charging roaming service –
Part 2: Use cases**

**Échange d'informations pour le service d'itinérance de la recharge des véhicules
électriques –
Partie 2: Cas d'utilisation**

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NORME INTERNATIONALE



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électriques –**

Partie 2: Cas d'utilisation

INTERNATIONAL
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Part 2: Use cases**FOREWORD**

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Draft	Report on voting
69/847/FDIS	69/862/RVD

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 International Standard 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. The main document types developed by IEC are described in greater detail at www.iec.ch/standardsdev/publications.

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INFORMATION EXCHANGE FOR ELECTRIC VEHICLE CHARGING ROAMING SERVICE –

Part 2: Use cases

1 Scope

This part of IEC 63119 specifies roaming use cases of information exchange between EV charging service providers (CSP), charging station operators (CSOs) and clearing house platforms through roaming endpoints. The elementary use cases defined in this document are designed to support the user to have access to the EV supply equipment which does not belong to the home-CSP.

IEC 63119 (all parts) is applicable to high-level communication involved in information exchange/interaction between different CSPs, as well as between a CSP and CSO with or without clearing house platform through the roaming endpoint.

IEC 63119 (all parts) does not specify the communication either between charging station (CS) and charging station operator (CSO) or between EV and CS.

2 Normative references

The following documents are 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 63119-1, *Information exchange for electric vehicle charging roaming service – Part 1: General*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in IEC 63119-1 and the following apply.

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

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

3.1 service

series of processes that the service provider provides to the EV user, including energy transfer service, reservation service, parking service, etc.

3.2 energy transfer service charging service

complete energy transfer process that the service provider provides to the EV user, including authentication, charging, billing, and settlement, for the time being

3.3**EV user ID**

unique electronic identifier used to distinguish different EV users, which probably can be a contract information NO/RFID id/UID

3.4**roaming endpoint ID**

REP ID

unique electronic identifier used to distinguish different CSP, CSO or clearing house

3.5**EV supply equipment ID**

unique electronic identifier used to distinguish different EV supply equipment

3.6**transaction ID**

unique electronic identifier used to label each service transaction

3.7**energy transfer session ID**

unique electronic identifier used to label each energy transfer session

3.8**business actor**

stakeholder related to EV roaming energy transfer services, including operators, automobile manufacturers, charging facilities, EV and charging users

3.9**service provider**

entity which provides EV service to users, such as charging service provider (CSP) and charging station operators (CSO)

3.10**EV charging system platform provider**

dedicated service party that provides the energy transfer service platform for the CSP/CSO

3.11**home charging service provider**

home-CSP

home e-mobility service provider

home-EMSP

entity which has a contract with the EV user and can authorize an energy transfer session to another CSP/CSO

3.12**visited charging station operator**

visited-CSO

CSO that the EV user visits for getting energy transfer service, which is not the EV user's home-CSP

3.13**system actor**

actor who uses and interacts with the system

3.14**system platform**

combination of hardware, software, and data that provides software services

3.15**function unit**

hardware and software unit that provides information process and exchange function between different system platforms

3.16**information exchange channel**

secured and authenticated communication data high-level link used for exchanging information between the different platforms

3.17**information exchange session**

period that started from the platform authentication and the closing of the platform exchange channel

3.18**service contract**

regulations and provisions of settlement between different CSPs, CSOs and clearing house

3.19**EV energy exchange infrastructure**

EV charging service infrastructure

set of associated equipment/systems used to support energy transfer service, which include EV supply equipment, and may also include supply network, and parking service system (ground lock system, barrier gate system, etc.)

3.20**EV service infrastructure**

EV supply equipment and set of value added service systems

Note 1 to entry: A value added service system may include

- supply network related information which, for example, might be necessary for smart charging services, and
- parking service system (ground lock system, barrier gate system, etc.).

3.21**authentication**

process of verifying the identity of the subject as what it claims to be

3.22**authorization**

process of granting subject access to particular resources or services

3.23**primary actor**

entity involved directly in IEC 63119 domain

3.24**secondary actor**

entity involved indirectly in IEC 63119 domain

3.25**identification**

procedure of identifying the credential (e.g., contract certificate, credit card number, etc.) to obtain the information for authentication

3.26**tariff**

tariff scheme

formula with parameters to calculate the cost of an energy transfer session

3.27**price**

unit price

value applied to each parameter of the tariff scheme

Note 1 to entry: The price can be dependent on contextual factors, such as the time of the day or the nominal power of the EV supply equipment.

3.28**cost**

total cost

series of process that manage to provide energy transfer service to the EV user

Note 1 to entry: The cost includes authentication and authorization from home-CSP, charging operation from visited-CSO and transaction between these two platforms.

3.29**switch table**

complicated information structure, which stores REP ID and relevant service URI, provides the path selection from incoming REP entries to initiate outgoing REP URI entries based on the destination REP ID

3.30**charge plan**

combined set of user's preferences which could include the energy transfer plan, monetary goals, mobility needs

EXAMPLE expected start time, expected departure time, expected amount of energy/power, etc.)

4 Abbreviated terms

PnC	plug and charge
SOC	state of charging
PKI	public key infrastructure
SDR	service detail record
SP	system platform
OID	operator identification
URI	universal resource identification

5 General requirements**5.1 General**

Clause 5 presents the general requirements that an implementer of the roaming protocol shall follow.

5.2 System requirements**5.2.1 General**

In the charging roaming service system, the charging roaming service achieves the service collaboration of different CSP/CSOs. Coherent system roles fall into two categories: primary actors and secondary actors. The system functions provided directly by the primary actors are to complete the information exchange process of the charging roaming service, and the system functions provided by the secondary system actors are used to support users to obtain the complete service transaction process. See Table 1.

Table 1 – System actor categories

System actor	Actor type
EV charging service provider system platform (SP system platform)	Primary actor
EV charging station operator system platform (CSO system platform)	Primary actor
Clearing house system platform (CH system platform)	Primary actor
EV services provider system platform	Secondary actor
EV parking services provider system platform	Secondary actor
Third-party charging services provider system platform	Secondary actor
EV charging service infrastructure	Secondary actor
EV user	Secondary actor
EV	Secondary actor

5.2.2 CSO system platform requirement

The CSO system platform is responsible for collecting, processing, and managing the information of the EV energy exchange infrastructure. It may exchange the information with the superior CSP platform.

The main functions of the CSO system platform include charging equipment registration, management, monitoring, remote control; user identification may be included under some scenarios.

The CSO system platform complies with the cybersecurity and data privacy requirements according to 5.3.

5.2.3 CSP platform system requirement

The CSP system platform is responsible for the EV or EV user registration and management, providing the charging transaction records, managing the payment, settlement information, and completing information interaction with the CSO system platform and other third party platforms.

The main functions of the CSP system platform include user identification, charging service authentication and authorization, billing, and settlement.

The CSP system platform complies with the cybersecurity and data privacy requirements according to 5.4 and IEC 63119-3¹.

5.3 Communication requirements

The platform which implemented roaming endpoint shall

- be based on IPV4/IPV6, and support bidirectional information exchange,
- support synchronous and asynchronous message mechanism,
- support request/response and publish/subscribe model,
- be capable of transmitting encrypted and/or signed message payload sub-elements, and
- be able to control the message transmitting priority by the application layer.

¹ Under preparation. Stage at the time of publication: IEC/ACD 63119-3:2022.

5.4 Cybersecurity requirements

5.4.1 Data transmission security

The information exchange between the REPs may adopt state of the art secure communication technology.

5.4.2 Role identification

The information exchange between the REPs shall adopt a trusted platform access authorization mechanism to ensure the authenticity of the identity of the information-sharing platform.

5.4.3 Information privacy protection

Privacy-preserving technology should be adopted in order to protect EV user privacy information in all cases where regulation is demanding it. For example, by applying pseudonymization, anonymization and de-identification.

5.4.4 Information sharing principle

Information should be shared securely exclusively with the corresponding recipient. When necessary, for example, end-to-end encryption or role-based access control may be applied.

5.4.5 Encryption key usage and management

The security and integrity of transmitted and received data should be guaranteed during the message transmission between the operators' platforms. PKI should be considered.

5.4.6 Agreement sharing principle

All roaming service parties, including CSP, CSO and clearing house, shall have an agreement on information sharing. Furthermore, the clearing house shall have an agreement with each CSP and CSO on information sharing.

5.5 Unique identifier

5.5.1 Requirements of the unique identifier

To achieve the roaming between the different platforms, the following requirements may be fulfilled.

- All the identification such as REP ID, equipment ID, connector ID, energy transfer transaction ID, etc., which are used by roaming endpoint may be universally unified and unique.
- The identification field should consist of two parts: global and local.
- The global part of the identification shall be public and unique.
- The local part of the identification may be defined and managed respectively by CSP/CSO.
- The information routing and destination addressing may be realized by distinguishing the global part of the ID during the information exchange for roaming.

5.5.2 Classification of the global ID

According to ISO 15118-2:2014, Annex H, the global identifiers used by the roaming endpoint are classified as follows:

- REP ID: the unique ID of the CSP/CSO/clearing house which implements the roaming endpoint;