
**Intelligent transport systems —
Framework for collaborative Telematics
Applications for Regulated commercial
freight Vehicles (TARV) —**

Part 5:

Generic vehicle information

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*Systemes intelligents de transport — Cadre pour applications
télématiques collaboratives pour véhicules de fret commercial
réglementé (TARV) —*

ISO 15638-5:2013
Partie 5: Informations génériques sur le véhicule

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received. www.iso.org/patents

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*

ISO 15638 consists of the following parts, under the general title *Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV)*:

- *Part 1 Framework and architecture*
- *Part 2: Common platform parameters using CALM*
- *Part 3: Operating requirements, 'Approval Authority' procedures, and enforcement provisions for the providers of regulated services*
- *Part 5: Generic vehicle information*
- *Part 6: Regulated applications* [Technical Specification]
- *Part 7: Other applications*
- *Part 8: Vehicle access monitoring (VAM)* [Technical Specification]
- *Part 9: Remote electronic tachograph monitoring (RTM)* [Technical Specification]
- *Part 10: Emergency messaging system/eCall (EMS)* [Technical Specification]
- *Part 11: Driver work records (work and rest hours compliance) (DWR)* [Technical Specification]
- *Part 12: Vehicle mass monitoring (VMM)* [Technical Specification]
- *Part 14: Vehicle access control (VAC)* [Technical Specification]
- *Part 15: Vehicle location monitoring (VLM)* [Technical Specification]
- *Part 16: Vehicle speed monitoring (VSM)* [Technical Specification]

- *Part 17: Consignment and location monitoring (CLM)* [Technical Specification]
- *Part 18: ADR (Dangerous Goods) transport monitoring (ADR)* [Technical Specification]
- *Part 19: Vehicle parking facilities (VPF)* [Technical Specification]

The following parts are under preparation:

- *Part 4: System security requirements* [Technical Specification]
- *Part 13: Mass Penalties and Levies (VMC)*

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Introduction

Many *ITS* technologies have been embraced by commercial transport operators and freight owners, in the areas of fleet management, safety and security. Telematics applications have also been developed for governmental use. While the regulatory services in use or being considered varies from country to country, these include services such as charging, digital tachograph, hazardous goods tracking and e-call. Additional applications with a regulatory impact being developed include access monitoring, on-board mass monitoring, fatigue management, speed monitoring and heavy vehicle charging based on mass, location, distance and time.

In such an emerging environment of regulatory and commercial applications, it is timely to consider an overall architecture (business and functional) that could support these functions from a single platform within a commercial vehicle that operate within such regulations. Such International Standards will allow for a speedy development and specification of new applications that build upon the functionality of a generic specification platform. This suite of standards deliverables describes and defines the framework and requirements so that the *in-vehicle system* [4.7] can be commercially designed in an open market to meet common requirements.

This suite of standards deliverables will provide the basis for future development of cooperative telematics applications for *regulated commercial freight vehicles* [4.14]. Many elements to accomplish this are already available. Existing relevant standards will be referenced, and the specifications will use existing standards (such as *CALM*) wherever practicable.

This suite of standards deliverables will also allow for a powerful platform for highly cost-effective delivery of a range of telematics applications for *regulated commercial freight vehicles* [4.14].

Finally, a business architecture based on a (multiple) *service provider* [4.15] oriented approach will also require consideration of legal and regulatory aspects for the *approval authority* [4.3] approval and auditing of *service providers* [4.7].

This suite of standards deliverables is timely as many governments (Europe, North America, Asia and Australia/New Zealand) are considering the use of telematics for a range of regulatory purposes. Ensuring that a single in-vehicle platform can deliver a range of services to both government and industry through open standards and competitive markets is a strategic objective.

This suite of standards deliverables addresses and defines the framework for a range of cooperative telematics applications for *regulated commercial freight vehicles* [4.14] (such as access monitoring, driver fatigue management, speed monitoring, on-board mass monitoring and charging). The overall scope includes the concept of operation, legal and regulatory issues, and the generic cooperative *ITS* service platform. The framework will be based on a (multiple) *service provider* [4.15] oriented approach provisions for the *approval authority* [4.3] approval and auditing of *service providers*.

This part of the ISO 15638 family of standards deliverables provides specifications for generic *basic vehicle data* [4.4] that it is required for all *IVSs* to support and make available to application *service providers* [4.15] using the *IVS* wireless communications link(s), in order to support the provision of regulated and commercial application services for *TARVs*; and provides *basic vehicle data* for cooperative intelligent transport systems.

NOTE The definition of what comprises a 'regulated' vehicle is regarded as an issue for national decision, and may vary from country to country. This suite of standards deliverables does not impose any requirements on nations in respect of how they define a regulated vehicle.

NOTE The definition of what comprises a 'regulated' service is regarded as an issue for national decision, and may vary from country to country. This suite of standards deliverables does not impose any requirements on nations in respect of which services for regulated vehicles countries will require, or support as an option, but will provide standardised sets of requirements descriptions for identified services to enable consistent and cost efficient implementations where implemented.

NOTE Cooperative *ITS* applications, in this context, are defined as the use of an in-vehicle *ITS* platform to meet both commercial and regulatory needs from a (functionally) single on-board platform.

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Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV) —

Part 5: Generic vehicle information

1 Scope

This part of ISO 15638 defines generic basic vehicle and *core application data* [4.5] provision to application *service providers* [4.15] to be supported by *in-vehicle system* [4.7] (IVS) for cooperative telematics applications for *regulated commercial freight vehicles* [4.14] (TARV), and to provide *basic vehicle data* [4.4] for cooperative intelligent transport systems.

This part of ISO 15638 provides the specifications for generic *basic vehicle data* [4.4] that it is required for all TARV IVSs to support and make available to application *service providers* [4.15] via a wireless communications link supported by the IVS, in order to support the provision of regulated and commercial application services.

Some further data concepts, while not required in all cases for every TARV in every *jurisdiction* [4.9], may be required generically for all equipment within a particular *jurisdiction* [4.9], or class of TARV within a *jurisdiction* [4.9], in order for the *jurisdiction* to achieve its regulation of TARVs.

Equipped vehicles operating internationally will need to carry all of the additional data concepts required by all of the *jurisdictions* [4.9] within which they operate, in order to determine their *core application data* [4.5]. This part of ISO 15638 provides standard definitions for these commonly expected additional data concepts.

A second set of (largely complementary) 'basic vehicle' data is required to support interoperable cooperative intelligent transport systems and this is also determined and provided within this part of ISO 15638. The framework architecture and many of the protocols are common between both (TARV and C-ITS) sets of requirements, and also with those being adopted by the wider cooperative ITS sector.

2 Conformance

This part of ISO 15638 defines specifications for generic *basic vehicle data* [4.4] that it is required for all IVSs to support and make available to application *service providers* [4.15] using the IVS wireless communications link(s), in order to support the provision of regulated and commercial application services for TARVs; and provides *basic vehicle data* for cooperative intelligent transport systems., and has no specific conformance tests defined herein, however Clause 10 specifies which tests may be required. Some aspects defined within may have conformance tests defined in other parts of ISO 15638.

Conformance to any other International Standard or specification referenced in this part of ISO 15638 shall be ascertained according to the requirements of the referenced deliverable.

Conformance to this part of ISO 15638 is therefore a matter of self-declaration of compliance, or by submission to a test house to ascertain that the provisions of the clauses of this part of ISO 15638 have been adhered to.

The protocols defined in this part of ISO 15638 have been independently tested. Annex C (Informative) provides results of these tests. In any conformance assurance process undertaken by candidate systems, where appropriate the results may be used as part of its process of conformance compliance.

3 Normative references

The following referenced documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

| | |
|----------------|---|
| ISO 3166-1 | <i>Codes for the representation of names of countries and their subdivisions — Part 1: Country codes</i> |
| ISO 3166-2 | <i>Codes for the representation of names of countries and their subdivisions — Part 2: Country subdivision codes</i> |
| ISO 3779 | <i>Road vehicles — Vehicle identification number (VIN) -- Content and structure</i> |
| ISO/IEC 8824-1 | <i>Information processing systems — Open Systems Interconnection — Specification of abstract syntax notation one (ASN.1) — Part 1: Specification of the Basic Notation</i> |
| ISO/IEC 8824-2 | <i>Information processing systems — Open Systems Interconnection — Specification of abstract syntax notation one (ASN.1) — Part 2: Information Object Specification</i> |
| ISO/IEC 8824-3 | <i>Information processing systems — Open Systems Interconnection — Specification of abstract syntax notation one (ASN.1) — Part 3: Constraint Specification</i> |
| ISO/IEC 8824-4 | <i>Information processing systems — Open Systems Interconnection — Specification of abstract syntax notation one (ASN.1) — Part 4: Parameterisation of the ASN.1 Specifications</i> |
| ISO/IEC 8825-2 | <i>Information technology — ASN.1 encoding rules. Specification of Packed Encoding Rules (PER)</i> |
| ISO 10918-1 | <i>Information technology — Digital compression and coding of continuous-tone still images: Requirements and guidelines</i> |
| ISO 13183 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) — Broadcast communications</i> |
| ISO 14816 | <i>Road transport and traffic telematics — Automatic vehicle and equipment identification — Numbering and data structure</i> |
| ISO 15638-1 | <i>Intelligent transport systems — Framework for cooperative telematics applications for regulated commercial freight vehicles (TARV) — Part 1: Framework and architecture</i> |
| ISO 15638 -2 | <i>Intelligent transport systems — Framework for cooperative telematics applications for regulated commercial freight vehicles (TARV) — Common platform parameters using CALM</i> |
| ISO 15638 -3 | <i>Framework for cooperative telematics applications for regulated commercial freight vehicles TARV — Operating requirements, 'Approval authority' procedures, and enforcement provisions for the providers of regulated services</i> |
| ISO 15638 -4 | <i>Intelligent transport systems — Framework for cooperative telematics applications for regulated commercial freight vehicles (TARV) — System security requirements</i> |
| ISO 17262 | <i>Intelligent transport systems — Automatic vehicle and equipment identification — Numbering and data structures</i> |
| ISO 21210 | <i>Intelligent transport systems — Communications access for land mobiles — IPv6 Networking</i> |

| | |
|-------------------|---|
| ISO 21212 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) — 2G Cellular systems</i> |
| ISO 21213 | <i>(CALM) — 3G Cellular systems</i> |
| ISO 21214 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) — Infra-red systems</i> |
| ISO 21215 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) -- M5</i> |
| ISO 21216 | <i>Intelligent transport systems — Wireless communications — CALM using millimetre communications — Air interface</i> |
| ISO 21217 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) — Architecture</i> |
| ISO 21218 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) — Medium service access points</i> |
| ISO 25111 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) — General requirements for using public networks</i> |
| ISO 25112 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) — Mobile wireless broadband using IEEE 802.16</i> |
| ISO 25113 | <i>(CALM) — Mobile wireless broadband using HC-SDMA</i> |
| ISO TS 26683-2 | <i>Intelligent transport systems — Freight land conveyance content identification and communication — Part 2: Application interface profiles</i> |
| ISO 29281 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) — Non-IP networking</i> |
| ISO 29282 | <i>Intelligent transport systems — Communications access for land mobiles (CALM) — Applications using satellite networks</i> |
| ISO 29283 | <i>ITS CALM Mobile Wireless Broadband applications using Communications in accordance with IEEE 802.20</i> |
| ETSI TS 102 894 | <i>Intelligent Transport System (ITS);Users & Applications requirements;Facility layer structure, functional requirements and specifications;Facility layer structure, functional requirements and specifications</i> |
| ETSI TS 102 890-1 | <i>Intelligent Transport Systems (ITS);Facilities layer function;Communication Management specification Facilities Communication Management</i> |
| ETSI TS 102 890-2 | <i>Intelligent Transport Systems (ITS);Facilities layer function;Services announcement specification-Facilities Service Announcement</i> |
| EN 302 895 | <i>Intelligent Transport Systems (ITS);Vehicular Communications;Basic Set of Applications; Local Dynamic Map (LDM) Specification</i> |

4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15638-1 and the following apply.

4.1

A/D voltage

analogue to digital converter voltage

4.2 application service
service provided by a *service provider* [4.15] accessing data from the *IVS* of a *regulated commercial freight vehicle* [4.14] via a wireless communications network

4.3 approval authority
organization (usually independent) which conducts 'Approval Authority' approval and ongoing audit for *service providers* [4.15]

4.4 basic vehicle data
data maintained/provided by all *IVS*

4.5 core application data
basic vehicle data [4.4] plus any additional data required to provide an implemented *regulated application services* [4.13]

4.6 G's
gravitational force
object's acceleration relative to free-fall

4.7 in-vehicle system (IVS)
equipment on-board a vehicle that can provide the specified telematics functionality

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NOTE This equipment may comprise a single physical *on-board unit* [4.11], or a telematics functionality within one or multiple equipments on-board a vehicle

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4.8 Java™
object oriented open source operating language developed by 'SUN Microsystems'™

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4.9 jurisdiction
government, road or traffic authority which owns the '*regulatory applications*' [4.12]

EXAMPLE Country, state, city council, road authority, government department (customs, treasury, transport), etc.

4.10 local data tree
LDT
frequently updated data concept stored in the on-board data pantry containing a collection of data values deemed essential for either a) *TARV regulated applications* [4.12], or b) cooperative intelligent transport systems

4.11 on-board unit
OBU
integrated telematics unit installed on-board which provides the specified telematics functionality required for the *IVS*

4.12 regulated/regulatory application
approval arrangement utilized by *jurisdictions* [4.9] for granting certain categories of commercial vehicles rights to operate in regulated circumstances subject to certain conditions

NOTE Each *jurisdiction* may use their own terminology including, but not limited to, permit, application, scheme, concession, exemption, gazettal and notice

4.13

regulated application service

TARV application service [4.2] that is mandated by a regulation imposed by a *jurisdiction* [4.9], or is an option supported by a *jurisdiction*

4.14

regulated commercial freight vehicle

vehicle designed to haul commercial freight that is subject to regulations determined by the *jurisdiction* [4.9] as to the use of the road system of the *jurisdiction* and the compliance with specific regulations for that class of *regulated commercial freight vehicle*, often through the provision of information via *TARV*

4.15

service provider

party which is approved by a *approval authority* [4.3] as suitable to provide regulated or commercial *ITS* services

4.16

unique vehicle identification

unambiguous identification of the vehicle

5 Symbols (and abbreviated terms)

ACK

acknowledgement

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API

application program interface

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app

application programme

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AS

application service

CALM

communications access for land mobiles

C-ITS

cooperative intelligent transport systems

CVIS

'Cooperative Vehicle-Infrastructure Systems' (EC Project)

DDS

distributed directory service

FOAM

framework for open applications (standards deliverable within CVIS)

G

gravitational force

GNSS

global navigation satellite system

HMC

host management centre