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**Intelligent transport systems —  
Framework for cooperative telematics  
applications for regulated commercial  
freight vehicles (TARV) —**

**Part 18:  
ADR (Dangerous Goods)**

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

*ISO 15638-18:2017*

*Partie 18: Monitoring du transport (de biens dangereux) d'ADR*

<https://standards.iteh.ai/catalog/standards/sist/ce416d5-ed2e-4d11-9e99-b6e2b40cc3c2/iso-15638-18-2017>



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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 (see [www.iso.org/directives](http://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 (see [www.iso.org/patents](http://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.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

This first edition of ISO 15638-18 cancels and replaces ISO/TS 15638-18:2013, which has been technically revised to bring the MSD and optional data concept specifications in line with the current revisions to EN 15722 and CEN TS 16405.

A list of all parts in the ISO 15638 series can be found on the ISO website.

## 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. Such regulatory services in use or being considered vary from jurisdiction to jurisdiction but include electronic on-board recorders, digital tachograph, on-board mass monitoring, “mass” data for regulatory control and management, vehicle access methods, hazardous goods tracking and e-call. Additional applications with a regulatory impact being developed include fatigue management, speed monitoring and heavy vehicle penalties imposed based on 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 freight vehicle that operate within such regulations. International Standards will allow for a speedy development and specification of new applications that build upon the functionality of a generic specification platform. A series of standards is required to describe and define the framework and requirements so that the on-board equipment and back-office systems can be commercially designed in an open market to meet common requirements of jurisdictions.

This series of standards addresses and defines the framework for a range of cooperative telematics ITS service applications for regulated commercial freight vehicles (such as access, driver fatigue management, speed monitoring, on-board mass monitoring, “mass” data for regulatory control and management). The overall scope includes the concept of operation, legal and regulatory issues and the generic cooperative provision of services to regulated commercial freight vehicles, using an on-board ITS platform. The framework is based on a (multiple) service provider-oriented approach with provisions for the approval and auditing of service providers.

This series of standards will:

- provide the basis for future development of cooperative telematics applications for regulated commercial freight vehicles. 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;
- allow for a powerful platform for highly cost-effective delivery of a range of telematics applications for regulated vehicles;
- a business architecture based on a (multiple) service provider oriented approach;
- address legal and regulatory aspects for the approval and auditing of service providers.

This series of standards 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 document provides specifications for ADR (dangerous goods).

NOTE 1 The definition of what comprises a “regulated” vehicle is regarded as an issue for National decision and can vary from jurisdiction to jurisdiction. This series of standard does not impose any requirements on nations in respect of how they define a regulated vehicle.

NOTE 2 The definition of what comprises a ‘regulated’ service is regarded as an issue for National decision, and can vary from *jurisdiction to jurisdiction*. This series of standards documents does not impose any requirements on nations in respect of which services for regulated vehicles *jurisdictions* will require, or support as an option, but will provide standardized sets of requirements descriptions for identified services to enable consistent and cost-efficient implementations where implemented.

# Intelligent transport systems — Framework for cooperative telematics applications for regulated commercial freight vehicles (TARV) —

## Part 18: ADR (Dangerous Goods)

### 1 Scope

This document addresses the provision of “ADR (dangerous goods)” and specifies the form and content of such data required to support such systems and access methods to that data.

The scope of this document is to provide specifications for common communications and data exchange aspects of the application service ADR (dangerous goods) that a regulator may elect to require or support as an option, including

- a) high-level definition of the service that a service provider has to provide (the service definition describes common service elements, but does not define the detail of how such an application service is instantiated, nor the acceptable value ranges of the data concepts defined),
- b) means to realize the service, and
- c) application data, naming content and quality that an IVS has to deliver.

The definition of what comprises a “regulated” service is regarded as an issue for national decision and may vary from jurisdiction to jurisdiction. This document does not impose any requirements on nations in respect of which services for regulated vehicles jurisdictions will require, or support as an option, but provides standardized sets of requirements descriptions for identified services to enable consistent and cost-efficient implementations where instantiated.

ISO 15638 has been developed for use in the context of regulated commercial freight vehicles (hereinafter referred to as “regulated vehicles”). There is nothing, however, to prevent a jurisdiction extending or adapting the scope to include other types of regulated vehicles, as it deems appropriate.

### 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 15638-1, *Intelligent transport systems — Framework for collaborative telematics applications for regulated commercial freight vehicles (TARV) — Part 1: Framework and architecture*

ISO 15638-2, *Intelligent transport systems — Framework for collaborative telematics applications for regulated commercial freight vehicles (TARV) — Common platform parameters using CALM*

ISO 15638-3, *Intelligent transport systems — Framework for collaborative telematics applications for regulated commercial freight vehicles (TARV) — Operating requirements, ‘approval authority’ procedures, and enforcement provisions for the providers of regulated services*

## ISO 15638-18:2017(E)

ISO 15638-4<sup>1)</sup>, *Intelligent transport systems — Framework for collaborative telematics applications for regulated commercial freight vehicles (TARV) — System security requirements*

ISO 15638-5:2013, *Intelligent transport systems — Framework for collaborative telematics applications for regulated commercial freight vehicles (TARV) — General vehicle information*

ISO 15638-6:2014, *Intelligent transport systems — Framework for collaborative telematics applications for regulated commercial freight vehicles (TARV) — Regulated applications*

ISO 15638-10, *Intelligent transport systems — Framework for cooperative telematics applications for regulated vehicles (TARV) -Emergency messaging system/eCall*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15638-1 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 access methods

procedures and protocols to provision and retrieve data

#### 3.2 app

small (usually) *Java*<sup>™</sup> (3.28) applets, organized as software bundles, that support *application services* (3.3) by keeping the *data pantry* (3.18) provisioned with up to date data

#### 3.3 application service

service provided by a *service provider* (3.40) enabled by accessing data from the *IVS* (3.25) of a *regulated vehicle* (3.37) via a wireless communications network

#### 3.4 application service provider

ASP  
party that provides an *application service* (3.3)

#### 3.5 app library

separately secure area of memory in *IVS* (3.25) where apps are stored (with different access controls to *data pantry* (3.18))

#### 3.6 approval

formal affirmation that an applicant has satisfied all the requirements for appointment as an *application service provider* (3.4) or that an application service delivers the required service levels

#### 3.7 approval agreement

written agreement made between an *approval authority (regulatory)* (3.8) and a *service provider* (3.40)

Note 1 to entry: An *approval authority (regulatory)* (3.8) approval agreement recognizes the fact that a *service provider* (3.40), having satisfied the approval authority's requirements for appointment as a service provider, is appointed in that capacity and sets out the legal obligations of the parties with respect to the ongoing role of the service provider.

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1) To be published.



**3.8****approval authority (regulatory)**

organization (usually independent) which conducts *approval* (3.6) and ongoing *audit* (3.10) for *service providers* (3.40) on behalf of a *jurisdiction* (3.29)

**3.9****architecture**

formalized description of the design of the structure of TARV and its *framework* (3.24)

**3.10****audit/auditing**

review of a party's capacity to meet, or continue to meet, the initial and ongoing *approval agreements* (3.7) as a *service provider* (3.40)

**3.11****basic vehicle data**

data that shall be maintained/provided by all *IVS* (3.25) (regardless of *jurisdiction* (3.29))

**3.12****communications access for land mobiles****CALM**

layered solution that enables continuous or quasi continuous communications between vehicles and the infrastructure, or between vehicles, using such (multiple) wireless telecommunications media that are available in any particular location and which have the ability to migrate to a different available media where required and where media selection is at the discretion of *user* (3.45) determined parameters by using a series of standards based on ISO 21217 (CALM architecture) and ISO 21210 (CALM networking) that provide a common platform for a number of standardized media using *ITS-stations* (3.27) to provide wireless support for applications, such that the application is independent of any particular wireless medium

**3.13****commercial application(s)**

ITS applications in *regulated vehicles* (3.37) for commercial (non-regulated) purposes

EXAMPLE Asset tracking, vehicle and engine monitoring, cargo security, driver management, etc.

**3.14****consignment**

shipment of goods/cargo to a destination

**3.15****cooperative ITS****C-ITS**

ITS applications for both regulatory and commercial purposes that require the exchange of data between uncontracted parties using multiple *ITS-stations* (3.27) communicating with each other and sharing data with other parties with whom they have no direct contractual relationship to provide one or more *ITS services* (3.26)

**3.16****core data**

*basic vehicle data* (3.11) plus any additional data required to provide an implemented *regulated application service* (3.36)

**3.17****dangerous goods****hazardous goods****HAZMAT**

substances or articles which are potentially hazardous (for example, poisonous to humans, harmful to the environment, explosive, flammable or radioactive) that require regulatory control when transported

**3.18**

**data pantry**

secure area of memory in *IVS* (3.25) where data values are stored (with different access controls to *app library* (3.5))

**3.19**

**driver**

person driving the *regulated vehicle* (3.37) at any specific point in time

**3.20**

**driver work records**

**DWR**

collection, collation, and transfer of *driver* (3.19) work and rest hours data from an *in-vehicle system* (3.25) to an *application service provider* (3.4)

**3.21**

**eCall**

specialized instantiation of an *EMS* (3.22) that provides incident messaging and communication with a public service assistance point via priority wireless telephone communications using its emergency call capabilities

**3.22**

**emergency message system**

**EMS**

collection, collation, and transfer of emergency message data from an *in-vehicle system* (3.25) to an *application service provider* (3.4)

**3.23**

**facilities**

layer that sits on top of the communication stack and helps to provide data interoperability and reuse and to manage applications and enable dynamic real-time loading of new applications

**3.24**

**framework**

particular set of beliefs or ideas referred to in order to describe a scenario or solve a problem

**3.25**

**in-vehicle system**

**IVS**

*ITS-station* (3.27) and connected equipment on board a vehicle

**3.26**

**ITS service**

communication functionality offered by an *ITS-station* (3.27) to an *ITS-station application*

**3.27**

**ITS-station**

**ITS-s**

entity in a communication network, comprised of application, *facilities* (3.23), networking and access layer components specified in ISO 21217 that operate within a bounded secure management domain

**3.28**

**Java™**

object-oriented open source operating language developed by SUN systems

**3.29**

**jurisdiction**

government, road or traffic authority which owns the *regulatory applications* (3.35)

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

### 3.30 local data tree LDT

frequently updated data concept stored in the on-board *data pantry* (3.18) containing a collection of data values deemed essential for either a) *TARV regulated application service* (3.36) or b) *cooperative intelligent transport systems* (3.15)

### 3.31 mass

mass of a given heavy vehicle as measured by equipment affixed to the *regulated vehicle* (3.37)

### 3.32 “mass” data for regulatory control and management MRC

collection, collation, and transfer of vehicle *mass* (3.31) data from an *in-vehicle system* (3.25) to an *application service provider* (3.4) to enable data provision to *jurisdictions* (3.29) for the control and management of equipped vehicles based on the *mass of the regulated vehicle* (3.37), or use of such data to enable compliance with the provisions of regulations

### 3.33 operator

fleet manager of a *regulated vehicle* (3.37)

### 3.34 prime service provider

*service provider* (3.40) who is the first contractor to provide *regulated application services* (3.36) to the *regulated vehicle* (3.37) or a nominated successor on termination of that initial contract

Note 1 to entry: The *prime service provider* (3.34) is also responsible to maintain the installed *IVS* (3.25).

Note 2 to entry: If the *IVS* was not installed during the manufacture of the vehicle the *prime service provider* (3.34) is also responsible to install and commission the *IVS* (3.25).

### 3.35 regulated/regulatory application

application arrangement using TARV utilized by *jurisdictions* (3.29) for granting certain categories of commercial vehicles rights to operate in regulated circumstances subject to certain conditions, or indeed to permit a vehicle to operate within the jurisdiction

Note 1 to entry: This may be mandatory or voluntary at the discretion of the jurisdiction.

### 3.36 regulated application service

TARV *application service* (3.3) to meet the requirements of a *regulated application* (3.35) that is mandated by a regulation imposed by a *jurisdiction* (3.29) or is an option supported by a jurisdiction

### 3.37 regulated commercial freight vehicle/regulated vehicle

vehicle that is subject to regulations determined by the *jurisdiction* (3.29) as to its use on the road system of the jurisdiction in regulated circumstances, subject to certain conditions, and in compliance with specific regulations for that class of regulated vehicle

Note 1 to entry: At the option of jurisdictions, this may require the provision of information via TARV or provide the option to do so.

### 3.38 regulator

agent of the *jurisdiction* (3.29) appointed to regulate and manage TARV within the domain of the jurisdiction

Note 1 to entry: This may or may not be the *approval authority (regulatory)* (3.8).

3.39

**remote tachograph monitoring**

**RTM**

collection, collation, and transfer of data from an on-board electronic *tachograph* (3.43) system to an *application service provider* (3.4)

3.40

**service provider**

party which is approved by an approval *authority (regulatory)* (3.8) as suitable to provide regulated or commercial ITS *application services* (3.3)

3.41

**session**

wireless communication exchange between the *ITS-station* (3.27) of an *IVS* (3.25) and the *ITS-station* of its *application service provider* (3.4) to achieve data update, data provision, upload apps, or otherwise manage the provision of the *application service* (3.3), or a wireless communication provision of data to the *ITS-station* of an *IVS* (3.25) from any other *ITS-station*

3.42

**specification**

explicit and detailed description of the nature and functional requirements and minimum performance of equipment, service or a combination of both

3.43

**tachograph**

sender unit mounted to a vehicle gearbox, a tachograph head and a digital driver card, which records the *regulated vehicle* (3.37) speed and the times at which it was driven and aspects of the *driver's* (3.19) activity selected from a choice of modes (standards.iteh.ai)

3.44

**telematics**

use of wireless media to obtain and transmit (data) from a distant source

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<https://standards.iteh.ai/catalog/standards/sist/cee410d5-ed2c-4d1c-9e99-66c2b40cc3c2/iso-15638-18-2017>

3.45

**user**

individual or party that enrolls in and operates within a regulated or *commercial application* (3.13) *service* (3.3)

EXAMPLE *Driver* (3.19), *transport operator* (3.33), *freight owner*, etc.

3.46

**vehicle access control**

**VAC**

control of *regulated vehicles* (3.37) ingress to and egress from controlled areas and associated penalties and levies

3.47

**vehicle access management**

**VAM**

monitoring and management of *regulated vehicles* (3.37) approaching or within sensitive and controlled areas

3.48

**vehicle location monitoring**

**VLM**

collection, collation, and transfer of vehicle location data from an *in-vehicle system* (3.25) to an *application service provider* (3.4)

**3.49****vehicle mass monitoring****VMM**

collection, collation, and transfer of vehicle *mass* (3.31) data from an *in-vehicle system* (3.25) to an *application service provider* (3.4)

**3.50****vehicle parking facility****VPF**

system for booking and *access* (3.1) to and egress from a vehicle parking facility (VPF)

**3.51****vehicle speed monitoring****VSM**

collection, collation, and transfer of vehicle speed data from an *in-vehicle system* (3.25) to an *application service provider* (3.4)

**4 Symbols and abbreviated terms**

ADR	<i>Accord européen relatif au transport international des marchandises Dangereuses par Route (dangerous goods)</i>
ADRM	ADR monitoring
app	applet (Java™ application or similar)
ASP	application service provider
CALM	communications access for land mobiles
C-ITS	cooperative intelligent transport systems
DLR	driving licence reader
DRD	driver records device
EMS	emergency message system
ID	identity
IP	Internet protocol
ITS-S	ITS-station
IVS	in-vehicle system
LDT	local data tree
MSD	minimum set of data ( <i>eCall</i> , EN 15722)
OID	object identifier
PSAP	public service answering point
SAD	single administrative document (which accompanies ADR consignments in Europe)
SE	service element
s.u.t	system under test

TARV	telematics applications for regulated vehicles
TD	transport document
UML	Unified Modeling Language (see ISO 19501)
UNECE	United Nations Economic Commission for Europe
URL	uniform resource locator
UTC	coordinated universal time

### 5 Conformance

Requirements to demonstrate conformance to any of the general provisions or specific application services described in this document shall be within the regulations imposed by the jurisdiction where they are instantiated. Conformance requirements to meet the provisions of this document are therefore deemed to be under the control of, and to the specification of, the jurisdiction where the application service(s) is/are instantiated.

The protocols defined in this document have been independently tested. [Annex A](#) 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.

### 6 General overview and framework requirements

ISO 15638-1 provided a framework and architecture for TARV. It provided a general description of the roles of the actors in TARV and their relationships.

To understand clearly the TARV framework, architecture and detail and specification of the roles of the actors involved, the reader is referred to [ISO 15638-1](#).

ISO 15638-6 provides the core requirements for all regulated applications. To understand clearly the general context in to which the provision of this application service, the reader is referred to ISO 15638-6.

In order to be compliant with this document, the overall architecture employed shall comply to ISO 15638-1.

In order to be compliant with this document, the communications employed shall comply to ISO 15638-2.

In order to be compliant with this document, the operating requirements employed shall comply to ISO 15638-3.

In order to be compliant with this document, the security employed shall comply to ISO 15638-4.

In order to be compliant with this document, the basic vehicle data shall comply to ISO 15638-5.

In order to be compliant with this document, the generic conditions for this application service shall comply to ISO 15638-6.

ISO 15638 has been developed for use in the context of regulated commercial freight vehicles. There is nothing, however, to prevent a jurisdiction extending or adapting the scope to include other types of regulated vehicles, as it deems appropriate.

## 7 Requirements for services using generic vehicle data

The means by which the access commands for generic vehicle information specified in ISO 15638-5 can be used to provide all or part of the data required in order to support a regulated application service shall be as defined in ISO 15638-6.

## 8 Application services that require data in addition to basic vehicle data

### 8.1 General

Shall be conducted as defined in ISO 15638-6.

### 8.2 Quality of service requirements

This document contains no general requirements concerning quality of service. Such aspects shall be determined by a jurisdiction as part of its specification for any particular regulated application service. However, where a specified regulated application service has specific Q of S requirements essential to maintain interoperability, these aspects shall be as specified in [Clause 10](#).

### 8.3 Test requirements

This document contains no general requirements concerning test requirements. Such aspects shall be determined by a jurisdiction as part of its specification for any particular regulated application service, and issued as a formal test requirements specification document. However, where a specified regulated application service has specific test requirements essential to maintain interoperability, these aspects shall be as specified in [Clause 10](#) relating to this regulated application service, or in a separate standards document referenced within that clause. Where multiple jurisdictions recognize a benefit to common test procedures for a specific regulated application service, this shall be the subject of a separate standards deliverable.

### 8.4 Marking, labelling and packaging

This document has no specific requirements for marking, labelling or packaging.

However, where the privacy of an individual may be potentially or actually compromised by any instantiation based on the ISO 15638 series, the contracting parties shall make such risk explicitly known to the implementing jurisdiction and shall abide by the privacy laws and regulations of the implementing jurisdiction and shall mark up or label any contracts specifically and explicitly drawing attention to any loss of privacy and precautions taken to protect privacy. Attention is drawn to ISO/TR 12859 in this respect.

## 9 Common features of regulated TARV application services

### 9.1 General

The details of the instantiation of regulated application service are as designed by the application service system to meet the requirements of a particular jurisdiction and are not defined herein. ISO 15638-6 specifies the generic roles and responsibilities of actors in the systems and instantiations that claim compliance with this document shall also be compliant with the requirements of ISO 15638-6.

The means by which data is provisioned into the data pantry and the means to obtain the TARV LDT and core data are described in ISO 15638-6:2014, Clause 8.

In order to minimize the demand on the IVS (which it is assumed will be performing multiple application services simultaneously, as well as supporting general safety related cooperative ITS systems), and