TECHNICAL SPECIFICATION

ISO/TS 24534-1

First edition
2007-12-15

Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles —

Part 1:
Architecture

*Identification automatique des véhicules et des équipements —
Identification d'enregistrement électronique (ERI) pour les véhicules —
Partie 1: Architecture*

© ISO 2007

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/TS 24534-1:2007
https://standards.iteh.ai/catalog/standards/sist/db604b21-73d7-4c38-a1b8-
02a91e36934e/iso-ts-24534-1-2007

COPYRIGHT PROTECTED DOCUMENT

Contents

Page

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/TS 24534-1:2007
https://standards.iteh.ai/catalog/standards/sist/db604b21-73d7-4c38-a1b8-
02a91e36934e/iso-ts-24534-1-2007

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.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

— an ISO Publicly Available Specification (ISO/PAS) represents an agreement between technical experts in an ISO working group and is accepted for publication if it is approved by more than 50 % of the members of the parent committee casting a vote;

— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

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/TS 24534-1 was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*, and by Technical Committee CEN/TC 278, *Road transport and traffic telematics* in collaboration.

ISO/TS 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 both in respect of 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/TS 24534 illustrates the ERI system concept and the fully featured ERI function enabling simple to complex applications of ERI.

The various parts of ISO 24534 provide the overall framework for ERI and specification of requirements for "fully featured" ERI. An associated International Standard in this family of ERI standards, ISO 24535, provides a subset of these requirements to provide a "basic ERI" functionality. Figure 1 shows the functional stack accommodating both fully featured and basic ERI.
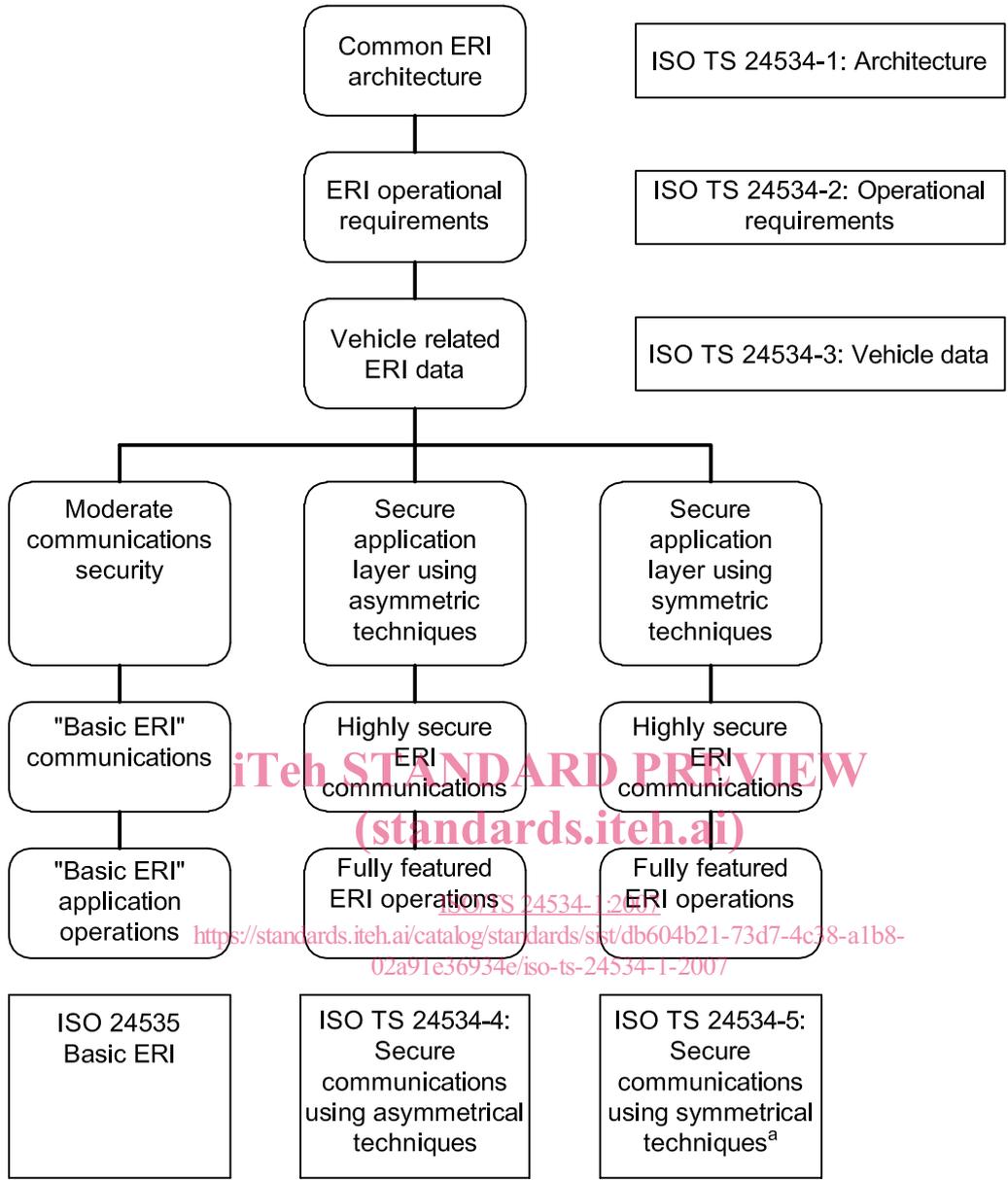
Figure 1 — Functional stack accommodating both "fully featured" and "basic" ERI

Automatic vehicle and equipment identification — Electronic Registration Identification (ERI) for vehicles —

Part 1:
Architecture

1 Scope

This part of ISO/TS 24534 provides the requirements for electronic registration that is 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, and

— commercial services.

It adheres to privacy and data protection regulations.

This part of ISO/TS 24534 provides an overview of the ERI system concept, in terms of the onboard vehicle components and the external off-vehicle components required for an operational system. The detailed requirements are defined in the Parts 2, 3, 4 and 5 of ISO 24534 and for the more limited, relevant provisions of ISO 24535.

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 7498-2, *Information processing systems — Open Systems Interconnection — Basic Reference Model — Part 2: Security Architecture*

ISO 14814, *Road transport and traffic telematics — Automatic vehicle and equipment identification — Reference architecture and terminology*

ISO/IEC 9798-1, *Information technology — Security techniques — Entity authentication — Part 1: General*

3   Terms and definitions

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

3.1
additional vehicle data
vehicle related data in addition to the vehicle identifier

3.2
air interface
conductor-free medium between onboard ERI equipment and the reader/interrogator through which the linking of the onboard equipment to the reader/interrogator is achieved by means of electro-magnetic signals

[ISO 14814]

3.3
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

3.4
confidentiality
information not made available or disclosed to unauthorized individuals, entities, or processes

[ISO 7498-2]

3.5
Electronic Registration Identification
ERI
action or act of identifying a vehicle with electronic means for purposes described in the scope of this part of ISO/TS 24534

3.6
ERI data
ERI data consisting of the vehicle identifier and possible additional vehicle data as defined in ISO/TS 24534-3

3.7
Electronic Registration Reader
ERR
device used to read or read/write data from or to an "Electronic Registration Tag"

3.8
Electronic Registration Tag
ERT
onboard ERI device that contains the ERI data, including relevant security provisions and one or more interfaces to access that data

NOTE   In cases of high security, this is a type of SAM. The ERT interfaces with onboard ERI equipment to communicate with external systems and may also interface with onboard non-ERI equipment components.

3.9
key
sequence of symbols that controls the operations of a cryptographic transformation (e.g. encipherment, decipherment, cryptographic check function, signature generation, or signature verification)

[ISO/IEC 9798-1]

3.10
onboard ERI equipment
equipment fitted within or on the outside of the vehicle and used for ERI purposes

NOTE   The onboard equipment includes the ERT and any communication provisions for the exchange of ERI data with an ERI reader or writer.

3.11
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 to them

3.12
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 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 known which such a precision that not more than one vehicle can be present at the same time on 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.

3.13
vehicle identification
action or act of establishing the identity of a vehicle. For the purpose of this part of ISO/TS 24534, a distinction is made between specific vehicle identification and vehicle vicinity identification

3.14
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 a specific vehicle identity has passed in the vicinity of a reader.

4   Abbreviated terms

4.1
AEI
Automatic Equipment Identification

4.2
AVI
Automatic Vehicle Identification

4.3
ELV
End of Life Vehicles

4.4
ERI
Electronic Registration Identification

4.5
ERR
Electronic Registration Reader