INTERNATIONAL STANDARD

ISO 15638-10

First edition
2017-06

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

Part 10: Emergency messaging system/eCall

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

Partie 10: Système de messagerie d'urgence/appel électronique

Reference number
ISO 15638-10:2017(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **2**
4 Symbols and abbreviated terms **7**
5 Conformance **8**
6 General overview and framework requirements **8**
7 Requirements for services using generic vehicle data **8**
8 Application services that require data in addition to basic vehicle data **9**
8.1 General 9
8.2 Quality of service requirements 9
8.3 Test requirements 9
8.4 Marking, labelling and packaging 9
9 Common features of regulated TARV application services **9**
9.1 General 9
9.2 Common role of the jurisdiction, approval authority, service provider and user 10
9.3 Common characteristics for instantiations of regulated application services 10
9.4 Common sequence of operations for regulated application services 11
9.5 Quality of service 11
9.6 Information security 11
9.7 Data naming content and quality 11
9.8 Software engineering quality systems 11
9.9 Quality monitoring station 11
9.10 Audits 11
9.11 Data access control policy 11
9.12 Approval of IVSs and service providers 11
10 TARV emergency messaging/eCall system (EMS) **12**
10.1 TARV EMS service description and scope 12
10.1.1 TARV EMS use case 12
10.1.2 Description of TARV EMS regulated application service 13
10.1.3 Description of eCall regulated application service 13
10.2 Concept of operations for TARV EMS 14
10.2.1 General 14
10.2.2 Statement of the goals and objectives of the TARV EMS 14
10.2.3 Strategies, tactics, policies, and constraints affecting the TARV EMS 14
10.2.4 Organisations, activities, and interactions among participants and stakeholders in TARV EMS 14
10.2.5 Clear statement of responsibilities and authorities delegated for TARV EMS 15
10.2.6 Operational processes for the TARV EMS 16
10.2.7 Role of TARV EMS service provider 16
10.2.8 Role of TARV EMS user 16
10.3 Concept of operations for eCall via TARV 17
10.3.1 General concept of TARV eCall 17
10.3.2 Statement of the goals and objectives of the TARV eCall system 17
10.3.3 Strategies, tactics, policies, and constraints affecting the TARV eCall system 18
10.3.4 Organisations, activities, and interactions among participants and stakeholders for TARV eCall 18
10.3.5 Clear statement of responsibilities and authorities delegated in TARV eCall 18
10.3.6 Operational processes for the TARV eCall system 18

10.3.7 Role of service provider in TARV eCall 19
10.3.8 Role of user in TARV eCall 19
10.4 Sequence of operations for TARV eCall 19
10.5 Sequence of operations for TARV EMS 22
10.6 TARV EMS naming content and quality 23
10.7 Specific TARV EMS data naming content and quality 23
10.7.1 eCall Minimum set of data 23
10.7.2 HGV eCall dataset 23
10.7.3 Other TARV EMS emergency messages 23
10.8 TARV EMS service elements 23
10.8.1 TARV EMS SE1: TARV eCall 23
10.8.2 TARV EMS SE2: Establish 'TARV Emergency Call' (TARV EMS) jurisdiction regulations or system specification 23
10.8.3 TARV EMS SE3: Request system approval 23
10.8.4 TARV EMS SE4: User (operator) contracts with prime service provider 23
10.8.5 TARV EMS SE5: User (operator) equips vehicle with a means to provide consignment data 23
10.8.6 TARV EMS SE6: User contracts with application service provider 24
10.8.7 TARV EMS SE7: Application service provider uploads software into the TARV equipped vehicles of the operator 24
10.8.8 TARV EMS SE8: Recording of vehicle consignment data 24
10.8.9 TARV EMS SE9: EMS trigger 24
10.8.10 TARV EMS SE10: Make TARV EMS emergency call 24
10.8.11 TARV EMS SE11: Obtain/request consignment data 25
10.8.12 TARV EMS SE12: Contact emergency responder 25
10.8.13 TARV EMS SE13: Notification to ***operator*** (3.32) 25
10.8.14 TARV EMS SE13: Emergency response 26
10.9 TARV EMS Emergency messaging access methods to provision and retrieve data 26
10.10 Contents of the 'Minimum Set of Data' (MSD) 26
10.10.1 Basic contents of MSD 26
10.10.2 Contents of the optionalAdditionalData for Schema A 26
10.10.3 Contents of the optionalAdditionalData for Schema B 29
10.11 TARV EMS application service specific provisions for quality of service 31
10.12 TARV EMS application service specific provisions for test requirements 31
10.13 TARV EMS application specific rules for the approval of IVSs and 'Service Providers' 31

11 Declaration of patents and intellectual property 32

Annex A (informative) **ASN.1 definition of optional datablock 33**

Annex B (informative) **ASN.1 definition of complete MSD message with HGV info 37**

Bibliography 45

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 ISO/TC 204, *Intelligent transport systems*.

This first edition cancels and replaces the Technical Specification ISO/TS 15638-10:2013 which has been technically revised to bring the MSD and optional data concept specification in line with the current revisions to EN 15722:2015 and EN/TS 16405:2014.

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

Introduction

Many ITS technologies have been embraced by commercial transport *operators* (3.32) and freight owners, in the areas of fleet management, safety and security. *Telematics* (3.41) applications have also been developed for governmental use. Such regulatory services in use or being considered vary from *jurisdiction* (3.27) to *jurisdiction*, but include electronic on-board recorders, digital *tachograph*, on-board *mass* (3.30) monitoring, 'mass' penalties and levies, vehicle *access methods* (3.1), *hazardous goods* (3.16) tracking and *eCall* (3.20). 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* (3.9) (business and functional) that could support these functions from a single platform within a commercial freight vehicle that operates within such regulations. International Standards will allow for a speedy development and *specification* (3.40) 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* (3.22) 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* (3.27).

The ISO 15638 suite of standards addresses and defines the *framework* (3.22) for a range of cooperative *telematics* (3.41) applications for *regulated commercial freight vehicles* (3.36) (such as *access methods* (3.1), driver fatigue management, speed monitoring, on-board *mass* (3.30) monitoring, penalties and levies). The overall scope includes the concept of operation, legal and regulatory issues, and the generic cooperative provision of services to *regulated commercial freight vehicles* (3.36), using an on-board ITS platform. The *framework* is based on a (multiple) *service provider* (3.38) oriented approach with provisions for the *approval* (3.6) and *auditing* (3.10) of *service providers*.

The ISO 15638 suite of standards deliverables will:

— provide the basis for future development of cooperative *telematics* (3.41) applications for *regulated commercial freight vehicles* (3.36). Many elements to accomplish this are already available. Existing relevant standards will be referenced, and the *specifications* (3.40) will use existing standards (such as *CALM*) wherever practicable.

— allow for a powerful platform for highly cost-effective delivery of a range of *telematics* (3.41) applications for *regulated commercial freight vehicles* (3.36).

— a business *architecture* (3.9) based on a (multiple) *service provider* (3.38) oriented approach

— address legal and regulatory aspects for the *approval* (3.6) and *auditing* (3.10) of *service providers.*

The ISO 15638 suite of standards deliverables is timely as many governments (Europe, North America, Asia and Australia/New Zealand) are considering the use of *telematics* (3.41) 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* (3.40) for emergency messaging system/eCall using the TARV architecture and communications methodology.

NOTE 1 The definition of what comprises a 'regulated' vehicle is regarded as an issue for National decision, and may vary from *jurisdiction* (3.27) to *jurisdiction*. The ISO 15638 suite of standards deliverables does not impose any requirements on nations in respect of how they define a *regulated vehicle* (3.36).

NOTE 2 The definition of what comprises a 'regulated' service is regarded as an issue for National decision, and may vary from *jurisdiction* (3.27) to *jurisdiction*. The ISO 15638 suite of standards deliverables does not impose any requirements on nations in respect of which services for *regulated vehicles* (3.36) *jurisdictions* 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.

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

Part 10:
Emergency messaging system/eCall

1 Scope

This document addresses the provision of 'Emergency messaging system/eCall' using the TARV framework, architecture and communications methodology (as defined in ISO 15638-1 to 6) and specifies the form and content of such data required to support such systems, and *access methods* (3.1) to that data.

This document provides *specifications* (3.40) for common communications and data exchange aspects of the *application service* (3.3) 'Emergency Messaging System/eCall' that a *regulator* (3.28) may elect to require or support as an option, including:

a) High level definition of the service that a *service provider* (3.38) has to provide, (The service definition describes common service elements; but does not define the detail of how such an *application service* (3.3) is instantiated, not the acceptable value ranges of the data concepts defined)

b) Means to realise the service

c) Application data, naming content and quality that an *IVS* (3.23) has to deliver.

The definition of what comprises a 'regulated' service is regarded as an issue for National decision, and may vary from *jurisdiction* (3.27) to *jurisdiction*. This document does not impose any requirements on nations in respect of which services for *regulated commercial freight vehicles jurisdictions* will require, or support as an option, but provides standardised sets of requirements descriptions for identified services to enable consistent and cost efficient implementations where instantiated.

The ISO 15638 suite of standards has been developed for use in the context of regulated commercial freight vehicles [hereinafter referred to as *regulated vehicles* (3.36)]. 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 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 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) — Part 2: Common platform parameters using CALM*

ISO 15638-3, *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*

ISO 15638-4[1)], *Intelligent transport systems — Framework for cooperative telematics applications for regulated commercial freight vehicles (TARV) — 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 15638-6, *Intelligent transport systems — Framework for collaborative Telematics Applications for Regulated commercial freight Vehicles (TARV) — Part 6: Regulated applications*

EN 15722:2015, *Intelligent transport systems — eSafety — eCall minimum set of data*

EN 16102:2011, *Intelligent transport systems — Third party services supported eCall — Operating requirements*

EN/TS 16405:2014, *Intelligent transport systems — ESafety — eCall Additional optional dataset for commercial vehicles*

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™* [2)](3.26) applets, organised as software bundles, that support *application services* (3.3) by keeping the *data pantry* (3.17) provisioned with up to date data

3.3
application service
service provided by a *service provider* (3.38) enabled by accessing data from the *IVS* (3.23) of a *regulated vehicle* (3.36) 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* (3.23) where *apps* (3.2) are stored, with different access controls to *data pantry* (3.17)

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

1) To be published.

2) This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results

3.7
approval agreement
written agreement made between an *approval authority (regulatory)* (3.8) and a *service provider* (3.38)

Note 1 to entry: An *approval authority (regulatory)* (3.8) approval agreement recognises the fact that a *service provider* (3.38), 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.*

3.8
approval authority (regulatory)
organisation (usually independent) which conducts *approval* (3.6) and ongoing *audit* (3.10) for *service providers* (3.38) on behalf of a *jurisdiction* (3.27)

3.9
architecture
formalised description of the design of the structure of *TARV* and its *framework* (3.22)

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* (3.38)

3.11
basic vehicle data
data that shall be maintained/provided by all *IVS* (3.23), regardless of *jurisdiction* (3.27)

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* (3.42) determined parameters by using a suite of standards based on ISO 21217 (*CALM* architecture) and ISO 21210 (*CALM* networking) that provide a common platform for a number of standardised media using *ITS-stations* (3.25) to provide wireless support for applications, such that the application is independent of any particular wireless medium

3.13
consignment
shipment of goods/cargo to a destination

3.14
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* (3.25) 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* (3.24)

3.15
core data
basic vehicle data (3.11) plus any additional data required to provide an implemented *regulated application service* (3.35)

3.16
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

Note 1 to entry: Accord européen relatif au transport international des marchandises Dangereuses par Route (ADR).

3.17
data pantry
secure area of memory in *IVS* (3.23) where data values are stored, with different access controls to *app library* (3.2)

3.18
driver
person driving the *regulated vehicle* (3.36) at any specific point in time

3.19
driver work records
DWR
collection, collation, and transfer of *driver* (3.18) work and rest hours data from an *in-vehicle system* (3.23) to an *application service provider* (3.4)

3.20
eCall
specialised instantiation of an *EMS* (3.21) that provides incident messaging and communication with a public safety assistance point via priority wireless telephone communications using its emergency call capabilities

3.21
emergency message system
EMS
collection, collation, and transfer of emergency message data from an *in-vehicle system* (3.23) to an *application service provider* (3.4)

3.22
framework
particular set of beliefs or ideas referred to in order to describe a scenario or solve a problem

3.23
in-vehicle system
IVS
ITS-station (3.25) and connected equipment on board a vehicle

3.24
ITS service
communication functionality offered by an *ITS-station* (3.25) to an *ITS-station* application

3.25
ITS-station
ITS-s
entity in a communication network, comprised of application, facilities, networking and access layer components specified in ISO 21217 that operate within a bounded secure management domain

3.26
Java™
object oriented open source operating language developed by SUN systems

3.27
jurisdiction
government, road or traffic authority which owns the r*egulatory applications* (3.34)

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

3.28
jurisdiction regulator
regulator
agent of the *jurisdiction* (3.27) appointed to regulate and manage TARV within the domain of the *jurisdiction,* which may or may not be the *approval authority (regulatory)* (3.8)

3.29
local data tree
LDT
frequently updated data concept stored in the on-board *data pantry* (3.17) containing a collection of data values deemed essential for either a) *TARV regulated application service* (3.35), or b) *cooperative intelligent transport systems* (3.14)

3.30
mass
mass of a given heavy vehicle as measured by equipment affixed to the *regulated vehicle* (3.36)

3.31
'mass' information for jurisdictional control and enforcement data for regulatory control and management
MICE
collection, collation, and transfer of vehicle *mass* (3.30) data from an *in-vehicle system* (3.23) to an *application service provider* (3.4*)* to enable data provision to *jurisdictions* (3.27) for the control and enforcement of equipped vehicles based on the *mass* of the *regulated vehicle* (3.36), or use of such data to enable compliance with the provisions of regulations.

3.32
operator
fleet manager of a *regulated vehicle* (3.36)

3.33
prime service provider
service provider (3.38) who is the first contractor to provide *regulated application services* (3.35) to the *regulated vehicle* (3.36), or a nominated successor on termination of that initial contract and to maintain the installed *IVS* (3.23) and 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*

3.34
regulated application
regulatory application
application arrangement using TARV utilised by *jurisdictions* (3.27) 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* and which may be mandatory or voluntary at the discretion of the *jurisdiction*

3.35
regulated application service
TARV application service to meet the requirements of a regulated application that is mandated by a regulation imposed by a *jurisdiction* (3.27), or is an option supported by a *jurisdiction*

3.36
regulated commercial freight vehicle
regulated vehicle
vehicle that is subject to regulations determined by the *jurisdiction* (3.27) 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, at the option of *jurisdictions* and which may require the provision of information via TARV or provide the option to do so

3.37
remote tachograph monitoring
RTM
collection, collation, and transfer of data from an on-board electronic tachograph system to an *application service provider* (3.4)

3.38
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)

3.39
session
wireless communication exchange between the *ITS-station* (3.25) of an *IVS* (3.23) 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* from any other *ITS-station*

3.40
specification
explicit and detailed description of the nature and functional requirements and minimum performance of equipment, service or a combination of both

3.41
telematics
use of wireless media to obtain and transmit (data) from a distant source

3.42
user
individual or party that enrols in and operates within a regulated or *commercial application service* (3.3)

EXAMPLE *Driver* (3.18), transport *operator* (3.32), freight owner, etc.

3.43
vehicle access control
VAC
control of *regulated vehicles* (3.36) ingress to and egress from controlled areas and associated penalties and levies

3.44
vehicle access management
VAM
monitoring and management of *regulated vehicles* (3.36) approaching or within sensitive and controlled areas

3.45
vehicle location monitoring
VLM
collection, collation, and transfer of vehicle location data from an *in-vehicle system* (3.23) to an *application service provider* (3.4)

3.46
vehicle mass monitoring
VMM
collection, collation, and transfer of vehicle *mass* (3.30) data from an *in-vehicle system* (3.23) to an *application service provider* (3.4)

3.47
vehicle parking facility
VPF
system for booking and access to and egress from a *vehicle parking facility*

3.48
vehicle speed monitoring
VSM
collection, collation, and transfer of vehicle speed data from an *in-vehicle system* (3.23) to an *application service provider* (3.4)

4 Symbols and abbreviated terms

app	applet (JAVA™ application or similar) (3.2)
AS	application service
ASP	*application service provider* (3.4)
CALM	*communications access for land mobiles* (3.12)
C-ITS	*cooperative intelligent transport systems* (3.14)
EMS	*emergency message system* (3.21)
ID	identity
IP	internet protocol
ITS-S	*ITS station* (3.25)
IVS	*in-vehicle system* (3.23)
LDT	*local data tree* (3.29)
MSD	minimum set of data [*eCall* (3.20) EN 15722]
OID	object identifier
PSAP	public safety answering point
SE	service element
TARV	*telematics* (3.41) applications for *regulated commercial freight vehicles* (3.36)
TPS	third party service [*eCall* (3.20) EN 16102]
TPSP	third party *service provider* (3.38) [*eCall* (3.20) EN 16102]

TS11	normal phone connection (teleservice 11)
TS12	emergency call priority phone connection (teleservice 12)
UNECE	United Nations Economic Commission for Europe
UTC	coordinated universal time

5 Conformance

Requirements to demonstrate conformance to any of the general provisions or specific *application services* (3.3) described in this document shall be within the regulations imposed by the *jurisdiction* (3.27) 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 B (informative) provides results of these tests. In any conformance assurance process undertaken by candidate systems, where appropriate these results may be used as part of its process of conformance compliance. (The actual data content tested was the data content as specified in ISO/TS 15638-10, which was in line with EN 15722:2011. This document revises the data content itself, in line with the revision of EN 15722:2015, however the communication session principles and protocols remain unchanged).

6 General overview and framework requirements

ISO 15638-1 provided a *framework* (3.22) and *architecture* (3.9) 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* (3.9) and detail and *specification* (3.40) 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 of 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* (3.34) shall be as defined in ISO 15638-6.

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

8.1 General

This 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* (3.27) as part of its *specification* (3.40) for any particular *regulated application service* (3.35). However, where a specified *regulated application service* (3.35) 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* (3.27) as part of its *specification* (3.40) for any particular *regulated application service* (3.35), and issued as a formal test requirements *specification* (3.40) document. However, where a specified *regulated application service* (3.35) 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 deliverable referenced within that Clause. And where multiple *jurisdictions* recognise 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 suite of standards, the contracting parties shall make such risk explicitly known to the implementing *jurisdiction* (3.27) 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* (3.35) are as designed by the application service system to meet the requirements of a particular *jurisdiction* (3.27) 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* (3.17), and the means to obtain the *TARV LDT* (3.29) and *core data* (3.15) are described in ISO 15638-6:2014, Clause 8.

In order to minimise demand on the *IVS* (3.23) (which it is assumed will be performing multiple *application services* (3.3) simultaneously, as well as supporting general safety related cooperative vehicle systems), and because national requirements and system offerings will differ, a 'cloud' approach has been taken in defining *TARV regulated application services* (3.35).

The *TARV* approach is for the on-board *app* (3.2) supporting the application service to collect and collate the relevant data, and at intervals determined by the *app,* or on demand from the *application service provider (ASP)* (3.4), pass that data to the *ASP.* All of the actual application service processing shall occur in the mainframe system of the *ASP* (in the 'cloud').

For further information see ISO 15638-6:2014, Clause 9.

At a conceptual level, The *TARV* system is therefore essentially simple, as shown in Figure 1. The process is similar to that for CoreData, but data is supplied to a different on-board file in the *data pantry* (3.17).

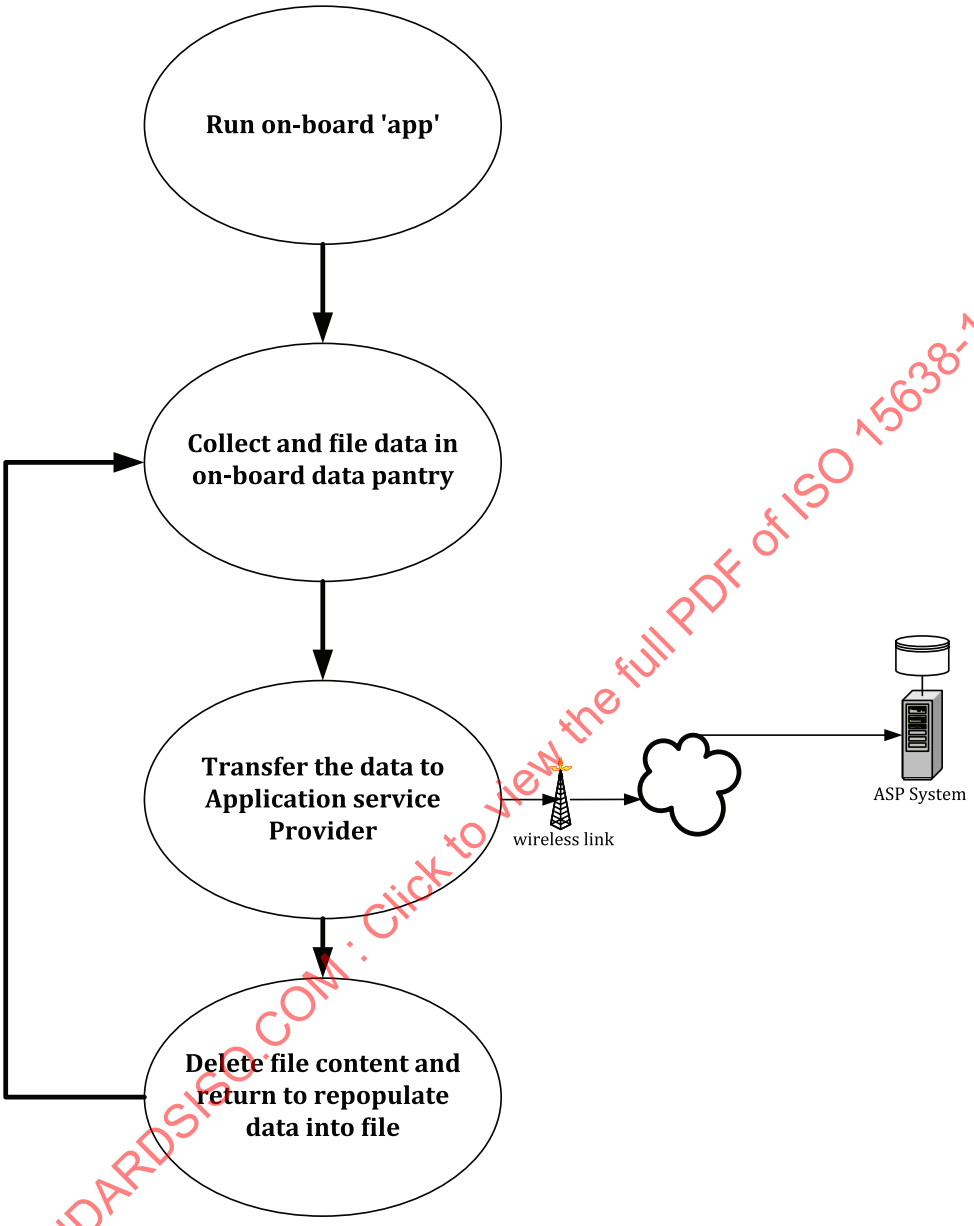

Figure 1 — TARV regulated application service on-board procedure

At a common generic functional level for this application service, the process may be seen as shown in Figure 2 below, however the connected equipment may/may not be required in all cases.

9.2 Common role of the jurisdiction, approval authority, service provider and user.

The common role of the jurisdiction, approval authority, application service provider and user shall be as defined in ISO 15638-6.

9.3 Common characteristics for instantiations of regulated application services

The common characteristics for instantiations of regulated application services shall be as defined in ISO 15638-6.

9.4 Common sequence of operations for regulated application services

The common sequence of operations for regulated application services shall be as defined in ISO 15638-6.

9.5 Quality of service

Generic quality of service provisions for *application services* (3.3) shall be as defined in ISO 15638-6.

9.6 Information security

Information security shall be as defined in ISO 15638-6.

9.7 Data naming content and quality

Data naming and quality shall be as defined in ISO 15638-5:2013, 8.2, 8.3 and 8.4.

Variations specific to the 'Emergency Messaging System/eCall' *application service* (3.3) shall be as defined below.

9.8 Software engineering quality systems

Software engineering quality systems shall be as defined in ISO 15638-6.

9.9 Quality monitoring station

The availability of quality monitoring stations shall be as defined in ISO 15638-6.

9.10 Audits

Audits shall be as defined in ISO 15638-6.

9.11 Data access control policy

To protect the data and information held by the *application service provider* (3.4), each provider shall adopt a risk based data access control policy for employees of the provider.

9.12 Approval of IVSs and service providers

Generic provisions for the *approval* (3.6) of *IVSs* and *service providers* (3.38) shall be as specified in ISO 15638-3. Detailed provisions for specific *regulated applications* (3.34) shall be as specified by the regime of the *jurisdiction* (3.27).

10 TARV emergency messaging/eCall system (EMS)

10.1 TARV EMS service description and scope

10.1.1 TARV EMS use case

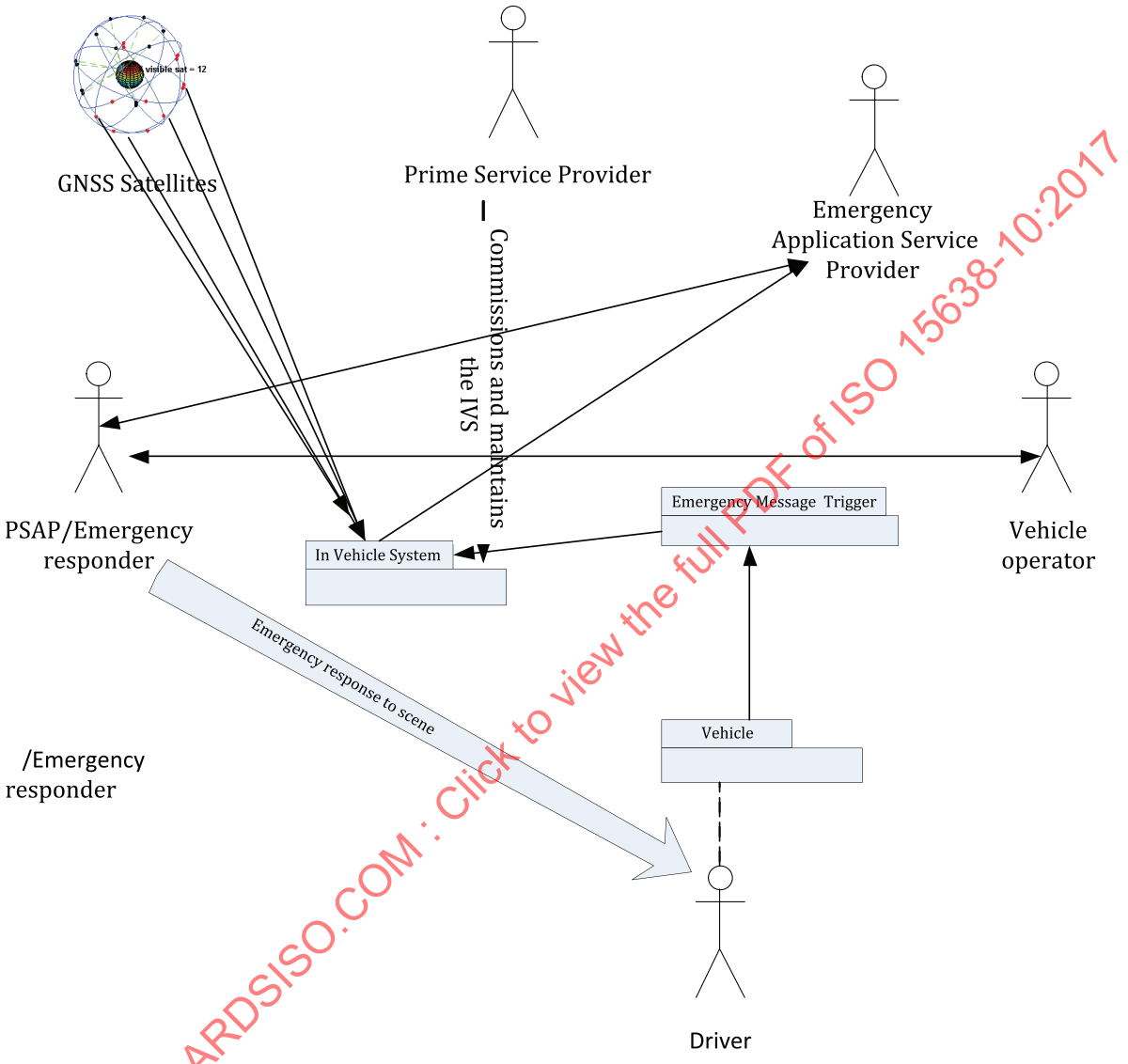

Figure 2 — TARV EMS use case

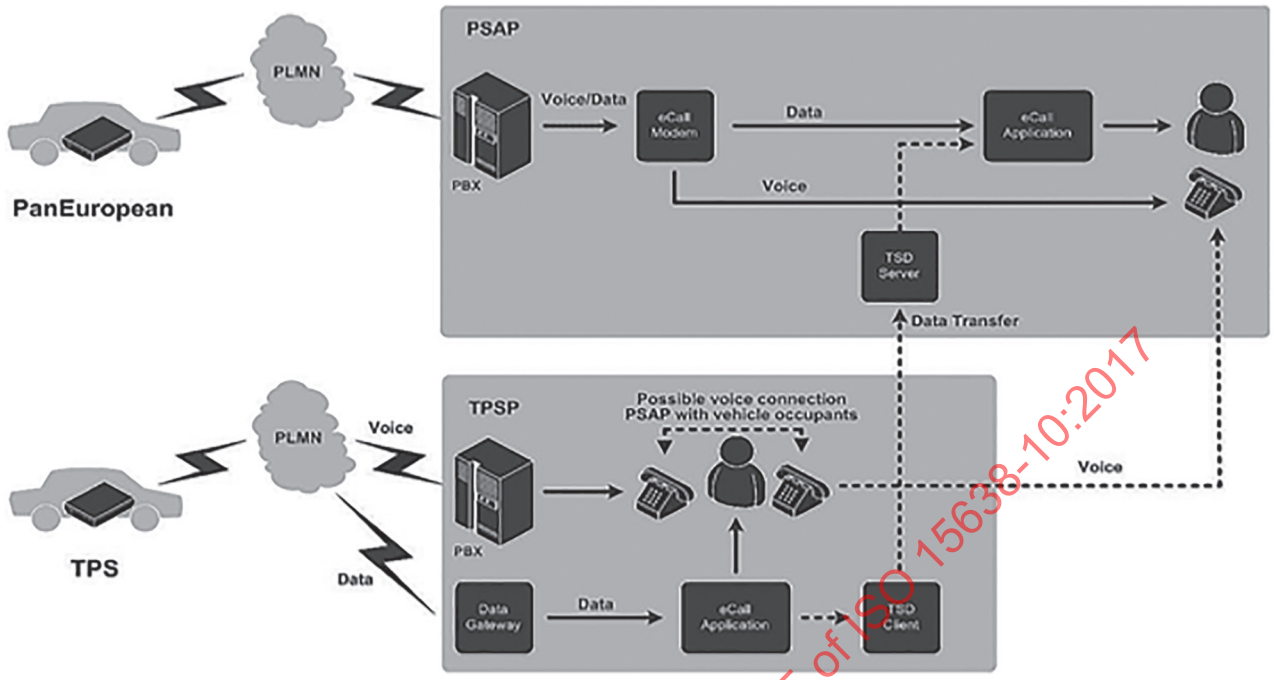

Figure 3 — Use case for end-to-end 'panEuropean eCall' and 'TPS-eCall' systems connected to an 'eCall' enabled PSAP

Figure 3 illustrates the use case for end-to-end 'pan-European eCall' and 'TPS-eCall' systems connected to an 'eCall' enabled PSAP.

10.1.2 Description of TARV EMS regulated application service

This application service uses the wireless link between the on-board *ITS-station* (3.25) of the *IVS* (3.23) and an *application service provider* (3.4), in order to convey an emergency message from the *regulated vehicle* (3.36) to a public safety assistance point or emergency service response unit. See Figure 2.

In the case of EU countries this application may take the form of an *eCall* (3.20) in which case it shall take the form determined in the relevant *eCall* standards referenced herein (see 10.1.3). In other *jurisdictions* (3.27), the content of any message shall adhere to the requirements of the regulations in force in that *jurisdiction,* or shall follow the data content defined herein.

NOTE This clause deals only with emergency messages in the event of an incident. For *application services* (3.3) to provide data related to the transport of dangerous / *HAZMAT* (3.16) goods, known by the UN as *'ADR'* (Accord européen relatif au transport international des marchandises Dangereuses par Route) goods, please refer to ISO 15638-18. In respect of other consignment and location monitoring application service requirements, please refer to ISO 15638-17.

10.1.3 Description of eCall regulated application service

eCall (3.20) is a specific instantiation of an emergency call being introduced throughout the 28 member states of the European Union. See Figure 3.

This provides a 'minimum set of data' (*MSD*) for any *eCall* (3.20) equipped vehicle of whatever class, to a 'Public Safety Answering Point'. The MSD has the capacity for an 'optional additional dataset' and EN/TS 16405 defines an optional additional dataset for HGVs, which provides information about the *consignment* (3.13) it is carrying.

The *eCall* (3.20) service also provides a direct voice link between the occupant(s) of the vehicle and the public safety assistance point (PSAP).

eCall will be compulsory (in Europe) for light vehicles but is optional for heavy goods vehicles.

10.2 Concept of operations for TARV EMS

10.2.1 General

An emergency message is, by definition, an extraordinary event. For normal collection of data about freight see ISO 15638-17 and for non-emergency messaging in respect of vehicles carrying ADR (dangerous) goods see ISO 15638-18.

What constitutes an extraordinary event that may generate an emergency message is not defined herein, but is likely to be an incident/accident involving the *regulated commercial freight vehicle* (3.36), an alarm condition on the *regulated commercial freight vehicle*, a hi-jack, *driver* (3.18) disablement, and in the case of vehicles carrying ADR (dangerous) goods, may be a breakdown or similar incident.

Except in the case of an *eCall* (3.20) (in the *jurisdictions* (3.27) where that application service is in operation), specific to *eCall* (see 10.3), the destination of an emergency message will depend on the actual incident, and it is assumed that the *application service provider* (3.4), with whom the *user* (3.42) is contracted, shall know the appropriate destination for the message. It may be the emergency services (PSAP), it may in some circumstances be directly with the police, and in others with some third party support response team, or a team of the *application service provider.*

10.2.2 Statement of the goals and objectives of the TARV EMS

The objective of this document is, in the event of an incident, to alert the appropriate emergency response services via the application service provider and to provide them with key information concerning the *regulated commercial freight vehicle* (3.36) and its *consignment* (3.13).

For the objectives of the specific *eCall* (3.20*)* instantiation of this service see 10.3, EN 16102, EN 15722, EN/TS 16405, and EN 16454.

10.2.3 Strategies, tactics, policies, and constraints affecting the TARV EMS

How response is initiated varies from *jurisdiction* (3.27) to *jurisdiction,* so the nexus of this service is the provision of data to a landside *application service provider* (3.4) who shall know who to contact in the event of a specific emergency type.

In jurisdictions where the eCall service is available, or required, via wireless cellular telephone systems, for the strategies, tactics, policies, and constraints affecting the specific *eCall* (3.20) instantiation of this service see EN 16102, EN 15722, EN/TS 16405 and EN 16454. In these jurisdictions, this document is an instantiation of TPS eCall as specified in EN 16102, as complemented by EN/TS 16405.

NOTE This document is designed for operation where an *application service provider* (3.4) is supporting TARV service provision to/ from regulated vehicles. Within Europe, and other countries that support eCall as specified in EN 16062, EN 16072 and EN 16454 such eCalls can also be sent directly using “Pan European eCall” standards.

In jurisdictions where eCall is not available via wireless cellular telephone systems, this document provides a means to provide eCall type assistance using a wireless link between the vehicle and an *application service provider* in conjunction with a landline link between the *application service provider* and a PSAP/emergency service responder.

10.2.4 Organisations, activities, and interactions among participants and stakeholders in TARV EMS

The emergency service responder may be a *PSAP*, or any responder deemed appropriate by the contract between the *user* (3.42) and the *application service provider* (3.4).

The *prime service provider* (3.33) is the actor who installs and maintains the *emergency message system* (3.21) and its triggering mechanism in the *regulated vehicle* (3.36).

The *application service provider* (3.4) is the party who contracts with the *user* (3.42) to provide the emergency *application service* (3.3).

The *user* (3.42) is the *regulated vehicle* (3.36) *operator* (3.32) and his *driver* (3.18).

10.2.5 Clear statement of responsibilities and authorities delegated for TARV EMS

Table 1 — TARV EMS actors involved, their activities and interactions

ACTOR	ROLE	ACTIVITIES	INTERACTIONS
***Jurisdiction* (J)** (3.27)	Sets requirements for mandatory and supported *EMS* (3.21)	Publishes *specifications* (3.40)	ALL
		Obtains regulations	ALL: Establish regime and regulations *ASP* Register
		Appoints *Approval Authority*	CA: Contract. Instruct Receive reports
***Approval authority* (CA)** (3.8)	Implements *jurisdiction* policy at equipment and service approval level	Approves *IVS* (3.23), *Application Service* (3.3) instantiations	PSP: Approve *IVS* *ASP*: Approve *Application Service*
		Conducts Q of S maintenance to instruction of *jurisdiction*	
***Prime service provider* (PSP)** (3.33)	Responsibility for *IVS*	Installs and/or commissions *IVS*	CA: May Apply to approve *IVS* Op; Installation
		Maintains *IVS*	Op: Maintain *IVS*
***Application service provider* (*ASP*)** (3.4)	Provides *EMS application services* (3.3)	Develops instantiation of *EMS application service*	CA : Applies for approval of Service
		Contracts with *users* (3.42)	Op: Contracts
		Provides *EMS* application service to *users* and jurisdiction	Op: Provides service IVS: Loads data IVS: Receives *EMS* Messages
***operator* (Op)** (3.32)	Provides *regulated vehicle* (3.36)	'Employs'/contracts *drivers*	Dr :Employs/Contracts
	Uses *regulated vehicle* for commerce and logistics	Operates *regulated vehicle*	PSP: Contracts, receives service *ASP* :Contracts, receives service *ASP* : Provides consignment data
		Receives *EMS* alerts from *ASP*	
***Driver* (Dr)** (3.18)	Drives *regulated vehicle* to instruction of *operator* (3.32)	Drives *regulated vehicle*	Op: to instructions *ASP* /ESR: talks with in event of *EMS* alert (if possible)

Table 1 *(continued)*

ACTOR	ROLE	ACTIVITIES	INTERACTIONS
Emergency system responder (ESR)	Receives emergency message	Responds to emergency	Op: obtains information Dr: talks with in event of *EMS* alert (if possible)

The *prime service provider* (3.33) is responsible to properly install and maintain the equipment which triggers the *application service* (3.3).

The *regulated vehicle* (3.36) *operator* (3.32) (or owner) commissions the service and contracts with the *application service provider* (3.4), and possibly the *prime service provider* (3.33) (although that may be a subcontract of the application service contract with the *application service provider*).

The emergency responder (or *PSAP*) is commissioned by the *application service provider* (3.4) (or generally offers this service to the public) to send the appropriate response to the location of the incident as a matter of priority.

10.2.6 Operational processes for the TARV EMS

A trigger in the *regulated vehicle* (3.36) sets off an emergency messaging sequence. The trigger may be an airbag, accelerometer, gyroscope, or an alarm system monitoring the state of the *regulated vehicle* (3.36) or its *consignment* (3.13), or similar. The trigger is not defined in this document.

The *in-vehicle system* (3.23) uses its *ITS-station* (3.25) to send the message and its associated data to the *application service provider* (3.4).

The *application service provider* (3.4) identifies the appropriate emergency response, contacts the responder, and provides relevant data.

The emergency responder may contact the *regulated vehicle* (3.36) *operator* (3.32) or a predetermined website address/telephone contact number/information endpoint, to obtain full information about the *consignment* (3.13) being carried by the affected vehicle.

The emergency responder then sends an appropriate response to the scene.

If the *in-vehicle system* (3.23) supports it, or a mobile phone number is provided, the emergency responder may also obtain voice contact with the *driver* (3.18) and any other occupants of the *regulated vehicle* (3.36).

10.2.7 Role of TARV EMS service provider

The *prime service provider* (3.33) installs and maintains the *emergency message system* (3.21) and its triggering mechanism in the *regulated vehicle* (3.36).

The *application service provider* (3.4) contracts with the *user* (3.42) to provide the emergency *application service* (3.3).

10.2.8 Role of TARV EMS user

The *user* (3.42) (*operator* (3.35) + driver) is the recipient of the service.

The *operator* (3.35) contracts with the *application service provider* (3.4) to provide the service and pays any appropriate fees to the *application service provider.*

The *user* (3.46) (*operator* (3.32)):

a) shall maintain a website (IPv6 address) where data relating to the *consignment* (3.13) is made available, or

b) may maintain a telephone hotline where data relating to the *consignment* (3.13) is made available.

10.3 Concept of operations for eCall via TARV

10.3.1 General concept of TARV eCall

An *eCall* (3.20) is an emergency call generated either automatically via activation of in-vehicle sensors or manually by the *regulated vehicle* (3.36) occupants; when activated, to provide notification and relevant location information to the most appropriate public safety answering points (*PSAP*), by means of mobile wireless communications networks using its system for emergency calls, and carries a defined standardised minimum set of data (*MSD*), notifying that there has been an incident that requires response from the emergency services and establishes an audio channel between the occupants of the *regulated vehicle* (3.36) and the most appropriate *PSAP*.

EN 16102 defines a system of using a 'third party services supported *eCall* (3.20)', abbreviated as TPS-eCall inside this document. This is an *eCall* variant which includes the transmission of data to a third party *service provider* (*TPSP*) (3.38), and the establishment of a voice call with this *TPSP*. In the case of an emergency situation likely to require assistance from the emergency services, the *TPSP* establishes a voice connection with the 'most appropriate *PSAP*'. The *TPSP* also forwards all relevant information concerning the event, including the information specified as mandatory by the *MSD* standard (EN 15722) as a minimum, to this 'most appropriate *PSAP*'. The *TPSP* also provides voice communication between the *PSAP* and the *regulated vehicle* (3.36) occupants, at least by setting up a conference call, if this is required by any of the parties involved and allowed by the *PSAP*.

In this instantiation, the means by which the *PSAP* obtains the data content of the *MSD* and its HGV/GV additional data concept is from the ASP (*TPSP*). As with TPS eCall, this may be data residing in the *TARV in-vehicle system* (3.23) but may be complemented by data held within the central database of the ASP.

The *MSD* (specified in EN 15722) contains static information regarding the *regulated vehicle* (3.36), dynamic information regarding its location, direction of travel etc., at the time of the incident, and makes provision for additional data to be provided.

The 'optional additional data' is provided in accordance to EN/TS 16405 and provides information about the cargo [*consignment* (3.13)] that the *regulated vehicle* (3.36) is transporting.

10.3.2 Statement of the goals and objectives of the TARV eCall system

The objective of implementing a 'third party' emergency call is to provide emergency assistance and an automated notification of a traffic incident, using 'third party services' packages where such services are supported between the *regulated vehicle* (3.36) and a 'third party service provider' in *jurisdictions* (3.27) where such notification of an emergency are supported by *PSAP*s.

The first objective of this *TPS-eCall* (3.20) is to transfer an emergency message from a vehicle to a *TPSP* in the event of a crash or an emergency situation, and to establish a voice channel between the in-vehicle equipment and the *TPSP*.

The second objective of this *TPS-eCall* is, in case of an emergency situation likely to require assistance from the emergency services, for the *TPSP* to transfer an emergency message including the data of the 'minimum set of data' (*MSD*) (as defined in EN 15722) from the *TPSP* to the 'most appropriate *PSAP*' and to make best efforts to establish a direct voice contact between that *PSAP* and the occupants of the *regulated vehicle* (3.36) if required by the *PSAP*, together with the HGV/GV additional data concept providing information about the *regulated vehicle consignment* (3.13) as defined in EN/TS 16405 HGV/GV additional data concept *specification* (3.40).

EN 16102 defines the general operating requirements and intrinsic procedures for an in-vehicle *eCall* (3.20) via the services of a *TPSP* and also provides definition of the service(s) provided to the *PSAP* and the method and form of service delivery. EN 16454 provides specifications for end to end conformance tests for the eCall application service, including such specifications for TPS-eCall.

10.3.3 Strategies, tactics, policies, and constraints affecting the TARV eCall system

The provision of the *eCall* (3.20) service for *TARV* vehicles shall conform to one of the communications media specified in ISO 15638-2, and the general provisions of ISO 15638-1, ISO 15638-3, ISO 15638-4, and ISO 15638-5.

The provision of the *eCall* (3.20) service for *TARV* vehicles shall conform to EN 16102.

The 'optional additional data' concept shall conform to EN/TS 16405.

10.3.4 Organisations, activities, and interactions among participants and stakeholders for TARV eCall

In the case of *eCall* (3.20) the emergency service responder is a 'public safety answering point' (*PSAP*).

The *prime service provider* (3.33) is the actor who installs and maintains the *emergency message system* (3.21) and its triggering mechanism in the *regulated vehicle* (3.36).

The *application service provider* (3.4) is the party who contracts with the *user* (3.42) to provide the emergency *application service* (3.3).

The *user* (3.42) is the *regulated vehicle* (3.36) *operator* (3.32) and his *driver* (3.18).

10.3.5 Clear statement of responsibilities and authorities delegated in TARV eCall

The *prime service provider* (3.33) is responsible to properly install and maintain the equipment which triggers the *eCall* (3.20) *application service* (3.3).

The *regulated vehicle* (3.36) *operator* (3.32) (or owner) commissions the service and contracts with the *application service provider* (3.4), and possibly the *prime service provider* (3.33) (although that may be a subcontract of the *application service* (3.3) contract with the *application service provider)*.

The *PSAP* normally offers an emergency service to the public normally using the emergency call (*TS12*) system to send the appropriate response to the location of the incident as a matter of priority. However, in the case of *TPSP eCall* (3.20), the *PSAP* has, in conformance to EN 16102, provided the approved *TPSP* with a *TS11* number at which it can be contacted.

In this TARV supported variant of eCall, a TS11 number may be replaced by any PSAP accepted VOIP address.

10.3.6 Operational processes for the TARV eCall system

A trigger in the *regulated vehicle* (3.36) sets off an emergency messaging sequence. The trigger may be an airbag, accelerometer, gyroscope, or an alarm system monitoring the state of the *regulated vehicle* or its *consignment* (3.13), or similar. The trigger is not defined in this document.

The *in-vehicle system* (3.23) uses its *ITS-station* (3.25) to send the message and its associated data to the *application service provider* (3.4) in accordance with EN 16102:2011.

NOTE The data procured from and sent from the vehicle may not be the complete MSD/ and any optional additional data, some of which may reside in the central systems of the ASP (*TPSP*). See EN 16102.

The 'optional additional data concept' shall use the HGV *eCall* (3.20) data concept as defined in EN/TS 16405.

Conformance shall be tested in accordance with the tests specified in EN 16454.

The *PSAP*/emergency responder may contact the *regulated vehicle* (3.36) *operator* (3.32) or a predetermined website address/information endpoint to obtain full information about the *consignment* (3.13) being carried by the affected vehicle.

The emergency responder then sends an appropriate response to the scene.

EN 16102 makes provision for the *PSAP* to make voice contact with the *driver* (3.18) and any other occupants of the *regulated vehicle* (3.36).

10.3.7 Role of service provider in TARV eCall

The *prime service provider* (3.33) installs and maintains the *emergency message system* (3.21) and its triggering mechanism in the *regulated vehicle* (3.36).

The *application service provider* (3.4) contracts with the *user* (3.42) to provide the emergency *application service* (3.3).

10.3.8 Role of user in TARV eCall

The *user* (3.42) (*operator* (3.32) + driver) is the recipient of the service.

The *operator* (3.32) contracts with the *application service provider* (3.4) to provide the service and pays any appropriate fees to the *application service provider.*

The *user* (3.42) (*operator* (3.32)) may maintain a website (IPv6 address) where data relating to the *consignment* (3.13) is made available.

10.4 Sequence of operations for TARV eCall

The sequence of operations in respect of *eCall* (3.20) shall be as determined in EN 16102.

The sequence of operations in respect of *TARV eCall* (3.20) is illustrated in Figures 4 and 5.

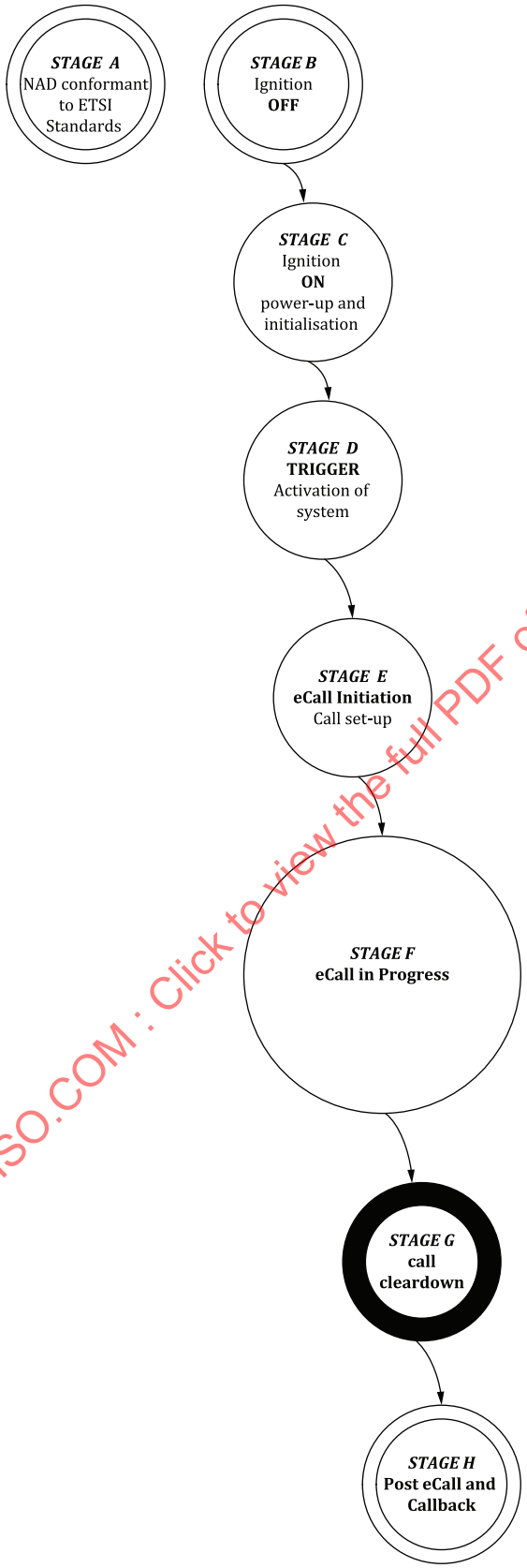

Figure 4 — High level state transition steps of eCall

Source EN 16454.

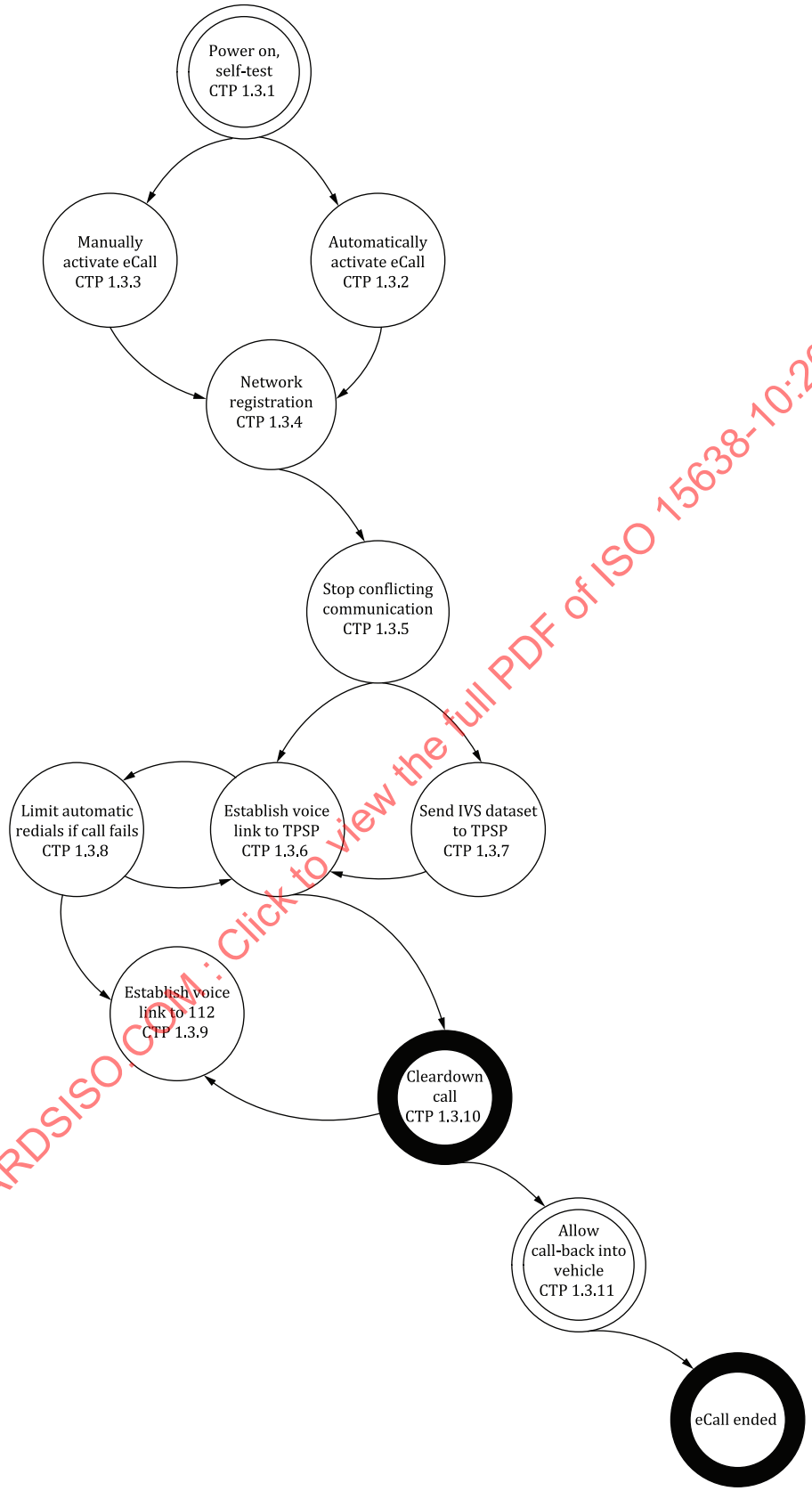

Figure 5 — In-vehicle system state transitions — Third party service provider (TPSP) eCall

Source EN 16454.

10.5 Sequence of operations for TARV EMS

The sequence of operations in respect of general *TARV EMS* shall be as shown in Figure 6.

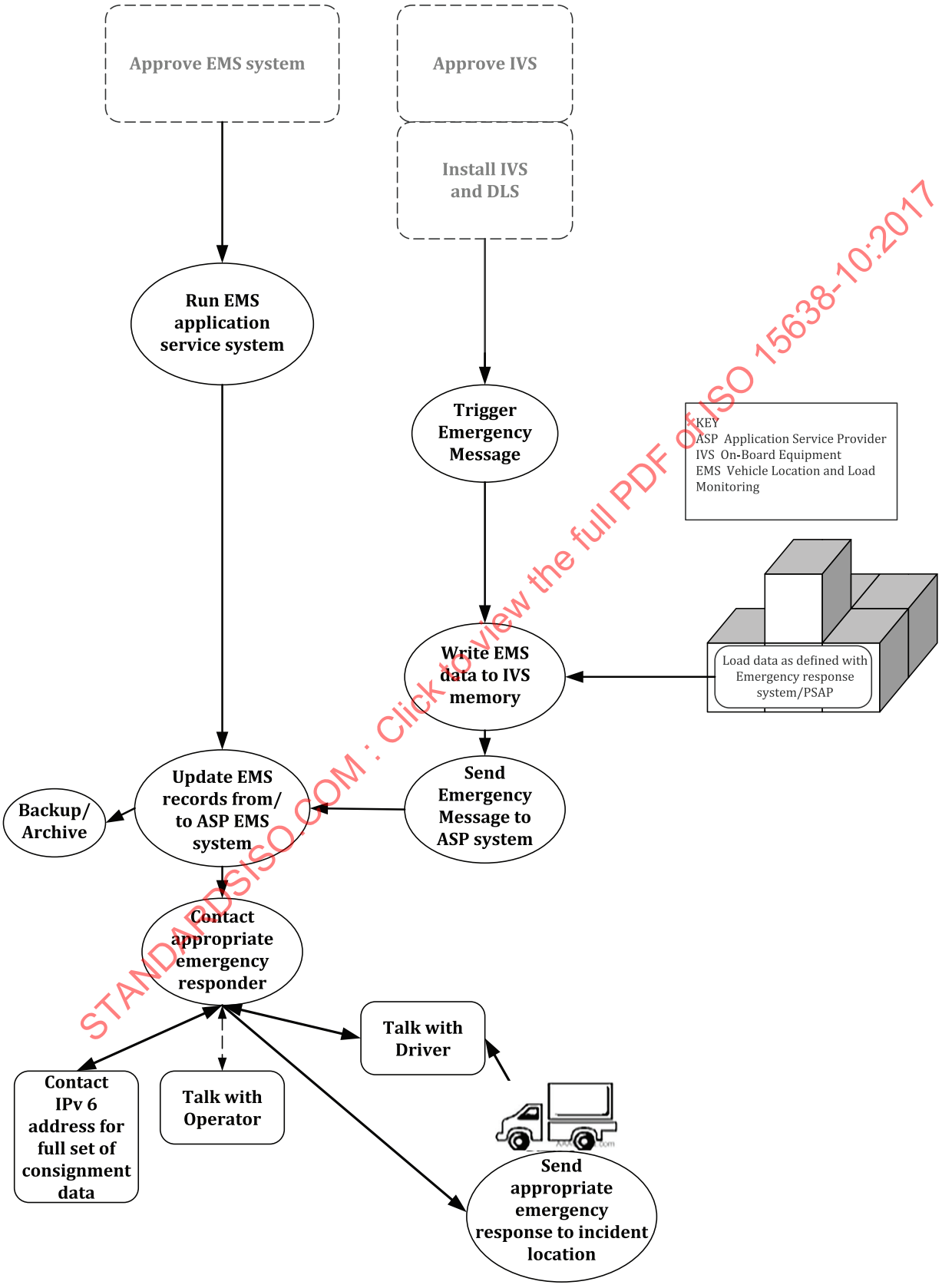

Figure 6 — Sequence of operations for TARV EMS

10.6 TARV EMS naming content and quality

The process to obtain *basic vehicle data* (3.11) (*TARV LDT* (3.29)) data content shall be as defined in ISO 15638-5:2013, 8.2, 8.3 and 8.4.

10.7 Specific TARV EMS data naming content and quality

10.7.1 eCall Minimum set of data

Where the *eCall* (3.20) variant is used, the minimum set of data shall be in accordance with EN 15722.

10.7.2 HGV eCall dataset

The *eCall* (3.20) HGV dataset shall be in accordance with EN/TS 16405.

10.7.3 Other TARV EMS emergency messages

Where an emergency message is other than an *eCall* (3.20) it shall be determined as required by regulations of the *jurisdiction* (3.27) or shall be as agreed between the *application service provider* (3.4) and the emergency responder. The format and content shall be the subject of a written agreement between the parties. However, for consistency, interpretation and data reuse, wherever the following data concepts elements are used they shall be represented as defined in Table 2.

10.8 TARV EMS service elements

10.8.1 TARV EMS SE1: TARV eCall

The service elements for the *TARV eCall* (3.20) variant shall be as determined in EN 16102. See Figures 4 and 5 for an illustration.

The service elements for general emergency messaging shall be as defined in the following subclauses:

10.8.2 TARV EMS SE2: Establish 'TARV Emergency Call' (TARV EMS) jurisdiction regulations or system specification

The *jurisdiction* (3.27) shall be responsible to define its requirements for its variant of the '*TARV* Emergency Call' (*TARV EMS*) *application service* (3.3), obtain any legislation and/or regulations, and define the procedure for an *application service provider* (3.4) to gain approval for its instantiation of the *TARV EMS application service.*

10.8.3 TARV EMS SE3: Request system approval

The *application service provider* (3.4) shall seek approval for its instantiation of the *TARV EMS* application service from the *approval authority (regulatory)* (3.8) in accordance with the regime established by the *jurisdiction* (3.27).

10.8.4 TARV EMS SE4: User (operator) contracts with prime service provider

It is a prerequisite for any potential vehicle *operator* (3.32) opting or being required to sign up for the *TARV EMS* application service that its *regulated vehicles* (3.36) are *TARV* equipped with a *TARV* compliant *IVS* (3.23) at point of manufacture or installed by a *prime service provider* (3.33), and that there is a maintenance contract with a *prime service provider* for that equipment. See ISO 15638-1.

10.8.5 TARV EMS SE5: User (operator) equips vehicle with a means to provide consignment data

It is a prerequisite for any potential vehicle *operator* (3.32) opting or being required to sign up for the *TARV EMS* application service that its *regulated vehicles* (3.36) are equipped to provide the *consignment*

(3.13) data required. If the data is provided via an IPv6 link to a website, no further data is required, but may optionally be provided as backup. If the *jurisdiction* (3.27) has specified the required data it shall be provided to the requirement of the *jurisdiction,* or otherwise as agreed between the *operator* (3.32) and the *TARV EMS application service provider* (3.4), who may choose to maintain some or all of the information in its application system (rather than on-board the *regulated vehicle* (3.36). Suggested data concept elements are provided in Table 2. It is further required that there is a maintenance contract with an approved *service provider* (3.38) for any equipment required to be installed in the *regulated vehicle* (3.36). That *service provider* shall be, or shall be considered as an agent of, the *prime service provider* (3.33) in respect of the provisions of this document.

10.8.6 TARV EMS SE6: User contracts with application service provider

The *user* (3.42) [*operator* (3.32)] shall contract with an *application service provider* (3.4) who offers an approved *TARV EMS* application service to provide the *TARV EMS* application service to nominated vehicles.

10.8.7 TARV EMS SE7: Application service provider uploads software into the TARV equipped vehicles of the operator

The *service provider* (3.38) shall upload and commission the on-board *TARV EMS app* (3.2) software into the *TARV* equipped vehicles of the *operator* (3.32).

10.8.8 TARV EMS SE8: Recording of vehicle consignment data

Prior to the commencement of each journey, the *application service provider* (3.4) shall establish a communications *session* (3.39) with the *in-vehicle system* (3.23).

At the start of each journey the *TARV EMS app* (3.2) held in the library of the *IVS* (3.23) shall be initiated.

The on-board *TARV EMS app* (3.2) shall create a file, type:EMS [EMS file] within this *specification* (3.40), with one of the following options (in order of precedence):

a) current *consignment* (3.13) data as required by the *jurisdiction* (3.27),

b) current *consignment* data as required by the contract between the *application service provider* and the *user* (3.42),

c) a combination of the *TARV LDT* (3.29) data and the *consignment* data determined in Table 2 (as far as it is available, with padded null fields where a data concept element data is not available).

During the journey the on-board *TARV EMS* 'App' in the in the *IVS* (3.23) shall replace the contents the *EMS* file with the (updated) consignment data.

10.8.9 TARV EMS SE9: EMS trigger

For most journeys the *EMS* system is a silent observer, and the system proceeds no further than SE9. But in the event that, during the journey, equipment installed in the *regulated vehicle* (3.36) shall trigger an *EMS* emergency message, the *TARV EMS* system initiates the subsequent SEs.

10.8.10 TARV EMS SE10: Make TARV EMS emergency call

The *IVS* (3.23) shall then use the on-board *ITS-station* (3.25) to contact an *ITS-station* of the *application service provider* (3.4) to deliver the *TARV EMS* emergency message.

Where suitably equipped the *IVS* (3.23) may also attempt to make voice contact between the occupants of the *regulated vehicle* (3.36) and a telephone number provided by the *application service provider* (3.4).

The *IVS* (3.23) shall also write a log of the event and associated data into the memory of the *IVS* as a record of the incident.

10.8.11 TARV EMS SE11: Obtain/request consignment data

10.8.11.1 The *application service provider* (3.4) shall use its access to a link to an IPv6 address provided in the *TARV EMS* emergency message (or maintained in its central database concerning the vehicle) to obtain full detail of the *consignment* (3.13) and any associated dangerous goods (ADR) data where appropriate. (This may be to request a resend of data, or as a result of an emergency triggered outside of the vehicle).

10.8.11.2 An interrogating ITS-station shall request specific data as determined in ISO 15638-6:2014, 7.1 and 8.1.2.

10.8.11.3 In the event that the IVS of a vehicle receives a wireless interrogation requesting the EMS data, the interrogator shall also provide at the time of the request, a unique 8 byte reference number (URef), and a destination IPv6 address (ReqDest) where it requests the data to be sent.

10.8.11.4 On receipt of the request the IVS shall acknowledge the request with the appropriate ACKnowledgement defined in ISO 15638-6:2014, 8.3.5, <E>, which acknowledges that a request for EMS data has been received.

10.8.11.5 The IVS shall then close the communication session.

10.8.11.6 The IVS shall then open a new communication session using an available and appropriate CALM wireless medium.

10.8.11.7 The IVS shall then send the EMS datafile to a predetermined destination IPv6 (internet) address that has previously been stored in the memory of the data pantry by its ASP, together with the URef and ReqDest provided by the interrogator.

10.8.11.8 On successful receipt of the data, the recipient at the predetermined destination IPv6 address shall send an acknowledgement <EMX> to the IVS.

10.8.11.9 On receipt of the acknowledgement <EMX> the IVS shall close its communication session.

10.8.11.10 The ASP shall be responsible to verify that the interrogation is legitimate, appropriate and from an accepted source, and having verified this, shall be responsible to send the data to the interrogator requested IPv6 address. The means and detail of how this is achieved is outside the scope of this document.

10.8.12 TARV EMS SE12: Contact emergency responder

The *application service provider* (3.4) shall then contact the appropriate emergency responder, providing the *TARV EMS* data to the responder and shall request the emergency responder to appropriately respond to the emergency call. The means by which this is achieved is not specified and may vary according to the location of the incident and the nature of the incident for audit trail purposes and the arrangements in place between the *ASP* (3.4) and *PSAP*.

The *TARV EMS* system of the *application service provider* (3.4) shall also write a log of the event and associated data into the memory of the backup/archive of the *application service provider* as a record of the incident for audit trail purposes.

10.8.13 TARV EMS SE13: Notification to *operator* (3.32)

The *application service provider* (3.4) shall then contact the *operator* (3.32) to notify them of the incident, providing the *TARV EMS* data to the *operator*. The means by which this is achieved is not specified and may vary according to the location of the incident and the nature of the incident for audit trail purposes.

10.8.14 TARV EMS SE13: Emergency response

The emergency responder shall then respond appropriately to the emergency call.

10.9 TARV EMS Emergency messaging access methods to provision and retrieve data

The process to obtain *basic vehicle data* (3.11) [*TARV LDT* (3.29)] data content shall be as defined in ISO 15638-5:2013, 8.2, 8.3 and 8.4.

The electronic records declared and stored by the *IVS* (3.23) shall be authenticated, have integrity and be secure from interception or corruption.

Consignment (3.13) data shall be provided before the journey commences to the *application service provider* (3.4), normally, but not necessarily, by electronic means, and the *application service provider* shall be responsible to provision any data required into the *data pantry* (3.17) of the *in-vehicle system* (3.23) via the *ITS-station* (3.25) of the *IVS*.

The format and content shall be the subject of a written agreement between the parties. However, for consistency, interpretation and data reuse, wherever the following data concepts elements are used they shall be represented as defined in Table 2.

NOTE *UNECE* JWG RID are currently reviewing their reference pointers to dangerous goods (*ADR)* information, and this Table will be revised if material change is made.

10.10 Contents of the 'Minimum Set of Data' (MSD)

The following sub-clauses provide the definition of the minimum set of data that shall be sent to the emergency responder in the case of an emergency call.

10.10.1 Basic contents of MSD

Table 1 provides a summary of the semantic contents of the MSD. For a full description please refer to EN 15722.

Table 2 — Contents/format of the MSD data concept

MSD				
msdVersion	INTEGER (1..255)	-	M	
msd				
msdStructure				
optionalAdditionalData			O	
oid	RELATIVE-OID			
data	OCTET STRING			

M – Mandatory data field

O – Optional data field

This document describes the contents of the `optionalAdditionalData` block.

10.10.2 Contents of the optionalAdditionalData for Schema A

Table 2 provides a summary of the semantic contents of the `optionalAdditionalData` part of the MSD for `Schema A`.

The sequence of data presentation shall be as specified in Table 2, represented as described in 9.1.2 and distributed as described in 9.1.3.

For clarity the 'type' used in Table 2 is a semantic representation of the type used in the ASN.1 definition. The exact representation is found in Annex A.

The real position of the element in the data-stream is defined by the ASN.1 'unaligned packet encoding rules' (uPER), following the definition in Annex A. Elements therefore do not necessarily start or end on a byte boundary.

Table 3 — Contents/format of commercial vehicle additional data Schema A

optionalAdditionalData				
oid	RELATIVE OID		M	Fixed value: 1.1
data				*encoded as OCTET STRING*
commercialVehicleType	ENUM		M	The supported types are: - unknown - tanker, one compartment - tanker, more compartments - truck, (*commercial vehicle*)
consignorPhone	NumericalString		M	Consignor contact telephone number or telephone number displa yed on goods container as contact number in case of emergency. NOTE: the number should be specified as international number, thus including the country- and area code (without zero)
alarmInfo			O	*Information about sensors present is encoded. Each sensor is optional and should be left out if not present.* *If a sensor is generating an alarm its value should be set to true, if a sensor is available but not generating an alarm its value is false* *IMPORTANT NOTE: Emergency services need to be aware that the absence of an alarm indicates only that there was no alarm showing as activated at the time of compiling the data. Alarms raised post the population of/sending of the MSD will not be transmitted. These codes therefore only indicate status before or at the point of the incident, and cannot be taken as the current status post incident.*
leakageAlarm	BOOLEAN		O	True if leakage has been detected
fireAlarm	BOOLEAN		O	True if fire has been detected
highTempAlarm	BOOLEAN		O	True if high temperature has been detected
lowTempAlarm	BOOLEAN		O	True if low temperature has been detected
shockAlarm	BOOLEAN		O	True if shock has been detected
highPressureAlarm	BOOLEAN		O	True if high pressure has been detected

	lowPressureAlarm	BOOLEAN		O	True if low pressure has been detected
	orientationAlarm	BOOLEAN		O	True if abnormal orientation has been det.
	otherAlarm	BOOLEAN		O	True if any other alarm was raised
goodsADR				O	*Up to 7 goods (most dangerous based on response code, within same response code prioritised to most impact in fire or largest volume) can be fully defined.*
definedGoodsADR[1]				O	*Each defined good has its own container with:*
	cargoUNCode	INTEGER		M	UNCode (max. value: 9999)
	kemlerCode	KemlerCode [1]		M	Kemler Code of cargo, up to 3 digits
	packageGroup	INTEGER		M	Package group (1, 2 or 3)
	quantity	INTEGER		M	The quantity of the cargo. Possible values are: 0: empty but uncleaned, 1 - 98 : the quantity as expressed 99: 99 tonnes / 99 m3 or more
	quantityInTonnes	BOOLEAN		M	True: quantity is given in tonnes False: quantity is given in m3 (rounded up)
	quantityIsGross	BOOLEAN		M	True: quantity is gross weight/volume
definedGoodsADR [2]				O	
	cargoUNCode	See above			
	kemlerCode				
	packageGroup				
	quantity				
	quantityInTonnes				
	quantityIsGross				
definedGoodsADR [3] ... definedGoodsADR [7]				O	
numberOfUndefined... ...GoodsADR		INTEGER		M	Number of ADR goods in the vehicle not fully defined in this section. Possible values: 0: no other ADR goods in vehicle, 1-9: specified number of other ADR goods in vehicle 10: 10 or more ADR goods in vehicle 15: unknown number of (other) ADR goods in vehicle
goodsNonADR				O	*Up to 6 materials of significant quantity (significant defined at the discretion of consignor) can be defined* *NOTE: definition should be in decreasing order of quantity.*
definedGoodsNonADR[1]				O	*Each defined good has its own container with:*

cargoSPSCode	INTEGER		M	The SPC code (can be obtained from www.unspsc.org)
containerType	ENUM		M	The container type code (according to ISO 6346)
definedGoodsNonADR[2]				
cargoSPSCode	See above			
containerType				
definedGoodsNonADR[3] ... definedGoodsNonADR[6]			O	
numberOfUndefined... ...GoodsNonADR	INTEGER		M	Number of non ADR goods in the vehicle not fully defined in this section. Possible values: 0: no other non ADR goods in vehicle, 1-9: specified number of other non ADR goods in vehicle 10: 10 or more non ADR goods in vehicle 15: unknown number of (other) non ADR goods in vehicle

M – Mandatory data field (i.e. mandatory if this encoding scheme is used)

O – Optional data field

10.10.3 Contents of the optionalAdditionalData for Schema B

Table 3 provides a summary of the semantic contents of the `optionalAdditionalData` part of the MSD for `Schema B`.

The sequence of data presentation shall be as specified in Table 3, represented as described in 9.1.2 and distributed as described in 9.1.3.

For clarity the 'type' used in Table 3 is a semantic representation of the type used in the ASN.1 definition. The exact representation is found in Annex B.

The real position of the element in the data-stream is defined by the ASN.1 'unaligned packet encoding rules (uPER), following the definition in Annex A. Elements therefore do not necessarily start or end on a byte boundary.

Table 4 — Contents/format of commercial vehicle additional data Schema B

optionalAdditionalData				
oid	RELATIVE OID		M	Fixed value: 1.2
data	*encoded as OCTET STRING*			
commercialVehicleType	ENUM		M	The supported types are: - unknown - tanker, one compartment - tanker, more compartments - truck, (*stukvracht*)

	consignorPhone	NumericalString		M	Consignor contact telephone number or telephone number displayd on goods container as contact number in case of emergency. NOTE: the number should be specified as international number, thus including the country- and areacode (without zero)
	alarmInfo			O	*Information about sensors present is encoded. Each sensor is optional and should be left out if not present.* *If a sensor is generating an alarm its value should be set to true, if a sensor is available but not generating an alarm its value is false.* *IMPORTANT NOTE: Emergency services need to be aware that the absence of an alarm indicates only that there was no alarm showing as activated at the time of compiling the data.* *Alarms raised post the population of/sending of the MSD will not be transmitted. These codes therefore only indicate status before or at the point of the incident, and cannot be taken as the current status post incident.*
	leakageAlarm	BOOLEAN		O	True if leakage has been detected
	fireAlarm	BOOLEAN		O	True if fire has been detected
	highTempAlarm	BOOLEAN		O	True if high temperature has been detected
	lowTempAlarm	BOOLEAN		O	True if low temperature has been detected
	shockAlarm	BOOLEAN		O	True if shock has been detected
	highPressureAlarm	BOOLEAN		O	True if high pressure has been detected
	lowPressureAlarm	BOOLEAN		O	True if low pressure has been detected
	orientationAlarm	BOOLEAN		O	True if abnormal orientation has been det.
	otherAlarm	BOOLEAN		O	True if any other alarm was raised
	numberOfGoodsADR	INTEGER		M	Number of ADR goods in the vehicle not fully defined in this section. Possible values: 0-9: specified number of other ADR goods in vehicle 10: 10 or more ADR goods in vehicle 15: unknown number of (other) ADR goods in vehicle
	numberOfGoods... ...NonADR	INTEGER		M	Number of non ADR goods in the vehicle not fully defined in this section. Possible values: 0: no other non ADR goods in vehicle, 1-9: specified number of other non ADR goods in vehicle 10: 10 or more non ADR goods in vehicle 15: unknown number of (other) non ADR

				goods in vehicle
cargoInformationEndpoint			O	
cargoInformationURI	PrintableString		M	Information about the cargo is available through the given URI (max length: 80 char). NOTE 1: the URI should follow the format '<scheme>://<host>[:<port>]/path[?query string], example: https://cargo.info.com/msdinfo?key=124 NOTE 2: the information endpoint should respond in a standardized way, as referenced by cargoInformationProtocol. That standardisation is done to be set elsewhere and is outside the scope of this deliverable.
cargoInformation… …Protocol	RELATIVE-OID		M	Relative object identifier designating the protocol to use to retrieve information through the above named URI.

M – Mandatory data field (i.e. mandatory if this encoding scheme is used)

O – Optional data field

10.11 TARV EMS application service specific provisions for quality of service

Except for *eCall* (3.20), shall be at the determination of the *jurisdiction* (3.27), or in the absence of such *specification* (3.40) to the *specification* of the *application service provider* (3.4) in agreement with the emergency responder/*PSAP*.

In the case of *eCall* (3.20) shall conform to EN 16454.

The integrity of the data is important and other sensors as well as parameters may then be required based on the approaches and techniques used to provide assurance of the quality of the data. The generic quality of service provisions for the service elements specified in 10.4 are defined in ISO 15638-6 and ISO 15638-5.

Instantiation specific requirements shall be part of the regulation of the *jurisdiction* (3.27). However, in defining such requirements *jurisdictions* shall wherever possible, use performance based or functionally *specifications* (3.40) in order to avoid locking requirements into technologies that will become obsolete.

NOTE Having prescribed integrity and its parameters into an operational system, it is harder to move to other integrity indicators when new technologies come along.

See also Clause 9 for general quality of service requirements.

10.12 TARV EMS application service specific provisions for test requirements

There are no specific provisions for test requirements specified in this first version of this document, but in relation to the eCall aspects see EN 16102 and EN 16454.

10.13 TARV EMS application specific rules for the approval of IVSs and 'Service Providers'

As 9.12.

11 Declaration of patents and intellectual property

This document contains no known patents or intellectual property other than that which is implicit in the media standards referenced herein and in ISO 15638-2. While the *CALM* standards themselves are free of patents and intellectual property, *CALM* in many cases relies on the use of public networks and IPR exists in many of the public network media standards. The reader is referred to those standards for the implication of any patents and intellectual property.

Application services (3.3) specified within this document and ISO 15638-7 contain no direct patents nor intellectual property other than the copyright of ISO. However, national, regional or local instantiations of any the applications services defined in this document and ISO 15638-7, or of the generic vehicle information defined in ISO 15638-5, the security requirements contained in ISO 15638-4, or the requirements of ISO 15638-3, may have additional requirements which may have patent or intellectual property implications. The reader is referred to the regulation regime of the *jurisdiction* (3.27) and its regulations for instantiation in this respect.

Annex A
(informative)

ASN.1 definition of optional datablock

As soon as the OID has revealed the nature of the data as being Schema A or B (using the standard eCall MSD message definition, see EN 15722) the data from the optionalAdditionalData block can be decoded either by applying the definition of the datablock to that data (this Annex), or by applying a constituted complete eCall MSD message definition (Annex B).

A.1 Definition of contents of optionalAdditionalData.data `Schema A`

This section contains the ASN.1 definition of the extra data for Schema A.

A.1.1 ASN.1 definition

```
MSD_ADDITIONAL_CV_A_1

DEFINITIONS
AUTOMATIC TAGS ::=
BEGIN

-- Definition can be used to decode data in the data part
-- of optionalAdditionalData in the MSD message.
--
-- It can also be used in a constituted definition of an
-- extended MSD definition like so:
--
-- AdditionalData ::= SEQUENCE {
--    oid  RELATIVE-OID,
--    data OCTET STRING (CONTAINING CVADSchemaA)
-- }

CVADSchemaA ::= SEQUENCE {
  commercialVehicleType          CVehicleType,
  consignorPhone                 NumericString(SIZE(1..17)) OPTIONAL,
  alarmInfo                      CVAlarmType       OPTIONAL,
  goodsADR                       CVGoodsADRType    OPTIONAL,
  goodsNonADR                    CVGoodsNonADRType OPTIONAL
}

CVehicleType ::= ENUMERATED {
  unknown(0),
  tankerSingleCompartment(1),
  tankerMultiCompartment(2),
  truckPieceCargo(3),
  ...
}

CVGoodsADRType ::= SEQUENCE {
  definedGoodsADR              SEQUENCE SIZE(1..7) OF CVADRCoded OPTIONAL,
  numberOfUndefinedGoodsADR    INTEGER (0..15)
}

CVGoodsNonADRType ::= SEQUENCE {
  definedGoodsNonADR           SEQUENCE SIZE(1..6) OF CVSPCCoded OPTIONAL,
  numberOfUndefinedGoodsNonADR INTEGER (0..15)
}

CVAlarmType ::= SEQUENCE {
  leakageAlarm      BOOLEAN OPTIONAL,
  fireAlarm         BOOLEAN OPTIONAL,
```

```
  highTempAlarm     BOOLEAN OPTIONAL,
  lowTempAlarm      BOOLEAN OPTIONAL,
  shockAlarm        BOOLEAN OPTIONAL,
  highPressureAlarm BOOLEAN OPTIONAL,
  lowPressureAlarm  BOOLEAN OPTIONAL,
  orientationAlarm  BOOLEAN OPTIONAL,
  otherAlarm        BOOLEAN OPTIONAL,
  ...
}

CVADRCoded ::= SEQUENCE {
  cargoUNCode       INTEGER (0..9999),
  kemlerCode     ADRKemlerCode,
  packageGroup      INTEGER (1..3),
  quantity          INTEGER (0..99),
  quantityUnit    HGVQuantityUnit
}

CVQuantityUnit ::= ENUMERATED {
  qtyInTonnesNet(0),
  qtyInTonnesGross(1),
  qtyInCubicM(5),
  ...
}

ADRKemlerCode ::= SEQUENCE {
  firstDigit        PrintableString (SIZE(1)) (FROM("2".."9"|"X")) DEFAULT "2" ,
  secndDigit        PrintableString (SIZE(1)) (FROM("0"|"2".."9"|"X")) OPTIONAL,
  thirdDigit        PrintableString (SIZE(1)) (FROM("0"|"2".."9"|"X")) OPTIONAL
}

CVSPCCoded ::= SEQUENCE {
  cargoSPSCode      NumericString (SIZE(2..8)),
  containerTypeCode CVisoContainerType OPTIONAL
}

CVisoContainerType ::= ENUMERATED {
  containerTypeG0(0),  containerTypeG1(1),  containerTypeG2(2),  containerTypeG3(3),
  containerTypeV0(4),  containerTypeV2(5),  containerTypeV4(6),
  containerTypeR0(7),  containerTypeR1(8),  containerTypeR2(9),  containerTypeR3(10),
  containerTypeH0(11), containerTypeH1(12), containerTypeH2(13), containerTypeH5(14),
   containerTypeH6(15),
  containerTypeU0(16), containerTypeU1(17), containerTypeU2(18), containerTypeU3(19),
   containerTypeU4(20), containerTypeU5(21),
  containerTypeT0(22), containerTypeT1(23), containerTypeT2(24), containerTypeT3(25),
   containerTypeT4(26), containerTypeT5(27), containerTypeT6(28), containerTypeT7(29),
    containerTypeT8(30), containerTypeT9(31),
  containerTypeB0(32), containerTypeB1(33), containerTypeB3(34), containerTypeB4(35),
   containerTypeB5(36), containerTypeB6(37),
  containerTypeP0(38), containerTypeP1(39), containerTypeP2(40), containerTypeP3(41),
   containerTypeP4(42), containerTypeP5(43),
  containerTypeS0(44), containerTypeS1(45), containerTypeS2(46),
  ...
}

END
```

A.1.2 Syntax check of ASN.1 definition

```
ASN.1 Studio Version 6.0.4

Copyright (C) OSS Nokalva, Inc. 2011-2012.  All rights reserved.

This product is licensed for use by Cheiron IT bv, Leiden, Holland - Standards Editor License
66410E related to eCall/European HeERO Project
ASN.1 syntax check result: C0043I: 0 error messages, 0 warning messages and 0 informatory
messages issued.

Compilation summary: The project HGV_Revision2013_SchemeA includes 1 PDUs and 0 ASN.1 values.
```


A.1.3 Example

The example below is shown in ASN.1 value encoding (plain text):

```
value HGVSchemaA ::=
{
  commercialVehicleType tankerSingleCompartment,
  consignorPhone "31207110123",
  alarmInfo
  {
    leakageAlarm FALSE,
    fireAlarm TRUE,
    highTempAlarm TRUE,
    highPressureAlarm TRUE,
    lowPressureAlarm FALSE
  },
  goodsADR
  {
    definedGoodsADR
    {
      {
        cargoUNCode 1203,
        kemlerCode "3",
        packageGroup 2,
        quantityAmount 44,
        quantityUnit qtyInCubicM
      }
    },
    numberOfUndefinedGoodsADR 0
  }
}
```

The same example encoded in UPER (hexadecimal representation, 38 bytes):

```
E2A42318 22123473 1D02598C C58800
```

A.2 Definition of contenst of optionalAdditionalData.data `Schema B`

This section contains the ASN.1 definition of the extra data for `Schema B`.

A.2.1 ASN.1 definition

```
MSD_ADDITIONAL_CV_B_1

DEFINITIONS
AUTOMATIC TAGS ::=
BEGIN

-- Definition can be used to decode data in the data part
-- of optionalAdditionalData in the MSD message.
--
-- It can also be used in a constituted definition of an
-- extended MSD definition like so:
--
-- AdditionalData ::= SEQUENCE {
--   oid  RELATIVE-OID,
--   data OCTET STRING (CONTAINING HGVSchemaA)
-- }

CVADSchemaB ::= SEQUENCE {
  commercialVehicleType            CVehicleType,
  consignorPhone           NumericString(SIZE(1..17)),
  alarmInfo                CVAlarmType  OPTIONAL,
  numberOfGoodsADR         INTEGER (0..15),
  numberOfGoodsNonADR      INTEGER (0..15),
  cargoInformationEndpoint CVcargoInformationEndpoint OPTIONAL
}
```