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**Automatic vehicle and equipment  
identification — Electronic registration  
identification (ERI) for vehicles —**

**Part 2:  
Operational requirements**

**iTeh STANDARD PREVIEW**  
*Identification automatique des véhicules et des équipements —  
Identification d'enregistrement électronique (ERI) pour les véhicules —  
Partie 2: Exigences de fonctionnement*  
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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 24534-2 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 278, *Road transport and traffic telematics*, in collaboration with Technical Committee ISO/TC 204, *Intelligent transport systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 24534-2 cancels and replaces ISO/TS 24534-2:2007, which has been technically revised.

[ISO 24534-2:2010](http://standards.iteh.ai/catalog/standards/sist/8bffc95-c8d-461d-be27-5b948d757d1c/iso-24534-2-2010)

ISO 24534 consists of the following parts, under the general title *Automatic vehicle and equipment identification — Electronic registration identification (ERI) for vehicles*:

- *Part 1: Architecture*
- *Part 2: Operational requirements*
- *Part 3: Vehicle data*
- *Part 4: Secure communications using asymmetrical techniques*
- *Part 5: Secure communications using symmetrical techniques*

## Introduction

A quickly emerging need has been identified with administrations to improve the unique identification of vehicles for a variety of services. Situations are already occurring where manufacturers intend to fit lifetime tags to vehicles. Various governments are considering the needs and benefits of electronic registration identification (ERI) as a legal proof of vehicle identity with potential mandatory uses. There is commercial and economic justification in respect of both tags and infrastructure that a standard enables an interoperable solution.

ERI is a means of uniquely identifying road vehicles. The application of ERI will offer significant benefits over existing techniques for vehicle identification. It will be a suitable tool for the future management and administration of traffic and transport, including applications in free-flow, multi-lane traffic conditions with the capability to support mobile transactions. ERI addresses the need of authorities and other road users for a trusted electronic identification, including roaming vehicles.

The unique vehicle identifier is held in a secure environment within an electronic registration tag (ERT) fitted to a vehicle. The identifier used to identify a vehicle is called the vehicle identifier or vehicleId. The preferred vehicle identifier is the VIN, assigned to the vehicle by its manufacturer in accordance with ISO 3779, or a variant of this vehicle identifier.

The ERT may contain vehicle data in addition to the unique identifier, as required by authorities or their agents for ERI applications (e.g. vehicle registration details). An ERT is the core component for simple to complex applications of ERI, ranging from a simple read-only device, with more complex applications requiring one or more communications systems.

The ERT may be accessed by an electronic registration reader (ERR), either to read, or read/write data, from or to an ERT.

Optionally, the ERT may communicate with other onboard vehicle equipment. The potential range of ERI applications, simple to complex, will require interoperability to exist between an ERT and an ERR by application.

This part of ISO 24534 illustrates the ERI system concept and the fully featured ERI function enabling simple to complex applications of ERI.

Whilst it is desirable to determine a single set of requirements for operation in all environments and under all operating conditions, this could impose unacceptable costs for an ERI application. This part of ISO 24534 provides classification categories of operational parameters for different aspects of a system specification, enabling appropriate performance parameters to be selected for an ERI application. Annex A provides example ERI user requirements with operational scenarios.

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# Automatic vehicle and equipment identification — Electronic registration identification (ERI) for vehicles —

## Part 2: Operational requirements

### 1 Scope

This part of ISO 24534 provides requirements for electronic registration identification (ERI) that are based on an identifier assigned to a vehicle (e.g. for recognition by national authorities) suitable to be used for:

- electronic identification of local and foreign vehicles by national authorities;
- vehicle manufacturing, in-life maintenance and end-of-life identification (vehicle life cycle management);
- adaptation of vehicle data (e.g. for international resales);
- safety-related purposes;
- crime reduction;
- commercial services.

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This part of ISO 24534 defines the operational requirements for the remaining parts of ISO 24534 and the more limited but relevant provisions of ISO 24535.

Whilst the definition of the organizational framework required to implement, operate and maintain an ERI system is outside the scope of this part of ISO 24534, a list of potential stakeholders in the public and private sector has been included.

### 2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 24534-3, *Automatic vehicle and equipment identification — Electronic registration identification (ERI) for vehicles — Part 3: Vehicle data*

IEC 60721-3-5:1988, *Classification of environmental conditions — Part 3: Classification of groups of environmental parameters and their severities — Section 5: Ground vehicle installations*

IEC 60215:1987, *Safety requirements for radio transmitting equipment*

EN 301 489-1, *Electromagnetic compatibility and radio spectrum matters (ERM) — Electromagnetic compatibility (EMC) standard for radio equipment and services — Part 1: Common technical requirements*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**3.1 access control**  
prevention of unauthorized use of a resource, including the prevention of use of a resource in an unauthorized manner

[ISO 7498-2:1989, definition 3.3.1]

**3.2 access control list**  
list of entities, together with their access right, which are authorized to have access to a resource

[ISO 7498-2:1989, definition 3.3.2]

**3.3 additional vehicle data**  
ERI data in addition to the vehicle identifier

**3.4 authentication**  
entity authentication which provides each entity with the assurance of the other's identity

**3.5 back office**  
facility for the control and data management of an ERI system by an authority, or for the provision of related services by a service provider

**3.6 ERI data**  
vehicle identifying data which can be obtained from an ERT

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NOTE ERI data consists of the vehicle identifier and possible additional vehicle data.

**3.7 electronic registration identification**  
**ERI**  
action or act of identifying a vehicle by electronic means for the purposes described in the scope of this part of ISO 24534

**3.8 electronic registration reader**  
**ERR**  
device used to read or read/write data from or to an ERT

**3.9 electronic registration tag**  
**ERT**  
onboard ERI device that contains the ERI data, including relevant security provisions and one or more interfaces to access data

NOTE 1 In case of high security, the ERT is a type of SAM (secure application module).

NOTE 2 The ERT may be a separate device or may be integrated into an onboard device that also provides other capabilities (e.g. DSRC communications).



**3.10****interoperability**

ability of systems to provide services to and accept services from other systems and to use these services to enable the systems to operate effectively together

**3.11****lifetime**

period of time during which an item of equipment exists and functions

NOTE Adapted from ISO 14815.

**3.12****onboard ERI equipment**

equipment fitted within or on the outside of the vehicle and used for ERI purposes

NOTE The onboard ERI equipment comprises an ERT and may also comprise any additional communication devices.

**3.13****operator**

entity responsible for the operational management of an ERI system

**3.14****privacy**

right of individuals to control or influence what information related to them may be collected and stored and by whom and to whom that information may be disclosed

[ISO 7498-2:1989, definition 3.3.43]

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**3.15****read only**

property that data content cannot be changed by a reader/interrogator

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**3.16****read/write**

data mode corresponding to an ERT in which data content can be changed by means of a compatible interrogator via the air interface

**3.17****read/write cycle**

complete sequence of interaction by the reader/interrogator where the ERT is unambiguously identified and new data, comprising either whole or part of the full data set, is written onto the ERT by means of the air interface

**3.18****registration authority**

⟨for vehicles⟩ authority responsible for the registration and maintenance of vehicle records

NOTE The authority can provide vehicle records to accredited organizations.

**3.19****registration authority**

⟨for ERI data⟩ organization responsible for the ERI data and security data according to local legislation

NOTE The registration authority for ERI data can be the same as the registration authority for vehicles. This International Standard, however, does not require this.

**3.20**

**registration certificate**

vehicle registration document (paper or smart card) issued by the registration authority for vehicles in which the vehicle and its owner or lessee are registered

**3.21**

**roadside equipment**

equipment located at a fixed position along the road transport network, for the purpose of communication and data exchanges with the onboard equipment of passing vehicles

**3.22**

**security**

protection of information and data so that unauthorized persons or systems cannot read or modify them and authorized persons or systems are not denied access

[ISO/IEC 12207:2008, definition 4.3.9]

**3.23**

**service provider**

person or organization providing a service that requires the vehicle identity and/or other information concerning the vehicle

**3.24**

**specific vehicle identification**

action or act of establishing the identity of a specific vehicle

NOTE 1 This is in contrast to vehicle vicinity identification, where the vicinity of a vehicle with a specific identity is detected. With specific vehicle identification, it is also known which specific vehicle has been identified.

NOTE 2 Two kinds of specific vehicle identification may be distinguished: first, localized vehicle identification, in which case the location of the identified vehicle is known with such precision that not more than one vehicle can be present at the same time in that location; second, peer communication identification, in which case the identification of the vehicle engaged in some form of communication (e.g. an EFC transaction) is established.

**3.25**

**vehicle vicinity identification**

action or act of establishing the identity of a specific vehicle near an external ERI reader (ERR) without pinpointing the exact position of the vehicle

NOTE If there is more than one vehicle present in the vicinity of a reader, no specific vehicle, or its exact location, is identified. However, it will establish that a specific vehicle identity has passed in the vicinity of a reader.

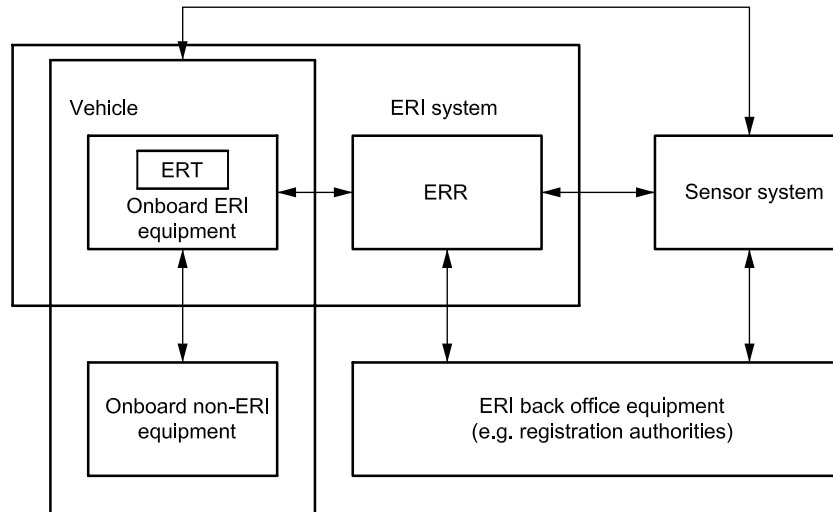
**4 Abbreviated terms**

AIB	accredited, independent testing body
ELV	end-of-life vehicles
EMC	electromagnetic compatibility
ERI	electronic registration identification
ERM	electromagnetic compatibility and radio spectrum matters
ERR	electronic registration reader
ERT	electronic registration tag
SAM	secure application module

## 5 System requirements

### 5.1 ERI system context

Figure 1 provides a context diagram (informative) of the environment within which the ERT functions, with the wider relationships which may exist with other components of an ERI system.



**Figure 1 — Fully featured ERI system, with onboard ERT component**  
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### 5.2 ERT

The ERT shall contain the vehicle identifier and may include additional vehicle data.

The ERT shall communicate directly or indirectly with an ERR.

NOTE The ERT may also communicate with other onboard ERI equipment, or onboard non-ERI equipment, when ERI data is required to support other transport applications.

### 5.3 Operational parameters

#### 5.3.1 General

In the classes defined herein, the ERT shall have the capability to communicate ERI data over a wireless link to an ERR.

An ERI system may be required to operate from stationary or low vehicle speeds; also, with traffic travelling in congested traffic conditions or at free flow, motorway speeds.

#### 5.3.2 ERT read range

ERI data shall be capable of being read from the ERT by an external ERR which may, according to application, operate as a close proximity reader (i.e. handheld), mobile (i.e. vehicle mounted), or a fixed location [i.e. roadside equipment (RSE)].

NOTE Reading parameters are defined within this subclause; writing parameters are subject to many factors and are outside the scope of this part of ISO 24534.