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BSI Standards Publication

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

Part 3: Operating requirements, 'Approval Authority' procedures, and enforcement provisions for the providers of regulated services

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National foreword

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

Part 3: Operating requirements, "Approval Authority" procedures, and enforcement provisions for the providers of regulated services

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

Partie 3: Exigences de fonctionnement, modes opératoires de l'Autorité d'approbation et dispositions d'exécution pour les fournisseurs de services réglementés

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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]

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— *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. Such regulatory services in use or being considered varies from country to country, but include vehicle charging, digital tachograph, electronic on-board recorders, on-board mass monitoring, vehicle access monitoring, hazardous goods tracking and e-call. Additional applications with a regulatory impact being developed include, 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 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 suite of standards deliverables is required to describe and define the framework and requirements so that the in-vehicle system and *back office* [4.7] systems can be commercially designed in an open market to meet common requirements of jurisdictions.

This suite of standards addresses and defines the framework for a range of cooperative telematics applications for *regulated commercial freight vehicles* [4.25] (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 provision of services to *regulated commercial freight vehicles* [4.25] using an on-board ITS platform. The framework is based on a (multiple) service provider oriented approach provisions for the *approval authority* [4.4] approval and auditing of *service providers* [4.27].

This suite of standards deliverables will:

- provide the basis for future development of cooperative telematics applications for *regulated commercial freight vehicles* [4.25]. 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 commercial freight vehicles* [4.25].
- a business architecture based on a (multiple) service provider oriented approach
- address legal and regulatory aspects for the *approval authority* [4.4] approval and auditing of *service providers* [4.27].

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.

NOTE 1: 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 2: 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 3: 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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This part of the ISO 15638 family of standards deliverables provides specifications for operating requirements, *approval authority* [4.4] approval procedures and enforcement provisions for the providers of regulated services.

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

Part 3:
Operating requirements, "Approval Authority" procedures, and enforcement provisions for the providers of regulated services

1 Scope

This part of ISO 15638 defines provisions to enable monitoring and enforcement of regulated vehicles and *approval authority* [4.4] approval procedures, specifically:

a) Definition of the roles and responsibilities of key entities: user, service provider, jurisdictions, and 'Approval Authorities'
b) Operating requirements ensuring that a cooperative in-vehicle platform can deliver a range of services to both government and industry through open standards and competitive markets
c) Basic service requirements for *service providers* [4.27] that are generic and independent of a specific application
d) Requirements for the *approval authority* [4.4] approval of *IVS*s and *service providers* [4.27]
e) Legal, regulatory, and enforcement aspects.

The scope includes the requirements for the *IVS* capability in the vehicle, and the definition of the roles of the *service provider* [4.27], 'Communications Service Provider', *IVS installer* [4.16], '*IVS maintainer* [4.17] ', *approval authority* [4.4], and the *user* [4.31], for cooperative telematics applications for *regulated commercial freight vehicles* [4.25].

NOTE The specific 'certification' or 'approval' procedures for specific application services are a matter for the jurisdiction and are outside the scope of this (or any) part of ISO 15638. However, approval authorities and jurisdictions are recommended to use the guidance of ISO 17000 and ISO guide 65 when developing and implementing such procedures.

2 Conformance

This part of ISO 15638 defines requirements for provisions to enable monitoring and enforcement of regulated vehicles and *approval authority* [4.4] approval procedures within the *TARV* context, and has no specific conformance tests defined herein. Principal requirements for conformance tests are specified in 14, but the tests themselves are not elaborated. Some aspects defined within may have conformance tests defined in other parts of ISO 15638.

Conformance declarations for the various parts of a CALM-compliant system shall be based on the relevant CALM-related International Standards that are normatively referenced in ISO 15638-2.

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.

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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.

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 11519-1 *Road vehicles — Low-speed serial data communication — Part 1: General and definitions*

ISO 11519-2 *Road vehicles — Low-speed serial data communication — Part 2: Low-speed controller area network (CAN)*

ISO 11519-3 *Road vehicles — Low-speed serial data communication — Part 3: Vehicle area network (VAN)*

ISO 11898-1 *Road vehicles — Controller area network (CAN) — Part 1: Data link layer and physical signalling*

ISO 11898-2 *Road vehicles — Controller area network (CAN) — Part 2: High-speed medium access unit*

ISO 11898-3 *Road vehicles — Controller area network (CAN) — Part 3: Low-speed, fault-tolerant, medium-dependent interface*

ISO 11898-4 *Road vehicles — Controller area network (CAN) — Part 4: Time-triggered communication*

ISO 11898-5 *Road vehicles — Controller area network (CAN) — Part 5: High-speed medium access unit with low-power mode*

ISO/TR 12859 *Intelligent transport systems — System architecture — Privacy aspects in ITS standards and systems*

ISO 14816 *Road transport and traffic telemantics — Automatic vehicle and equipment identification — Numbering and data structures*

ISO 17262 *Intelligent transport systems — Automatic vehicle and equipment identification — Numbering and data structures*

ISO 26683-2 *Intelligent transport systems — Freight land conveyance content identification and communication — Part 2: Application interface profiles*

SAE J1939 *Recommended Practice for a Serial Control and Communications Vehicle Network*

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
actor
coherent set of roles that users of an entity can play when interacting with the entity

NOTE An actor may be considered to play a separate role with regard to each use case with which it communicates. In the metamodel, Actor is a subclass of Classifier. An Actor has a Name and may communicate with a set of UseCases, and, at realization level, with Classifiers taking part in the realization of these UseCases. An Actor may also have a set of Interfaces, each describing how other elements may communicate with the Actor.

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4.2
applicant
party which has applied for approval authority [4.4] approval as a service provider [4.27]

4.3
application service
service provided by a service provider accessing data from the *IVS* of a regulated commercial freight vehicle via a wireless communications network

4.4
approval authority
organization (usually independent) which conducts approval and ongoing *audit* [4.5] for *service providers* [4.27]

4.5
audit
review of a party's capacity to meet, or continue to meet, the initial and ongoing *certificate of approvals* [4.11] as a *service provider* [4.27]

4.6
auditor
person or organization approved as an auditor by an *approval authority* [4.4]

4.7
back office
generic term for the computing and communication facilities of a *service provider* [4.27] or an *approval authority* [4.4] or *jurisdiction regulator* [4.16]

4.8
basic vehicle data
data that shall be maintained/provided by all *IVS* (regardless of *jurisdiction* [4.18])

4.9
CAN bus
network designed for use in automotives

NOTE 1 It uses a single terminated twisted pair cable; is multi master; maximum signal frequency used is 1 Mbit/sec; length is typically 40M at 1Mbit/sec up to 10KM at 5Kbits/sec; it has high reliability with extensive error checking; typical maximum data rate achievable is 40KBytes/sec; maximum latency of high priority message <120 µsec at 1Mbit/sec.

NOTE 2 CAN is unusual in that the entities on the network, called nodes, are not given specific addresses. Instead, it is the messages themselves that have an identifier which also determines the messages' priority. For this reason there is no theoretical limit to the number of nodes although in practice it is ~64.

4.10
certification
formal affirmation that an *applicant* [4.2] has satisfied all the requirements for appointment as a *service provider* [4.27]

4.11
certificate of approval
written agreement made between an *approval authority* [4.4] and a *service provider* [4.27]

NOTE An *approval authority* [4.4] approval agreement recognizes the fact that a *service provider* [4.27], 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 on-going role of the *service provider*.

4.12
clear-down
call clear-down
termination of call and freeing up of communication channel

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4.13
core application data
basic vehicle data [4.8] plus any additional data required to provide an implemented regulated application service

4.14
entity
something that exists independently

4.15
in-vehicle system
IVS
equipment on-board a vehicle that can provide the specified telematics functionality of the in-vehicle system

NOTE This equipment may comprise a single physical *on-board unit* [4.20], or a telematics functionality within one or multiple equipments on-board a vehicle

4.16
IVS installer
actor (4.1) who installs *IVS* on behalf of the vehicle manufacturer or the initial *prime service provider* [4.21]

4.17
IVS maintainer
actor [4.1] who installs *IVS* on behalf of the *prime service provider* [4.21]

4.18
jurisdiction
government, road or traffic authority which owns the *regulatory applications* [4.23]

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

4.19
jurisdiction regulator
regulator
agent of the jurisdiction appointed to regulate and manage *TARV* within the domain of the jurisdiction

NOTE This may or may not be the *approval authority* [4.4].

4.20
on-board unit
OBU
integrated telematics unit installed on-board which provides specified in-vehicle system functionality

4.21
prime service provider
service provider who is the first contractor to provide *regulated application services* [4.24] to the regulated commercial freight vehicle, or a nominated (by the user) successor on termination of that initial contract

NOTE The prime service provider is also responsible to maintain the installed *IVS*; if the *IVS* was not installed during the manufacture of the vehicle the prime service provider is also responsible to install and commission the *IVS*s.

4.22
prime user
principal *user* [4.31] of the *TARV* services

4.23
regulated/regulatory application
approval arrangement utilised by *jurisdictions* [4.18] for granting certain categories of commercial vehicles rights to operate in regulated circumstances subject to certain conditions

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

4.24
regulated application service
TARV application service that is mandated by a regulation imposed by a *jurisdiction* [4.18], or is an option supported by a *jurisdiction*

4.25
regulated commercial freight vehicle
vehicle designed to haul commercial freight that is subject to regulations determined by the *jurisdiction* [4.18] as to the use of the road system of the *jurisdiction* and the compliance with specific regulations for that class of commercial freight vehicle, often through the provision of information via *TARV*

4.26
secondary user
other user(s) of the *TARV* services who are not the *prime user* [4.22]

4.27
service provider
party which is certified by an *approval authority* [4.4] as suitable to provide regulated or commercial ITS services

4.28
tamper/tampering
conduct towards *IVS* or a *service provider's* [4.27] system which is intended to prevent the *IVS* or the *service provider's* system from functioning correctly including, but not limited to, preventing accurate recording of data or allowing unauthorized modifications to data

4.29
type approved
equipment or system approved by a process determined by the *jurisdiction regulator* [4.19]

4.30
unique vehicle identification
unambiguous identification of the vehicle

4.31
user
individual or party that enrols in and operates within a regulated or commercial *application service* [4.3]

EXAMPLE Driver, transport operator, freight owner, etc.

5 Symbols (and abbreviated terms)

CISPR
Comité International Spécial des Perturbations Radioélectriques

CAD
core application data

GNSS
global navigation satellite system

HMI
human/machine interface

IVS

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In-vehicle system [4.15]

LDT
local data tree

MEMS
micro electro mechanical system

OBU
on-board unit [4.20]

OEM
original equipment manufacturer

RAM
random access memory

ROM
read only memory

TARV
telematics applications for *regulated commercial freight vehicles* [4.25]

TID
trailer identification device

6 General overview and framework

ISO/TS 15638-1 provided a framework and architecture for *TARV*. It provided a general description of the roles of the actors [4.1] in *TARV* and their relationships.

To understand clearly the *TARV* framework the reader is referred to ISO/TS 15638-1.

Figure 1 shows the role model conceptual architecture of ISO/TS 156638-1 showing the key actors [4.1] and their relationships.

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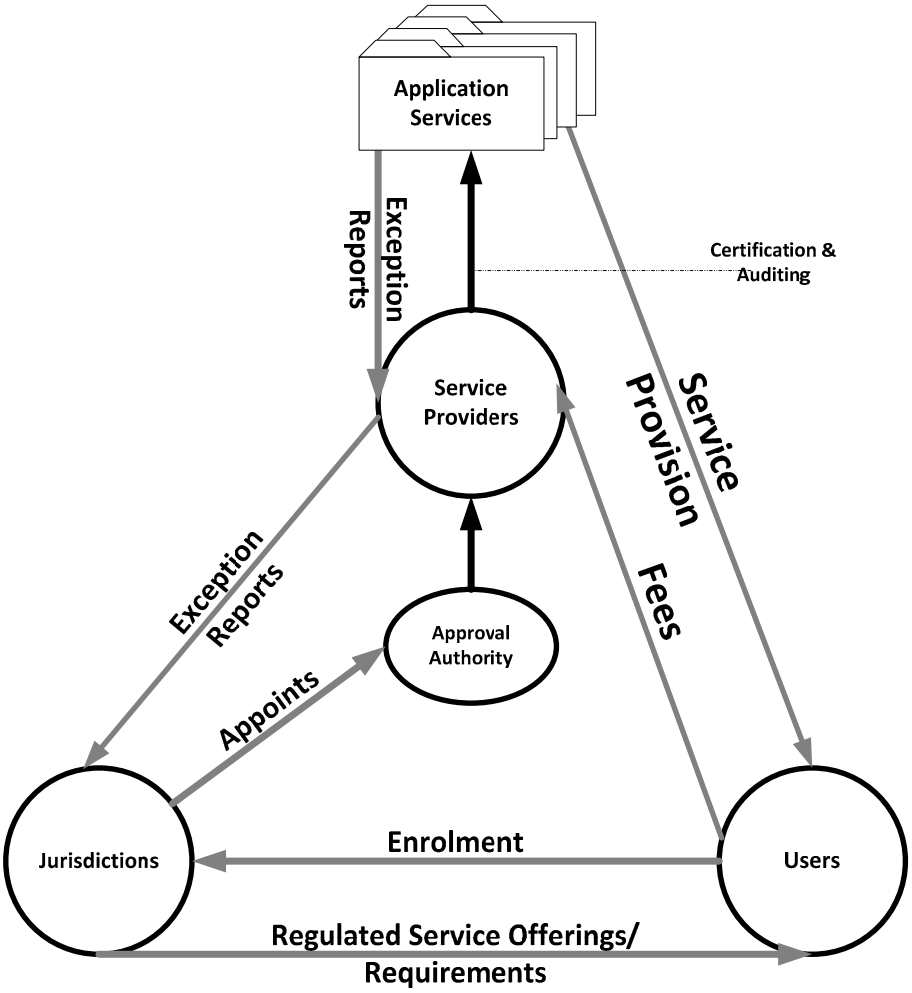

Figure 1 — Role model conceptual architecture
(Source: ISO 15638-1)

ISO 15638 provides a suite of standards deliverables addresses and defines the framework for a range of cooperative telematics applications for *regulated commercial freight vehicles* [4.25] (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 is based on a (multiple) service provider oriented approach provisions for the *approval authority* [4.4] approval and auditing of *service providers* [4.27].

ISO 15638 is comprised of seven framework parts, and twelve application specific parts. The framework parts are:

- 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 4: System security requirements
- Part 5:Generic vehicle information
- Part 6: Regulated applications [Technical Specification]

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- Part 7: Other applications

This part of ISO 15638-3 (Operating requirements, *approval authority* [4.4] procedures, and enforcement provisions for the providers of regulated services) provides both generic *approval authority* approval procedures and basic service requirements for *service providers* [4.27] that are generic and independent of a specific application.

(for example, shall have secure processing, shall have map-matching capability, shall keep records in a transparent and auditable way, shall read *IVS* data at defined intervals etc.). ISO 15638-3 (this part of ISO 15638) provides specifications for these issues.

ISO 15638-2 has provided specifications for communications aspects. ISO 15638-4 provides specifications for security issues.

Application service provision is in part provided by 'core *IVS* capabilities*'* and in part by requirements specific only to a regulated service application.

Examples of 'core *IVS* capabilities' includes aspects such as: shall have unique identifier, shall collect time and location data, shall have secure data processing and storage, shall be physically and environmentally robust, shall be able to communicate with the service provider etc.

ISO 15638-5 has defined the common data concepts for vehicle information.

Jurisdictions [4.18] may develop and make available schemes, permits, applications, notices, concessions, exemptions or gazettals (variously named in accordance with individual jurisdictional practice) which provide improved access to the road network and utilise *TARV* application services as a compliance solution. Other *jurisdictions* [4.18] will support some *TARV* application services as voluntary services, but not support others; some a combination of required and 'supported but not required' application services. The specifications in this part of ISO 15638 are designed to enable this flexibility, but provide specifications that enable *IVS* designers and manufacturers to design common equipment.

7 Requirements

The requirements of this part of ISO 15638 are determined in Clauses 8 to 14.

8 DEFINITION OF THE ROLES AND RESPONSIBILITIES OF KEY ACTORS

8.1 Generic service requirements

ISO/TS 15638-1 provided a framework and architecture for *TARV.* It provided a general description of the roles of the actors [4.1] in *TARV* and their relationships. To understand clearly the *TARV* framework the reader is referred to ISO/TS 15638-1. This Clause provides definition of the responsibilities of each of the actors described in ISO/TS 15638-1 in respect of the fitting, maintenance and provision use of *IVS, TID,* and the provision and availability of generic data and the provision of application services.

Security aspects are dealt with in ISO 15638-4 *TARV* System security requirements.

Generic vehicle information and data aspects are specified in ISO 15638-5.

Specific application service provision aspects are defined in ISO 15638-6 '*TARV* Regulated applications', and ISO 15638-7 '*TARV* Other applications'.

The framework and architecture for the roles of the actors [4.1] in *TARV* are described in ISO 15638-1. The Clauses and subClauses of this part of ISO 15638 specify the responsibilities of these actors.

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8.2 User

Firstly, it is important to be clear that, as the objective of *TARV* is application service provision, the *user* [4.31] is the *user* of the application service(s).

ISO 15638-1 identifies that are a number of possibilities for the role of the *user* [4.31] of the application service

- Owner of the vehicle
- Operator of the vehicle
- Driver
- Owner of the load
- Other support functions.

ISO TS 15638-1 concludes that:

'The user may therefore in some circumstances be the operator of the vehicle, and in other circumstances, be the driver of the vehicle. Regulated application system specifications must therefore specify and define who the user of the regulated application system is deemed to be.

It is true to say that the user is most commonly the operator of the regulated vehicle.

In cases where the user is defined as the driver, the operator of the regulated vehicle should determine in the contract employing the driver that the driver will use the in-vehicle platform to undertake all regulated application services including driver specific services, and that the driver will provide all information in his possession that are required by the regulated application services.

As the driver is driving because he or she has been instructed to do so by the operator, any requirements that relate specifically to the driver being provided with an application service (such as reporting tachograph data or other driver related data required by the regulator) he or she is performing this duty as part of the fulfilment of his contract with the vehicle operator to drive the vehicle on any specific journey. The 'prime' user of the application service is therefore always the vehicle operator, and the driver is a secondary user, even if any regulatory action, if taken, may be taken directly against the driver (much as he or she is also required to obey speed limits, drive in a safe manner, and could be prosecuted directly if he or she is in violation).'

8.2.1 User specification US1: 'Prime User'

The *prime user* [4.22] of the application service shall be the operator of the regulated commercial freight vehicle.

8.2.2 User specification US2: 'Secondary User'

The driver shall be considered a *secondary user* [4.26] when fulfilling regulatory requirements for the provision of driver information and data to the regulator or his agent.

8.2.3 User specification US3: Mandatory application service enrolment

Users shall be required to enrol in mandatory applications for *regulated commercial freight vehicles* [4.25], as determined by regulations of the jurisdiction, and offered by a *service provider* [4.27], and this may vary from *jurisdiction* [4.18] to *jurisdiction.*

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8.2.4 User specification US4: Voluntary application service enrolment

8.2.4.1 Voluntary commercial application service enrolment

Users may, at the discretion of the user, choose to enrol into a voluntary commercial application service for *regulated commercial freight vehicles* [4.25] using the *IVS,* offered by an application *service provider* [4.27], and this may vary from *jurisdiction* [4.18] to *jurisdiction*.

8.2.4.2 Voluntary regulated application service enrolment

Users may, at the discretion of the user, choose to enrol into a voluntary *regulated application service* [4.24] for *regulated commercial freight vehicles* [4.25] using the *IVS*, offered by the *jurisdiction* [4.18], and this may vary from *jurisdiction* to *jurisdiction*.

8.2.5 User specification US5: Service provider engagement

Upon the enrolment of an application, the *user* [4.31] shall engage a *service provider* [4.27] to start operations under the enrolled application and shall pay any required fees to/through the *service provider* in accordance with the terms of the contract between the *service provider* and the *user.*

8.3 Service provider

8.3.1 Service provider specification SP1 : Service provider definition

A *regulated application* [4.23] *service provider* [4.27] shall be an *actor* [4.1] that provides a *regulated application service* [4.24] for *regulated commercial freight vehicles* [4.25].

8.3.2 Service provider specification SP2: Service provider 'Approval Authority' requirement

A *service provider* [4.27] that provides a *regulated application service* [4.24] for *regulated commercial freight vehicles* [4.25] shall be certified as 'approved' by the *approval authority* [4.4] (of the *jurisdiction regulator* [4.19]), in a manner determined by the jurisdiction, as suitable to provide regulated or commercial ITS services to *regulated commercial freight vehicles* [4.25].

8.3.3 Regimes for regulated application service provision

The application *service providers* [4.27] may be provided or subcontracted by the jurisdiction, but are more likely to be by the use of third party commercial enterprises which provide ITS services.

NOTE It is expected that in many cases, and particularly in the early years, the *service providers* [4.27] will also install the *IVS* into the users' vehicles, although in the future the *IVS* platforms may be an option for installed equipment at manufacture, or may be mandated equipment at manufacture, according to the jurisdiction, and separation of the provision and maintenance of equipment and service provision may also be possible if allowed by the *jurisdiction* [4.18].

In the open market context, application *service providers* [4.27] are third party commercial enterprises which provide ITS services based on the applications using a wireless communications link between the application *service provider* [4.27] and the vehicle. Where a *user* [4.31] employs a single *service provider* to provide all of the regulated services (and possibly some additional commercial services) it may be expected that the *service providers* may also install and maintain *IVSs* in the users' vehicles. See *IVS installer* [4.16] and the *IVS maintainer* [4.17], as essential sub-*actor* [4.1] roles in the architecture.

NOTE The choices may not necessarily be only those of the *user* [4.31]. In some jurisdictions, in order to maintain control and assure quality of service to its *regulated application services* [4.24], and because of issues of liability, a *jurisdiction* [4.18] may limit the option of the *user t*o that of a single or limited number of *service providers* [4.27].

See ISO 15638-1 for further description of the regimes for application *service providers* [4.27].

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8.3.4 Service provider specification SP3: Application service definition

Application services for *regulated commercial freight vehicles* [4.25], whether regulated or commercial, shall be clearly defined in terms of the requirements on the service provider, and the provision of information and data to the *jurisdiction* [4.18] and its agents and to the *user* [4.31].

NOTE Some guidelines and specification or application services are provided in 15638-6 and 15638-7.

8.3.5 Service provider specification SP4: Service provision

The *service provider* [4.27] shall provide the application service, interacting wirelessly with the vehicle to collect relevant data from the *IVS*, process the data and provide the *jurisdiction* [4.18] reports according to the requirements of the application service provided (as specified by the *jurisdiction* in respect of *regulated application services* [4.24]), and provide relevant data to the *user* [4.31] in accordance with its contract with the *user*.

NOTE In most cases, although collecting data from the vehicle constitutes a crucial part of the service provision, the end results are sorted and evaluated by and at the *service provider* [4.27] and communicated to the *jurisdiction* [4.18] (as demanded by the regulation) and to the *user* [4.31] (as agreed in the contract between the *service provider* and the user).

8.3.6 Service provider specification SP5: Service provider charging

The *service providers* [4.27] shall charge the users any fees for the service provided as agreed in the contract between the *user* [4.31] and the service provider, within the context of the agreement and contracts between the *jurisdiction regulator* [4.19] and the *service provider* for the provision of the regulated application service.

8.3.7 Service provider specification SP6: Service provider charging fees on behalf of jurisdiction regulator

The *service provider* [4.27] shall also collect fees from the *user* [4.31] as required by the regulation on behalf of the *jurisdiction regulator* [4.19] (for example fees for permits, road use payment, possibly even fees for violations) collecting these fees from the *user* [4.31] and forwarding these payments to the *jurisdiction* [4.18].

The responsibility for determination of such fees (or the scope within which the *service provider* [4.27] can set its fees) has to rest with the *jurisdiction* [4.18] and will depend on the legislation and regulation imposed by the *jurisdiction*.

8.3.8 Service provider specification SP7: Service provider transmission of data to the jurisdiction and/or its agents

Service providers [4.27] shall also transmit raw road usage data to the jurisdiction, as required by the regulation of the *jurisdiction* [4.18] but shall not provide any information relating to a specific vehicle, fleet of vehicles or driver other than that required by the regulations of the *jurisdiction*.

NOTE There are situations where government authorities and researchers require vehicle-specific data to fulfil specific purposes (research studies, special safety oversight programs, voluntary programs). This provision shall not prevent vehicle-specific data collection, so long as there is an agreement in place between the vehicle operators and the *entity* [4.14] collecting the data.

Service providers [4.27] shall not be required to provide any information that breaches the privacy laws of the *jurisdiction* [4.18]. See also 16.

Service providers [4.27] may, on request, provide anonymous aggregated data to the jurisdiction, the transport departments of the jurisdiction, for which they may expect to receive fees, or it may be a condition of their licence. In these cases privacy aspects need to be carefully considered by both the *jurisdiction* [4.18] and *service provider*. The *jurisdiction* shall not send to any third party whatsoever nor use any information that conflicts with or compromises the privacy regulations of the *jurisdiction*.

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8.3.9 Service provider specification SP8: Provision of non-regulated commercial services

Where permitted by the jurisdiction, *service providers* [4.27] may also provide additional commercial services to users using the same *IVS*, However, in this event the *service provider* shall:

a) obtain the approval of the *jurisdiction regulator* [4.19] or its *approval authority* [4.4] to permit such service provision (which shall not be unreasonably withheld)
b) ensure and assure that the provision of a non-regulated service does not affect the quality of the service provision of any regulated services in any significant way.

8.4 Wireless communications service provider

8.4.1 Service provider specification SP9: Wireless communications service provision

Service provision may take place using different wireless media, which shall conform to ISO 15638-2.

8.4.2 Service provider specification SP10: Responsibility for wireless communications service provision

The *service provider* [4.27] shall accept prime responsibility for any contract with any third party *service provider* [4.27] used to provide any regulated or commercial application services and shall be responsible to ensure that the communication *service provider* [4.27] meets the requirements of the regulation in respect of the wireless provision of the application service.

In the event that a general communications medium is used (for example GSM/UMTS) to provide a regulated application service, the *service provider* [4.27] shall ensure and assure that it has adequate access to that medium to enable the regulated service provision in accordance with the requirements of the *jurisdiction* [4.18].

8.5 IVS installer

The *IVS* equipment installer shall install the *IVS* communications equipment and shall be responsible to connect it to other equipment required in order to deliver the application service(s).

EXAMPLE In the case of remotely monitoring an electronic tachograph, to connect the tachograph into the *IVS*; in the case of on-board weigh in motion monitoring, connecting that equipment to the *IVS*; etc.

The *IVS* equipment installer shall be responsible to test the functionality of the installed equipment, and that where multiple equipment is connected, that all regulated services can be provided without detriment of one because of another.

The *IVS* equipment installer shall, in installing *IVSs* and *TIDs*, use only suitably qualified and trained personnel and shall maintain a register of those personnel.

The *IVS* equipment installer shall have in place documented and appropriate procedures for the installation of its *type approved* [4.29] *IVS*(s) and *TID*(s) and shall supply the same to its installation personnel.

The *IVS* equipment installer shall have in place, document and implement, appropriate procedures for the training of its installation personnel.

The *IVS* equipment installer shall install the *IVS* and *TID*(s) such that they do not interfere with the normal, safe operation of the vehicle. To that end, the *IVS* equipment installer shall consult with the manufacturer of the vehicle, and with other parties as necessary (such as the engine manufacturer) before an installation seeking their advice on issues such as equipment placement, sensor wiring and power take-off points. The training of all application *service provider* [4.27] installation personnel shall include manufacturer specific training on particular equipment.

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