International Standard

ISO 15638-25

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

Part 25:
Overhead clearance monitoring

Systèmes de transport intelligents — Cadre pour applications télématiques coopératives pour véhicules réglementés (TARV) — Partie 25: Contrôle du dégagement aérien

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Contents

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Foreword

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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 document 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).

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For an explanation of 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 www.iso.org/iso/foreword.html.

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

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Regions around the world share a common global target of achieving a safe and sustainable society. However, the number of bridge strike incidents caused by freight vehicles is increasing worldwide. Within this context, monitoring information provisioning to vehicles carrying freights which are higher than a bridge girder bottom is recommended. This can be made possible by building on the framework of ISO 15638-21 (TARV; telematics applications for regulated vehicles). This document defines an unregulated TARV service application framework for overhead clearance monitoring information provisioning.

The principle of overhead clearance monitoring information provisioning is that the service provider provides advance vehicle height clearance information when it is anticipated that clearance between an oncoming bridge girder bottom height and the vehicle's highest point is insufficient. Jurisdictions or road operators can also monitor vehicle height through roadside sensors mounted on the bridge girder low point, and can provide infrastructure information to:

— service providers (provided as in-advance road facility information);

— users (real-time basis through variable message sign; for vehicles with non-on-board units);

— roadside units (for vehicles with on-board units).

When the user provides vehicle height data to a service provider in advance, they receive better information from that service provider.

This document standardizes the conceptual operational framework of safety information provision provided by service providers. The ISO 15638 series is based on a group of vehicle operators with in-vehicle systems, on-board application service providers and jurisdictions. ISO 15638-1 focuses on the transactions between these parties via ITS-stations and roadside sensors. Using this system architecture, additional safety information provision services to freight vehicles can be realized. A new means of safe road transport management and enforcement can be enabled by using this document where a jurisdiction requires such regulated monitoring.

This document is intended to be used for unregulated services, but it can also be used for the deployment of regulated services, if necessary.

This document is intended for public road transport, but it can also be applied to private roads/property, if necessary.

NOTE   This document is consistent with the provisions of EC regulation 165/2014.[11]

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

Part 25:
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1 Scope

This document specifies a freight vehicle safety information provisioning service application or function. It is intended for use within non-enforcement applications and potentially for regulated application services (RAS), for the road transport safety management purposes of regulated commercial freight vehicle movements.

This document reinforces vehicle safety for non-enforcement purposes and other purposes by providing safety advisory information concerning overhead clearance provisions to freight vehicle drivers or operators transporting heavy goods on freight vehicles.

This document specifies the framework for remote vehicle safety information provision for non-enforcement and for the conceptual operation of other management purpose applications.

This document is intended to be beneficial to entities whose purpose is vehicle safety management. It provides additional use cases for TARV (telematics applications for regulated vehicles) service applications.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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/TS 15638-4, *Intelligent transport systems — Framework for cooperative telematics applications for regulated commercial freight vehicles (TARV) — Part 4: System security requirements*

ISO 15638-5, *Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV) — Part 5: Generic vehicle information*

ISO 15638-7:2013, *Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV) — Part 7: Other applications*

ISO/TS 14812, *Intelligent transport systems — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/TS 14812 apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Symbols and abbreviated terms

ASD   application service data

ASP   application service provider

CALM   communications access for land mobiles

C-ITS   cooperative intelligent transport system

CONOPS concept of operations

GNSS   global navigation satellite system

HMC   host management centre

ID   identity

ITS-S   ITS station

IVS   in-vehicle system

LDM   local dynamic map

LDT   local data tree

QoS   quality of service

RAS   regulated application service

ROAM   regime for open application management

TARV   telematics applications for regulated vehicles

VIN   vehicle identification number

5 Conformance

Requirements necessary for demonstrating conformance to any of the general provisions or specific application services described in this document shall be defined by the service provider.

6 General overview and framework

This document utilizes the framework and architecture for freight vehicle stability monitoring defined in ISO 15638-21. The general conceptual operation description of the roles of the actors in "extended" TARV architecture is defined in ISO 15638-21.

Figure 1 provides a summary of the "extended" role model conceptual architecture, showing the key actors and their relationships as defined in ISO 15638-21.
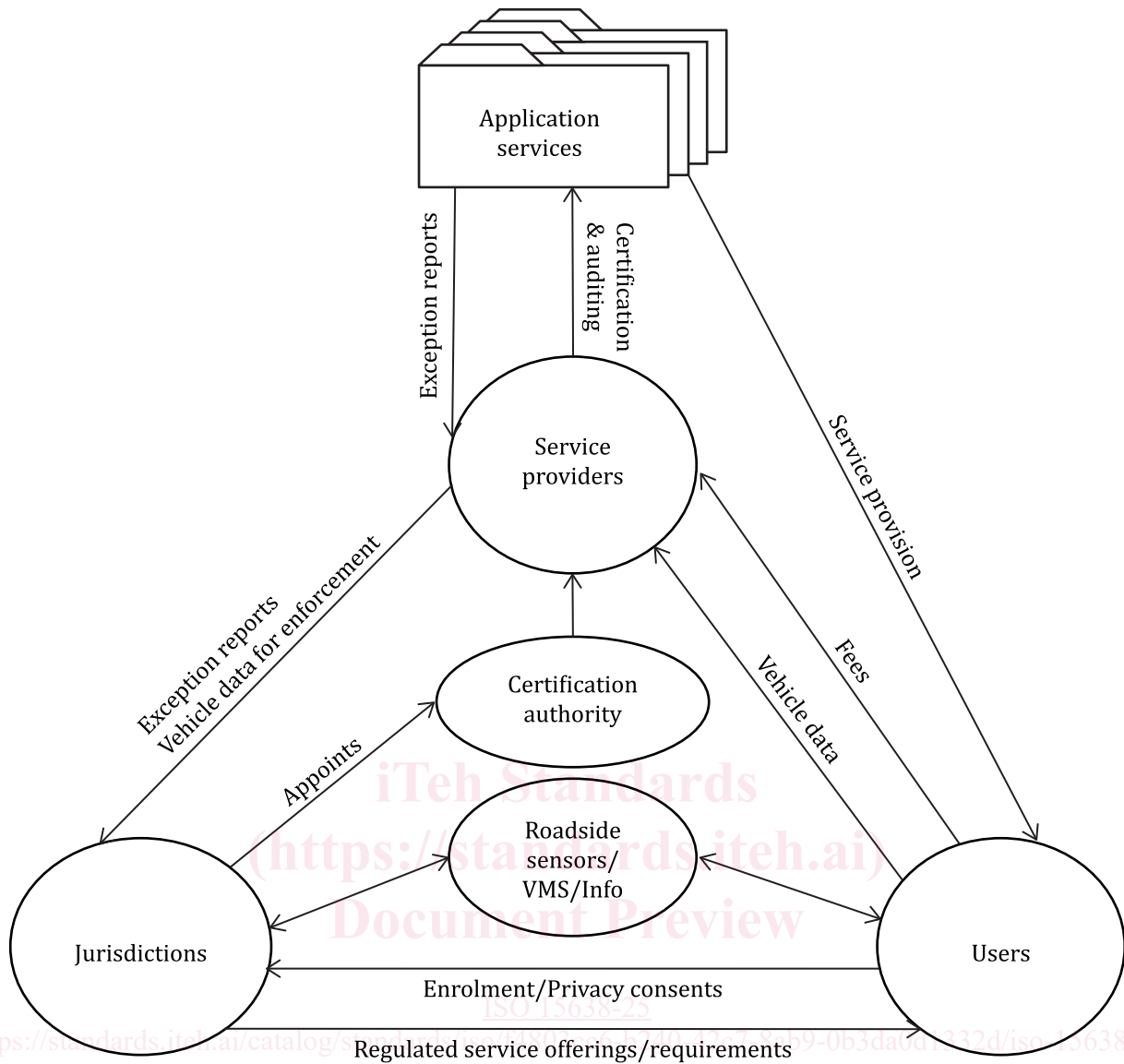
Figure 1 — Extended role model conceptual architecture

The ISO 15638 series addresses and defines the framework for a range of cooperative telematics applications for regulated vehicles (such as electronic tachograph monitoring, driver work records, emergency messaging/eCall, mass monitoring, "mass" information for jurisdictional control and enforcement, speed monitoring, access control, access methods, location monitoring, weigh in motion, freight vehicle stability monitoring, tyre monitoring, overhead clearance, etc.). 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, including provisions for the certification and auditing of service providers.

This document is intended for an unregulated service provision application for safe road transport by freight vehicles, achieved through the safety information provision of overhead clearance to the vehicle, such as safe driving information provision (including information such as insufficient overhead clearance and recommended detour advice information). Figure 2 shows the architecture from the viewpoint of the provision of an unregulated (commercial) application service, using the common "extended" TARV platform defined in ISO 15638-21.
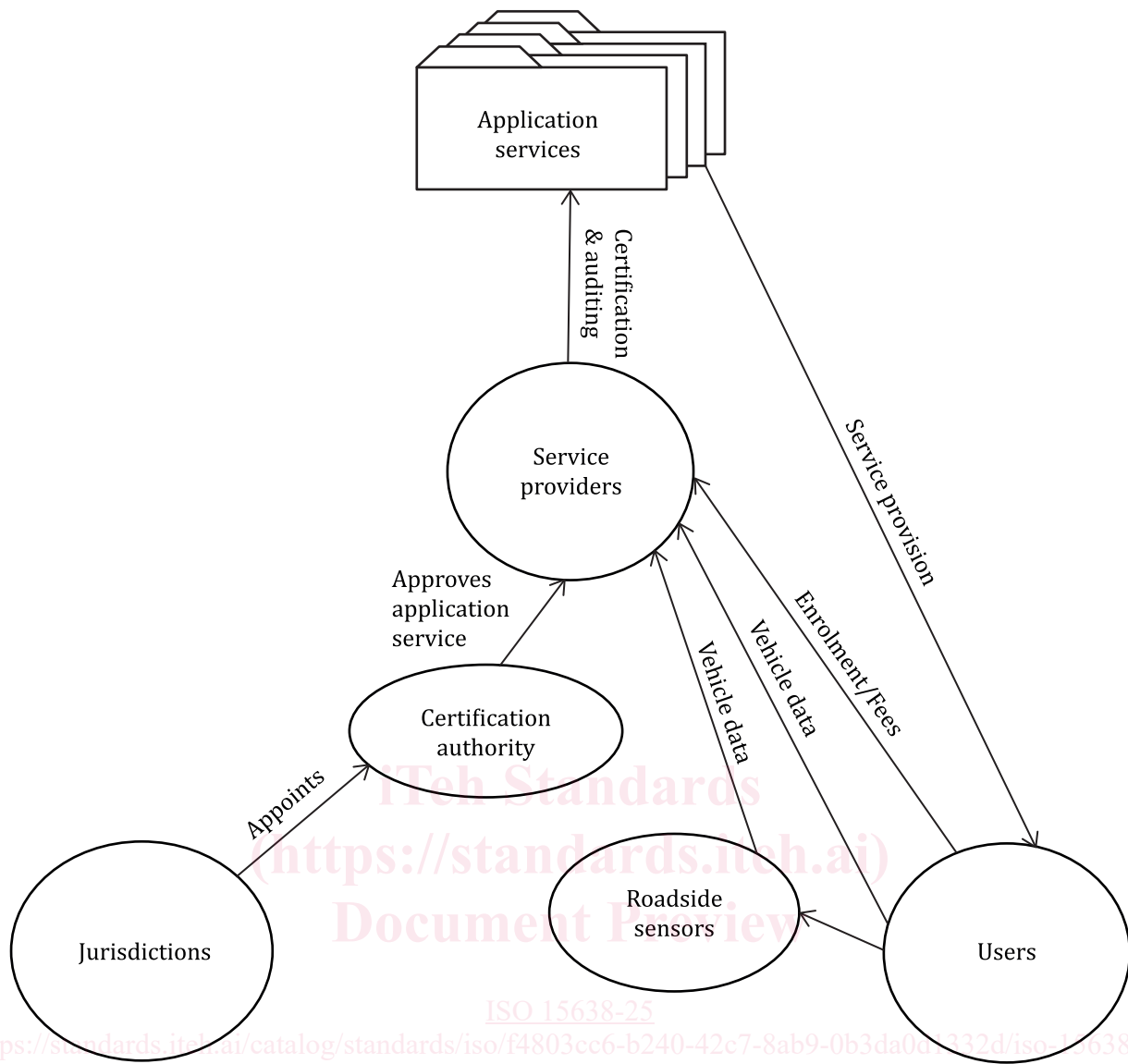
Figure 2 — Role model conceptual architecture — unregulated service provisioning

Freight vehicles are tall and therefore require earlier overhead clearance monitoring than smaller vehicles. In some private vehicle use cases, vehicle height clearance monitoring is also important. To achieve safer freight road transport of freight vehicles, an information provision service providing overhead clearance status well ahead of the freight vehicle is indispensable. The purpose of this document is to realize safe freight vehicle road transport, in particular, increasing vehicle safety by monitoring the overhead clearance to the vehicle transporting freight and container. The proper recommended manoeuvring and detour information given to the vehicle driver or operator is generated at the service provider. The service provider monitors vehicle height and gives safety advisory messages to the driver when necessary. This document enables safe freight vehicle road transport stability realization and efficient freight fleet transport operation of the user vehicles by avoiding accidents or serious incidents on the roadways.

Freight vehicle information can be obtained from various sources, such as roadside embedded sensors and freight vehicle on-board equipped height sensors. The sensor information is sent to the service provider to realize real-time remote monitoring of freight vehicle height. By providing the freight vehicle location (GNSS) data to the service provider, the service provider is able to provide safety driving advice for a specific part of the road, for a specific vehicle.

The service provider provides this application service to or for a user who is an individual or a party that enrols in and operates within an unregulated application service or commercial application service to meet specific aspects of the requirements of a service provider for the operation of the regulated vehicle.

Examples of users are transport operators, drivers, freight owners, etc. Most commonly, the user is a transport operator.

For basic TARV information, see ISO 15638-1.

This document defines the basic conceptual operational requirements for the freight vehicle overhead clearance safety information provision application service.

Where a commercial (unregulated) service can be instantiated using only the generic vehicle data specified in ISO 15638-5, no further standardization is necessary. Where a TARV commercial application is simply instantiated as a commercial application conforming to the requirements of this document, no further standardization is necessary, provided that conformance to the requirements of this document can be demonstrated. Service offerings may vary from service provider to service provider.

7 Basic conceptual operational requirements

7.1 General

The basic conceptual framework is described as shown in Figure 3.

The telematic application generates adequate overhead clearance information to avoid a bridge strike accident. This safety information depends on the road facility characteristic and the vehicle height, including freight.
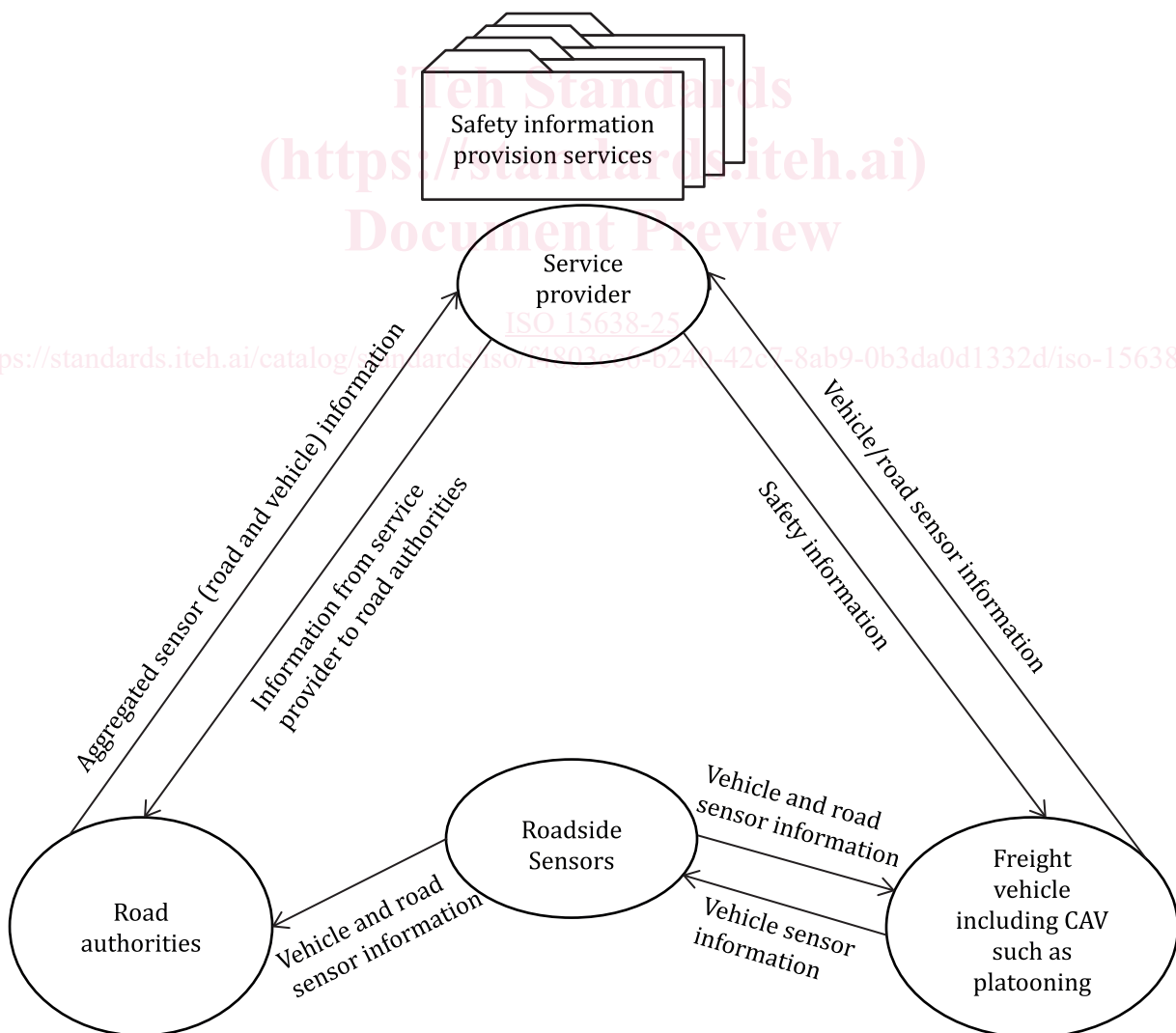

Figure 3 — Basic conceptual framework for vehicle safety information provisioning service