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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) —

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

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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).

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).

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.

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.

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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. 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.

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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*

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ISO 15638-4[1)], *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*™ (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.

1) To be published.

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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

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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 r*egulatory applications* (3.35)

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

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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).

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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

3.44
telematics
use of wireless media to obtain and transmit (data) from a distant source

3.45
user
individual or party that enrols 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 vehicle*s (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 vehicle*s (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)

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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	*Accord européen relatif au transport international des marchandises Dangereuses par Route* (*dangerous goods*)
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 (*eCall,* 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

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