Intelligent transport systems — eCall — Operating requirements for third party support

National foreword

This British Standard is the UK implementation of EN 16102:2011.

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Contents

Foreword

This document (EN 16102:2011) has been prepared by Technical Committee CEN/TC "Road transport and traffic telematics", the secretariat of which is held by NEN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2012, and conflicting national standards shall be withdrawn at the latest by June 2012.

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Introduction

The scale of death and injury on roads in Europe needs to be fully comprehended to understand the need for an automated method to alert about accidents. In 2008, there were 38 900 fatalities in the EU-27. The figure for 2009 is around 34 500 fatalities. The trend for 2001 to 2008 is around a 5 % annual reduction. Road accident Injuries are in the region of 1,7 million (2008). An automated method of accident notification has been estimated to have the potential to save up to 2 500 fatalities annually in the EU-27 when fully deployed, and reduce the severity of injuries in order to bring significant savings to society in terms of reduced costs and human suffering.

Emergency calls made from vehicles can assist with the objectives of significantly reducing road deaths and injuries, but drivers often have poor (imprecise) location awareness, especially on interurban roads or abroad. Additionally, in many situations, the car occupants may not be in a position to call using a normal mobile phone.

The situation is worse for those travelling abroad: a high (and increasing) number of vehicles travelling outside their home country and this is therefore also contributing to the need for an automated emergency call system in vehicles. In the EU there are over 100 million trips to another EU country per year (EU-15). 65 % of people feel less protected while abroad and most do not know which number to call in an emergency (in some countries over 60 %). Language problems are pertinent and may render communication difficult.

In the most crucial cases, the victim(s) may not be able to call because they have been injured and/or trapped, do not know the local number to call, and in many cases, particularly in rural situations and late at night, there may be no witnesses who happen to have a mobile phone or a sense of community.

The objective of implementing an in-vehicle emergency call system is to automate the notification of a traffic accident. One major benefit is to transmit *data* from the vehicle.

There are two means to provide an *eCall* from a vehicle:

— One method is to use the *pan-European eCall*, which sends the voice call and the *data* directly to the PSAP, using the emergency number 112.

— Another method consists of using a 'third party services supported eCall', referred to as *TPS-eCall* in this document. This is an *eCall* variant which includes the transmission of *data* to a Third Party Service Provider or TPSP, and the establishment of a voice call with this TPSP. In the case of an emergency 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 the *most appropriate PSAP*. The TPSP also provides voice communication between the PSAP and the *vehicle occupants* by setting up a conference call for example, if this is required by any of the parties involved and allowed by the PSAP.

This European Standard specifies the generic operational requirements for the *TPS-eCall*.

1 Scope

The objective of implementing a 'Third Party' emergency call is to provide emergency assistance and an automated notification of a traffic accident, using 'Third Party Services' packages where such services are supported between the vehicle and a Third Party Service Provider in countries where such notification of an emergency are supported by PSAPs.

The first objective of this *TPS-eCall* is to transfer an emergency message from a vehicle to a Third Party Service Provider (TPSP) in the event of a crash or an emergency, 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 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 vehicle if required by the PSAP.

This European Standard specifies the general operating requirements and intrinsic procedures for an in-vehicle *eCall* via the services of a Third Party Service Provider (TPSP).

This European Standard also provides definition of the service(s) provided to the PSAP and the method and form of service delivery.

NOTE   An important part of the *TPS-eCall* is the *Minimum Set of Data* (MSD). The operating requirements for the MSD are determined in this European Standard, but the form and *data* content of the MSD is not defined herein. The common European MSD for *eCall* is determined in EN 15722. Additional *data concepts* may also be transferred, and it is recommended that any such *data* concepts be registered using a *data registry* as defined in EN ISO 24978 to ensure that they can be understood by the recipient.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15722:2011, *Intelligent transport systems — eSafety — eCall minimum set of data (MSD)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
112
single European emergency call number

3.2
data
representations of static or dynamic objects in a formalized manner suitable for communication, interpretation, or processing by humans or by machines

3.3
data concept
any of a group of data structures (i.e. object class, property, value domain, *data elements*, message, interface dialogue, *association*) referring to abstractions or things in the natural world that can be identified with explicit boundaries and meaning and whose properties and behaviour all follow the same rules

3.4
data dictionary
organized and constructed (electronic database) compilation of descriptions of *data concepts* that provides a consistent means for documenting, storing and retrieving the syntactical form (i.e. representational form) and the meaning and connotation of *eCall data concept*

NOTE   A *data registry* provides definition of the metadata concept, it does not store the values of individual instances. For example, a *data registry* with a *data concept* 'registration plate identification of a vehicle' defines how the identification numbers/letters are represented. It does not contain a list of particular licence plates.

3.5
data element
single unit of information of interest (such as a fact, proposition, observation, etc.) about some (entity) class of interest (e.g. a person, place, process, property, concept, *association*, state, event) considered to be indivisible in a particular context

3.6
data registry
registration process to store *data* definitions, characterized in a consistent manner, as determined according to the provisions of an international standard, in a *data dictionary*

NOTE   Neither a *data registry* nor a *data dictionary* provides a database of specific values of instances of the use of the registry/dictionary in an implementation.

3.7
E164
ITU-T recommendation which defines the international public telecommunication numbering plan used in the PSTN and some other *data* networks

3.8
eCall
emergency call generated either automatically via activation of in-vehicle sensors or manually by the *vehicle occupants*; when activated, it provides notification and relevant location information to the most appropriate *Public Safety Answering Point*, by means of 'mobile wireless communications networks', carries a defined standardised *Minimum Set of Data*, notifying that there has been an incident that requires response from the emergency services and establishes an audio channel between the occupants of the vehicle and the *most appropriate Public Safety Answering Point*

[EN 16072:2011]

3.9
IVS dataset
minimum set of vehicle-generated *data elements* which are essential for the performance of the *TPS-eCall*

NOTE 1   The format and content of this 'IVS dataset' is not defined by this European Standard, but it needs to be possible for the service provider to create an MSD as defined in EN 15722 based on this 'IVS dataset'.

NOTE 2   This may be a sub-set of the MSD *data elements* as some MSD elements can be inferred/looked-up from other elements by the TPSP.

3.10
Minimum Set of Data (MSD)
standardised *data concept*, comprising *data elements* essential for the notification of a *TPS-eCall* to a PSAP

[EN 15722:2011]

3.11
Network Access Device (NAD)
see *mobile wireless communications network device*

3.12
pan-European eCall
eCall provided by a 'Teleservice 12' mobile communication network, as defined in EN 16072

3.13
Public Safety Answering Point (PSAP)
physical location where emergency calls are first received under the responsibility of a public authority or a private organisation recognised by the government (see also *most appropriate PSAP*)

NOTE   A number of different instantiations of PSAP service are supported within this European Standard.

3.14
most appropriate PSAP
PSAP defined beforehand by national authorities to cover emergency calls from a certain area or for emergency calls of a certain type (see also PSAP).

NOTE   A number of different instantiations of PSAP service are supported within this European Standard. A PSAP may be a Public Authority or a private service provider operating under the control of a Public Authority.

3.15
PSAP emergency telephone number
telephone number, generally conformant with the E164 general numbering scheme, which a TPSP can dial internationally in order to establish a voice connection to the PSAP as part of a *TPS-eCall notification*

3.16
PSAP emergency TSD-push address
secure URL provided by a PSAP, which allows an approved *TPS-eCall notifier* to push a *TPS-eCall set of data*, including a *TPS-eCall unique reference identification*, to this PSAP, using methods standardised in this European Standard

3.17
TPS-eCall set of data (TSD)
dataset in a format standardised within this European Standard, which can be used by a TPSP acting as a *TPS-eCall notifier* to forward details of a *TPS-eCall* to a PSAP

3.18
TPS-eCall generator
occupant of a vehicle or equipment within a vehicle that has cause to trigger a *TPS-eCall transaction* by automatic or manual means

3.19
TPS-eCall responder
organisation specifically trained for managing assistance or emergencies, which receives a *TPS-eCall* and notifies the vehicle or caller that the call has been received

NOTE   The *TPS-eCall responder* and *TPS-eCall notifier* will often be the same organisation but, to clarify the separate stages involved in a *TPS-eCall*, distinct roles and definitions are used in this European Standard. Within the *TPS-eCall responder* different organisations can handle the voice connection and the *data* management of an *eCall* event.

3.20
TPS-eCall notification
notification from a *TPS-eCall notifier* to a *most appropriate PSAP* about a *TPS-eCall* likely to require assistance from the emergency services, and provision of all relevant information concerning the event (if necessary collating *data* from the 'IVS dataset' and *data* from other sources), including the information specified as mandatory by the MSD standard EN 15722 as a minimum

3.21
TPS-eCall notifier
organisation specifically trained for managing emergencies, which performs a *TPS-eCall notification*; as a consequence of a *TPS-eCall responder* receiving a *TPS-eCall* likely to require assistance from the emergency services

NOTE 1 The *TPS-eCall notifier* also makes best efforts to provide voice communication between the PSAP and the *vehicle occupants*, at least by setting up a conference call, if this is required by any of the parties involved.

NOTE 2 The *TPS-eCall responder* and *TPS-eCall notifier* will often be the same organisation but, to clarify the separate stages involved, distinct roles and definitions are used in this standard for each stage of the *TPS-eCall*. Within the *TPS-eCall responder,* different organisations can handle the voice connection and the *data* management of an *eCall* event.

3.22
TPS-eCall service
capability of a vehicle to be a *TPS-eCall generator*, triggering of a *TPS-eCall transaction*, intent of a TPSP to be a *TPS-eCall responder* and provision of that response including where necessary a *TPS-eCall notification*

3.23
TPS-eCall transaction
transmission across a mobile network of a set of *data* from a vehicle to a *TPS-eCall responder* and the establishment of a voice channel between the vehicle and the *TPS-eCall responder*

3.24
TPS-eCall
'third party services supported eCall': *eCall* variant as described and defined in this European Standard

NOTE   In summary, it includes the transmission of the 'IVS dataset' (plus possibly additional *data*) from the vehicle to a TPSP, and the establishment of a voice call with this TPSP. In the event of an emergency 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 *vehicle occupants*, at least by setting up a conference call, if this is required by any of the parties involved.

3.25
TPS in-vehicle equipment
equipment within the vehicle that provides or has access to in-vehicle *data* required for the 'IVS dataset' to effect the *TPS-eCall transaction* via a public mobile wireless communications network providing a link between the vehicle and a *TPS-eCall responder*

3.26
TPS in-vehicle equipment provider
provider of *TPS in-vehicle equipment*

NOTE   The *TPS in-vehicle equipment provider* may be the *vehicle manufacturer* or the provider of aftermarket equipment.

3.27
TPS in-vehicle system (TPS-IVS)
TPS in-vehicle equipment together with the means to trigger, manage and effect the *TPS-eCall transaction*

3.28
TPS In-Vehicle System provider
provider of a *TPS In-Vehicle System*

NOTE   The *TPS In-Vehicle System provider* may be the *vehicle manufacturer* or the provider of aftermarket equipment.

3.29
TPSP
Third Party Service Provider organisation, recognised by the national rescue authorities as being allowed to transmit *TPS-eCall* to them, and compliant with the requirements of this standard

NOTE   The TPSP has two roles; *TPS-eCall responder* and *TPS-eCall notifier*.

3.30
TPSPCallbackNumber
telephone number of a prioritised voice contact at the TPSP call centre which can be used by the PSAP in case a subsequent call-back is required to request more details about the emergency or even to speak to *vehicle occupants*

3.31
TPS-eCall unique reference identification (TPS-eCall-UID)
unique standardised reference identification assigned by the TPSP to a given *TPS-eCall*

3.32
TPS-eCall short reference identification (TPS-eCall-SID)
shortened form of the *TPS-eCall-UID*, which is restricted to current and recent incidents, designed to be appropriate for forwarding verbally to a PSAP operator, to allow less-equipped PSAPs to refer to a specific *TPS-eCall set of data* for a current or recent incident

3.33
vehicle manufacturer
entity which first assembles the vehicle and may provide a 'TPS in-vehicle system' as part of its specification and subsequently sells the vehicle directly or via an agent

3.34
vehicle occupant(s)
person(s) inside the vehicle

3.35
VehiclePhoneNumber
telephone number of the *TPS In-Vehicle System* which may be used to attempt a call back to the vehicle

4   Symbols and abbreviated terms

ACD   Automatic Call Distribution

CLI   Caller Line Identifier

GIS   Geographic Information System

GNSS   Global Navigation Satellite System

GSM   Global System for Mobile communications

HMI   Human Machine Interface

TPS-IVS   *TPS In-Vehicle System*

MSD   *Minimum Set of Data*

MNO   Mobile Network Operator

NAD   *Network Access Device* (e.g. a GSM or UMTS module)

PSAP   *Public Safety Answering Point*

SID   Session Identification

TPS   Third Party Services

TPSP   Third Party Service Provider

TSD   *TPS-eCall set of data*

5   High level functional requirements

5.1 General high level functional requirements

The high level functional requirements of the *TPS-eCall* service are as follows:

— in the event of an accident, the *TPS-IVS* shall automatically determine whether or not to trigger a *TPS-eCall* and, when appropriate, make such a call automatically;

— a *TPS-eCall* shall also be able to be triggered manually;

— the TPS In-Vehicle System shall include an integrated Network Access Device (NAD), e.g. a GSM module (including a valid and activated SIM Card) and a GNSS system. Upon triggering a *TPS-eCall*, as defined in 8.2, the *TPS-IVS* shall attempt to send an 'IVS dataset' to the relevant *TPS-eCall responder*;

NOTE 1   If some *data elements* can be accurately inferred by the TPSP (e.g. vehicle type based on a VIN), these elements may not necessarily be sent from the vehicle. Additional information may be provided by the TPSP.

— in countries for which the necessary organisation has been set up, a Third Party Service Provider shall act as a *TPS-eCall responder* to receive and respond to a *TPS-eCall transaction* from the vehicle, including determining whether or not there is a need to notify the *most appropriate PSAP* about the incident;

— in case of an emergency likely to require assistance from the emergency services, a TPSP:

— shall act as a *TPS-eCall notifier* to request such assistance from the *most appropriate PSAP*; to provide the *most appropriate PSAP* with all relevant information (as determined in this European Standard);

— shall make best efforts to establish a voice connection initially between the vehicle and the relevant TPSP and subsequently shall make best efforts to make a direct voice connection between the occupants of the vehicle and the PSAP if this is required by the PSAP (see also 5.3);

NOTE 2   Additional information may be provided to the PSAP.

— the TPSP shall be able to attempt to re-establish the voice communication with the vehicle as long as the *VehiclePhoneNumber* is known.

NOTE 3   Although normally available, due to the nature of the mobile networks, it cannot be 100 % technically guaranteed that the *VehiclePhoneNumber* is known in all cases.

5.2 TPS-eCall generic architecture

A very high level generic architecture for *TPS-eCall* is described in Figure 1.
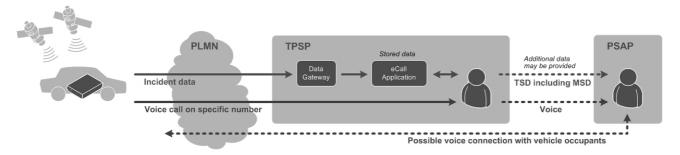
Figure 1 — *TPS-eCall* system overview

The relationship between the *TPS-eCall* and the *pan-European eCall* is shown in Figure 2 below:
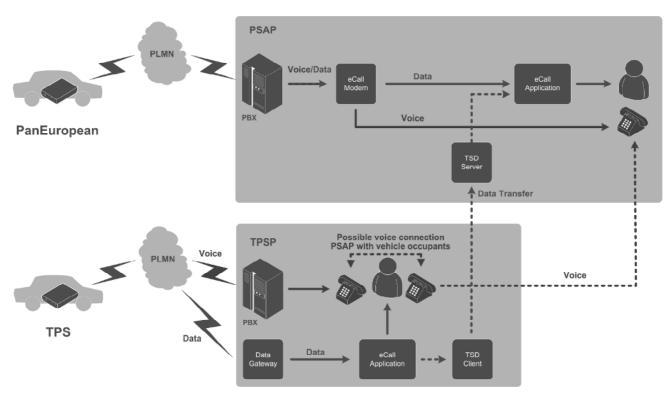
Figure 2 — End-to-end *pan-European eCall* and *TPS-eCall* systems connected to an eCall enabled PSAP

5.3 TPS-eCall operation sequence

The generic *TPS-eCall* functional operational sequence is as follows:

The *TPS-eCall generator* initiates the *TPS-eCall* by whatever means (such as sensors/vehicle-processors) automatically triggered and/or manually triggered. The *TPS-eCall* (between car and TPSP) consists of two elements:

— the data ('IVS dataset') provided by the *TPS-IVS*;

— a voice (audio) call between the TPSP and the occupants of the vehicle.

The Mobile Network Operator (MNO) shall treat the *TPS-eCall* as any other call and shall include the Caller Line Identifier (CLI).

The MNO shall establish the E164 call and transmit the *data* to the appropriate TPSP, according to the relevant subscriber service level agreement.

It shall be possible to verify whether the *data* has been properly received and a mechanism shall be provided in order to retransmit the *data* if necessary.

In case of an emergency likely to require assistance from the emergency services, the TPSP shall then send all necessary information including at least the mandatory *data* from the MSD (if necessary collating *data* from the 'IVS dataset' and *data* from other sources) to the *most appropriate PSAP* using the supported interface for *data* transmission to this PSAP, e.g. the PSAP interface contained in this standard, and the TPSP shall make best efforts to establish an audio/voice link between the PSAP and the occupants of the vehicle, if this is required by the PSAP.

5.4 Privacy aspects

All stakeholders involved are obliged to comply with all EU directives related to the protection of *data* and the privacy of the citizens.

This does not prevent the Third Party Services package providers to offer, at their discretion, any supplementary service, provided they respect EU regulations concerning privacy.

NOTE   At the time of developing the standard the European Directives 95/46 and 2002/58 apply.

6   Transmission from vehicle aspects

6.1 General requirements for the transmission from vehicle

Regardless of the wireless and wired transmission technologies employed in the provision of *TPS-eCall*, the 'TPS-eCall system provider' shall at all times ensure that they employ a reliable means of transmission in respect of

⎯   the *data* transmission from the vehicle to the TPSP,

⎯   the MSD transmission from the TPSP to the PSAP, and

⎯   where required by the PSAP, in respect of the establishment of a voice connection between the PSAP and the occupants of the vehicle.

The *TPS-IVS* shall implement adequate systems in order to ensure that the 'IVS dataset' is reliably sent and will be reliably received by the *TPS-eCall responder*.

The *TPS In-Vehicle System provider* shall show that the transmission of *data* from the vehicle to the TPSP shall be successful with at least 95 % success rate in less than 20 seconds from an area where the mobile radio strength indicator of a network supported by the *TPS-IVS* (RSSI as defined in ETSI standards) is better than -99 dBm, including multiple attempts if necessary.

The *TPS In-Vehicle System provider* shall show that the establishment of a direct voice connection between the occupants of the vehicle and the *TPS-eCall responder*, shall be successful with at least 95 % success rate from an area where the mobile radio strength indicator is better than -99 dBm, including multiple attempts if necessary.

NOTE 1   Transmission time may be dependent on the chosen technology.

NOTE 2   The RSSI figures will be different for networks other than GSM.

NOTE 3   Reducing the *data* transmission time would be advantageous.

6.2 Dual-channel transmission

In order to maximise the chances that the 'IVS dataset' is reliably received by the *TPS-eCall responder*, especially in remote areas, it is recommended that where the system uses a single channel for voice and *data*, a back-up capacity using another channel (e.g. SMS, GPRS, …) for *data* is provided wherever practicable when the attempt to alert the TPSP via the single channel is not successful.

6.3 Performance of the transmission

6.3.1   Performance criteria for the TPS-eCall service chain

A *TPS-eCall* generation sequence shall be commenced within one second after the confirmed triggering methods specified in 8.3.2 (automatic) or 8.3.3 (manual).

After the trigger has been distributed, and the *TPS-IVS* has registered with a suitable mobile network, the 'IVS dataset' begins to be transmitted, and the voice call is established between car and TPSP. It is noted that, in some poor radio coverage areas, the *data* will be successfully transmitted, but no conversation will be possible even if a telephone circuit can be established with TPSP.

The *data* transmission of the 'IVS dataset' shall typically be completed within 20 s, this time being measured from the successful establishment of the voice call.

6.3.2   Performance criteria for additional data

There is no requirement specified concerning the time for the transmission of any additional *data*.

6.4 Routing of a TPS-eCall

The *TPS-eCall* may be routed to a TPSP which is not located in the country from which the car is calling, provided this TPSP is compliant with this standard.

The final destination of the *data* and the voice call shall be the same TPSP operator.

Matching the *data* to the relevant voice call is the responsibility of the TPSP. This standard does not specify the method that is to be used to achieve this.

6.5 Call back to vehicle

In the event of a disconnection of the voice communication, a call-back voice connection shall be possible between the TPSP and the *TPS-IVS*, as long as the *VehiclePhoneNumber* is known.

This call-back functionality is described in 8.6 and 9.11.

6.6 Termination of the voice call

An in-progress voice call shall not be interrupted by the *TPS-IVS*.

6.7 Prioritisation of a TPS-eCall

A *TPS-eCall*, whether generated automatically or manually, shall normally be given the highest priority on the use of whatever wireless networks are used by the 'TPS in-vehicle system' for a *TPS-eCall* transaction, except where the same radio medium is required for higher priority time-critical active safety messages.

In the event of a *TPS-eCall* initiation, any communication medium that is supported by the *TPS in-vehicle equipment* for a *TPS-eCall transaction* shall terminate or suspend any other communication session that is in progress and in conflict until the *TPS-eCall* is terminated, unless this is required for time-critical active safety messages.

6.8 Failure situations

Different transmission failure situations can happen in the *TPS-eCall* service chain, particularly:

— the *data* has been successfully transmitted, but no voice call is established;

— the voice call has been successfully established, but no *data* was received.

In these situations, the TPSP shall do their best to solve the situation.

It is recognized, that in these failure situations, it may occur that no service or only limited service provision is possible by the TPSP.

7 Data

7.1 Generic requirements for TPS-eCall data

The *data* to be transmitted by the *TPS-IVS* (the 'IVS dataset'), shall include all or some of the information required to provide MSD *data elements* specified in EN 15722, with the possibility (at the discretion of the TPSP) to include some optional or additional *data*. If all the information necessary to provide *data elements* specified as 'Mandatory' in EN 15722 are not transmitted by the *TPS-IVS*, then the TPSP shall obtain the missing information from another source of information (for instance, a VIN Database) and combine these with the 'IVS dataset' before the transmission of the MSD to the PSAP.

Where the TPSP requires information from the vehicle in order to provide a 'Mandatory' (M) *data element* of the MSD as determined in EN 15722, then this information shall always be provided and transmitted by the *TPS-IVS*.

The transmission of 'IVS dataset' information required to provide optional *data* within the MSD are at the discretion of the *TPS in-vehicle equipment provider*, and are only optionally provided by the *TPS-IVS*.

7.2 Location data

7.2.1 Generic requirements for location data

The format of the location *data* provided as part of the *TPS-eCall notification* shall be as defined in EN 15722.

The reference point shall be the last known position of the vehicle as determined by the on-board system at the time of message generation. It shall be the responsibility of the *TPS in-vehicle equipment provider* to determine how the location *data* is established.

7.2.2 Insufficient data provided by the GNSS system

If the quality of information is inadequate to provide reliable location *data* when the 'IVS dataset' is to be provided , the 'IVS dataset' shall include an information element informing that the GNSS system provides insufficient *data*.

In this event, the location data provided in the 'IVS dataset' shall be the *TPS in-vehicle equipment provider's* best estimate based on the information available.

NOTE 1   This may be, for instance, the last location obtained where there was adequate *data* source available, or a calculation based on that *data* and other information, for example a dead-reckoning.

The position confidence bit within the MSD provided as part of the *TPS-eCall notification* shall be set as determined in EN 15722. This flag should only have the value 'position can be trusted' if a 2D or 3D position fix from current GNSS reception is available or the *TPS in-vehicle equipment provider*/ TPSP has another means of being confident that the information provided is within the limit set by EN 15722.

NOTE 2   Where the flag has the value 'low confidence in position' this does not mean that the information is necessarily wrong, only that it may be unreliable or lack precision.

7.2.3   Vehicle location

The *TPS-eCall* shall be able to reliably determine the driving direction/carriageway of the vehicle. The vehicle location *data* included in the 'IVS dataset' sent to the TPSP shall be sufficient to generate *data elements* that identify vehicle's exact location and facilitate determining the best access way to the emergency. As an example solution, optional 'Recent vehicle location n-1' and 'Recent vehicle location n-2' *data* may be included in the *data* that is sent to the TPSP. If this is not the case, the TPSP may provide an alternative solution that works as well as or better than using recent vehicle locations.

Manufacturers of 'TPS in-vehicle equipment' shall ensure that any recent location information provided is not sufficient for this information to be used for determining vehicle speed. However, the means to ensure this are not defined in this European Standard.

EXAMPLE   Typical means may be a randomness between which recent location fixes are used, withholding time coordinate information etc.

7.3 Optional additional data

"*Optional additional data*" elements as described in EN 15722 may be available to the TPSP and may be used at their discretion.

At the discretion of the *TPS in-vehicle equipment provider*, optional additional *data concepts* may also be provided as part of the 'IVS dataset'.

7.4 Data to transmit to PSAP: TPS-eCall set of data

7.4.1   General

The *TPS-eCall set of data* includes the *data* specified as 'Mandatory' in EN 15722. It may also include *data* specified as 'Optional' in the same standard.

The *TPS-eCall set of data* shall conform to the formal format description defined within Annex A.

NOTE 1   Because the *TPS-eCall set of data* contains not only the MSD but also additional *data*, an XML format is used, and the XML presentation option of the MSD as formally specified using an XML schema description within EN 15722 is used within the *TPS-eCall set of data* as defined in Annex A.

The actual presentation of *data* other than the MSD in the call handling system at the PSAP shall be at the PSAP's discretion.

The *TPS-eCall set of data* shall include a *TPSPCallbackNumber* and a *VehiclePhoneNumber* (if available) in case the PSAP needs to call back for more details later.

NOTE 2   A direct PSAP call-back to the *VehiclePhoneNumber* may conflict with other activities and the IVS may not be reachable (e.g. if the occupants are still connected to the 'TPS-eCall-Receiver' operator), and therefore the *TPSPCallbackNumber* may be more appropriate for the PSAP to use for a call-back.

The *TPS-eCall set of data* may optionally include a URL to access a textual/graphical representation of the same information (see above).

The *TPS-eCall set of data* may include optional additional *data*. Such optional additional *data*, at the discretion of the service provider may include, for example: number of injured persons, what has happened, road lane, km on highway, passenger responding via voice, vehicle colour, licence plate, make, model, street address.

NOTE 3   It is recommended that any such optional addition *data* concepts be registered using a *data registry* as defined in EN/ISO 24978, if available, to ensure that they can be understood by the recipient.

A formal description for an example format of optional additional *data* is given in Annex C.

The *TPS-eCall set of data* shall also include a *TPS-eCall unique reference identification* (*TPS-eCall-UID*), and a *TPS-eCall short reference identification* (*TPS-eCall-SID*).

NOTE 4   These identifications may assist matching of voice to *data*.

These *data concepts* shall be elaborated as follows in 7.4.2 and 7.4.3.

7.4.2 TPS-eCall-UID definition

17-characters VIN + 10-digit timestamp (seconds since 1970.01.01 00:00).

e.g. for the MSD example in EN 15722 'WMIVDSVDSYA1234560123456789'.

If VIN is unknown, the missing part shall be filled with the character '0'.

If timestamp is not delivered by the *TPS-IVS* the TPSP shall fill the timestamp with his receiving time.

When looking for matches, a first comparison should be made using with both elements (all 27 characters).

If this fails, a second comparison should be made using only the VIN part (first 17 characters).

If this fails, a third comparison should be made using only time (last 10 characters).

7.4.3 TPS-eCall-SID definition

3-characters TPSP-code + 4-digit incident-code

E.g. ATX1234, ADA2345, IMA3456, MAG5678

Possible TPSP codes would need to be maintained centrally to avoid any duplicate assignments. The TPSP code shall be unique across all European countries.

8   TPS In-Vehicle System requirements

8.1 General TPS-IVS requirements

The *TPS in-vehicle equipment* and communication system shall comply with the requirements in the Directives 2004/104/EC, EMC 2004/108/EC and R&TTE 1999/5/EC.

8.2 Modes of operation

The *TPS-eCall* shall be automatically enabled on vehicle ignition-on.

8.3 Triggering

8.3.1 Triggering overview

The *TPS-eCall* shall be triggered automatically or manually as determined below.

For any additional services which may be implemented in the vehicle, their activation conditions may be freely determined by the equipment provider.

8.3.2 Automatic triggering strategy

Without specifying the means of achievement, the following general requirements shall be met:

— the automatic 'TPS in-vehicle system' shall be armed when ignition is ON, and shall be disarmed when ignition is OFF. The automatic *TPS-eCall* should not be triggered if ignition is OFF;

— the automatic *TPS-eCall* trigger signal is generated by equipment installed in the vehicle to identify a probable collision. The nature of this device and its operational process shall be at the discretion of the *TPS In-Vehicle System provider*.

The *TPS-eCall* shall be generated to reflect as many different crash types as possible (e.g. front, rear, side crashes). The automatic *TPS-eCall* trigger shall be safe, robust, reliable, and designed so as to maximise the number of valid *TPS-eCalls* whilst minimising the number of false *TPS-eCalls*, generated by the *TPS-eCall generator*.

EXAMPLE   A signal generated by the airbag control module and/or a combination of other sensor *data* (e.g. gyro, radar, axle load, speed), or other crash information status (a severe accident has happened), e.g. created in the airbag control module without deployment of an airbag (e.g. rear crash).

8.3.3 Manual triggering strategy

Initiation of a *TPS-eCall* trigger signal shall be at the determination of an occupant of the vehicle, in accordance with the equipment provisions provided by the *TPS In-Vehicle System provider*.

The *TPS In-Vehicle System provider* shall design and implement reasonable precautions to avoid accidental manual triggering by the *TPS-eCall generator*. No specific requirements are determined within this European Standard.

Appropriate education shall be provided in vehicle user manuals, or otherwise given to the users, on the proper use of the *TPS-eCall* system in order to minimise the number of manual calls without emergency content.

The availability of the manual triggered *TPS-eCall* with ignition off shall be at the discretion of the *TPS In-Vehicle System provider*.

8.4   Termination of an in progress TPS-eCall

If a *TPS-eCall* is ongoing while ignition is being switched to OFF, that call shall not be terminated automatically. The system shall disarm only after the *TPS-eCall* has been terminated, on TPSP request.

8.5 Set-up of the voice call

The *TPS-IVS* shall attempt to enable a 'hands-free' conversation between the occupants of the vehicle and the *TPS-eCall responder*.

The required efficiency of the *TPS-IVS* in terms of success rate is described in 6.12 above. In the event that the *TPS-IVS* cannot establish the voice connection with the *TPS-eCall responder*, and is also unable to send the 'IVS dataset' to the *TPS-eCall responder*, the *TPS-IVS* shall attempt to establish a voice connection between the *vehicle occupants* and a PSAP using the 112 service.

In the event that the *TPS-IVS* cannot establish the voice connection with the *TPS-eCall responder*, the *TPS-IVS* may optionally attempt to establish a voice connection between the *vehicle occupants* and the PSAP using the 112 service.

NOTE   Refraining from calling 112 in case the 'IVS dataset' was sent to the *TPS-eCall responder* may improve the chances that the *TPS-eCall responder* can call back into the vehicle.

If the *TPS-IVS* does not also support *pan-European eCall* in this case, then it shall not set the 'Manually Initiated eCall' (MIeC) or 'Automatically Initiated eCall' (AIeC) *eCall* flag indicator when establishing the above 112 voice connections.

8.6 Call back function

The *TPS-IVS* shall have a mobile telephone number conformant with E164 general numbering scheme.

If a *TPS-eCall* has been successfully terminated by the TPSP, then the *TPS-IVS* shall allow a call-back into the vehicle. Such a call-back after a successfully terminated *TPS-eCall* may be treated with lower priority and it is therefore not necessary to block other vehicle functions to allow this.

NOTE 1   The *vehicle occupant* can also manually trigger a new *TPS-eCall* if the previous *TPS-eCall* has ended.

If the final *TPS-eCall* terminates abnormally (i.e. when no more automatic reconnection attempts will be made) then the *TPS-IVS* shall allow and automatically accept a call-back into the vehicle (e.g. from either the PSAP and/or the TPSP) for at least 3 min after the final voice call has terminated.

NOTE 2   Note, however, that a direct call-back may conflict with other activities and the *TPS-IVS* may not be reachable (e.g. if the occupants are still connected to the 'TPS-eCall-Receiver' operator), and that the *TPSPCallbackNumber* may be more appropriate for the PSAP to use for a call-back.

8.7 Automatic voice call retry

If a *TPS-eCall* voice connection between the *TPS-IVS* and the 'TPS-eCall receiver' is dropped unexpectedly and the *TPS-IVS* has not previously received confirmation from the 'TPS-eCall receiver' that the *TPS-eCall* can be terminated, then the *TPS-IVS* may automatically attempt to re-establish a 'hands-free' voice call to the 'TPS-eCall receiver'. The number of these redial attempts shall be limited. The duration, interval and number of redial attempts shall be a matter for product design and is not defined by this European Standard.

If a *TPS-eCall* has been successfully terminated by the 'TPS-eCall receiver', then the *TPS-IVS* shall not attempt to reconnect to the 'TPS-eCall receiver' unless a new trigger is received.

8.8 Post crash performance of TPS in-vehicle equipment

Following a crash as defined in the following crash tests defined for the European type approval, the 'TPS in-vehicle system' shall transmit the 'IVS dataset', so long as there is a suitable wireless network available to receive the signal:

— frontal crash: Directive 96/79, amended by Directive 1999/98 (or equivalent ECE R94-01);

— lateral crash: Directive 96/27 (or equivalent ECE R95-02).

The *TPS in-vehicle equipment provider* shall make best reasonable effort to enable an audio channel to be established so long as the relevant equipment has not been destroyed in the crash. Ideally, it should be possible to maintain a voice communication for at least 8 min.

NOTE   In cases where it is impracticable to test using real crash tests, for example after market devices, equivalent functionality shall be demonstrated.

8.9 Energy supply

The installed *TPS-IVS* shall demonstrate an adequate energy supply to conform to the post crash performance requirements in 8.8.

If necessary, or to provide a solution which is less dependent on a particular vehicle installation, this requirement may be achieved by the use of an appropriate vehicle-independent power supply.

8.10 In-vehicle Human Machine Interface (HMI) aspects

8.10.1 General

The human machine interface of the *TPS In-Vehicle System* shall have a means to inform the driver if the *TPS In-Vehicle System* is not functioning properly.

As defined within this European Standard, a *TPS-eCall* may be triggered automatically or manually. The consequences on the requirements for a *vehicle occupant* differ between these options.

8.10.2 HMI aspects in the case of manual triggering

Vehicles shall be equipped with a manual means for 'SOS' activation. The design and positioning of this activation means shall be a function of product design and is not defined in this European Standard.

The design of the means to manually trigger a *TPS-eCall* shall be such to avoid accidental triggering. The means by which this is achieved is at the discretion of the *TPS In-Vehicle System provider*.

Adequate information and marking shall be displayed on the means for manual operation. Such information and marking will be in conformance with the European Recommendation on 'Human Machine Interactions' (ESOP HMI, current version: C(2006) 7125 final, 22 Dec 2006).

8.10.3 Alert of the vehicle occupants (automatically or manually triggered)

Subsequent to the triggering of the event, whether initiated automatically or manually, the *TPS in-vehicle system (TPS-IVS)* shall, wherever possible, alert the *vehicle occupants* that a *TPS-eCall* message will be sent and that the *TPS-IVS* shall attempt to make a direct voice connection with the TPSP. The *TPS-IVS* shall provide clear visual and/or audible information regarding the status of the voice connection (TPS-IVS-MNO-TPSP) when the *TPS-IVS* is automatically or manually activated.

The means by which this alert is made and the nature of the alerts shall be a function of product design and it is not defined in this European Standard.

8.11 Antenna

The installed *TPS-IVS* shall demonstrate an adequate antenna for post-crash mobile network reception in order to comply with the requirements in 8.8. If necessary, or to provide a solution which is less dependent on a particular vehicle installation, this may be achieved by the use of an appropriate vehicle-independent antenna.

9   Service provider

9.1 Generic TPSP requirements

This European Standard is designed to ensure an adequate level of quality for the service provided.

The TPSP shall have a defined quality policy, and shall be able to evidence its quality procedures.

9.2 Operators

The TPSP call centre operators who handle the *TPS-eCall* shall have received appropriate training for handling emergencies.

9.3 Automatic Call Distribution

The TPSP call centre shall be equipped with an Automatic Call Distribution system (ACD) or equivalent, providing all the relevant information about the management of the calls. This system shall have a conference call capability, so that the TPSP operators may establish a conference call between TPSP operator, affected *vehicle occupants*, and the PSAP operator, if this is required by the PSAP.

9.4 Map accuracy at TPSP

In the event of a *TPS-eCall*, it is critical to identify the position of the caller from the coordinates provided in the 'IVS dataset' and to derive a location which can be provided to the emergency services. The capability for accuracy may vary according to the local conditions to acquire and process GNSS signals and the equipment installed in the vehicle.

The TPSP shall have an appropriate Geographic Information System (GIS) so that the operator can identify the position of the vehicle and the direction of travel/carriageway. In order to take into account the modifications of the geographical elements (such as the addresses), its geographical database shall be updated as appropriate.

9.5 Test of the data link between the carrier delivering the 'IVS dataset' and the 'TPSP eCall receiver'

The *data* link from the Mobile Network Operator interconnection point to the TPSP access point shall be automatically checked by the TPSP to ensure a permanent connection.

Any failure shall be detected within 5 min.

9.6 Answering time

The call centre of the 'TPS-eCall receiver' shall answer in less than 15 s for 90 % of the voice *TPS-eCalls*, this being calculated over a period of one month.

The TPSP shall use its ACD to provide the necessary statistics in order to prove that this requirement is fulfilled.

9.7 Reception of data without voice call

When receiving an 'IVS dataset' without any voice call from a car within a reasonable delay (e.g. 20 s), the TPSP shall attempt to establish a voice call with the vehicle in order to get the information about the situation.

NOTE   The vehicle automatic redial strategies may impact this delay.

9.8 Procedures for answering the voice calls

A period called 'Pre-qualification time' shall not exceed 90 s, by which time, the situation shall be classified by the TPSP as likely to require assistance from the emergency services or not.

Where relevant after the classification of the *TPS-eCall* as above, the TPSP shall contact the *most appropriate PSAP* to notify them about the emergency as defined elsewhere in this European Standard.

9.9 Notifying the emergency services for their intervention

In case of a situation likely to require assistance from the emergency services, the TPSP shall alert the *most appropriate PSAP*, using the appropriate protocol, to pass on the necessary information (at least the MSD mandatory information elements).

If requested by a national PSAP organisation in advance, criteria shall be agreed and taken into account by the TPSP in their decision as to notify the PSAP about the emergency or not.

NOTE 1   It is recommended that a precise agreement of what constitutes an emergency likely to require assistance from the emergency services is made between PSAP and TPSPs.

At the discretion of the PSAP organisation, this notification protocol may be any agreed means: e.g. voice call, fax or the *data* transmission protocol between TPSP and PSAP. This protocol shall be as defined in Clause 10.

The TPSP shall maintain the audio connection with the vehicle where possible at least until the PSAP has confirmed that they have received all necessary details concerning the emergency and that the audio link with the vehicle can be ended.

The TPSP shall conform to the PSAP requirements and ways of working according to the 'Service Level Agreement' or standard, if such a 'Service Level Agreement' or standard exists in the country, between the TPSP and the PSAP organisation and client.

The TPSP shall be able to handle a cross border *TPS-eCall* from countries for which the necessary organisation has been set up to support *TPS-eCall* and shall route a cross border *TPS-eCall* to the relevant *most appropriate PSAP*, determined dependent on the received vehicle location.

NOTE 2   Agreements may be established in advance between a TPSP and a national PSAP organisation for a given country, in which case these should be taken into account when defining TPSP procedures about whether to establish voice communication between the *vehicle occupants* and the PSAP only after specific PSAP request, or as a default procedure.

NOTE 3   It may be appropriate that any customer agreement associated with *TPS-eCall* ensures that the TPSP has the right to remain in the call even if the PSAP is connected with the *vehicle occupants*.

9.10 Linguistic aspects

The *TPS-eCall* provider shall clearly communicate to their customers about which language(s) are supported within the service being offered. The TPSP operator shall be able to speak the language of the (local) *most appropriate PSAP*. This requirement may be fulfilled through a conference call.

9.11 TPSP call back number

The TPSP shall provide a call back number, which can be used by the PSAP in case a subsequent call-back is required to request more details about the emergency or even to speak to *vehicle occupants*. The operator receiving a call-back from a PSAP shall have access to case details, and shall be able to attempt to establish a voice call to the vehicle if necessary and if the *VehiclePhoneNumber* is known.

9.12 Filing

The TPSP shall file all the information about the calls he receives for at least 14 days, whether or not it was considered to be an emergency likely to require assistance from the emergency services, ,in accordance with existing EU and relevant national regulations, especially those in respect of privacy and *data* protection.

In the event of an emergency likely to require assistance from the emergency services, the TPSP shall keep the information during at least six months, in accordance with existing EU regulations and relevant national regulations, namely on privacy and *data* protection.

The maximum conservation duration of the *data* shall be in accordance with the regulations in force.

NOTE   Some national regulations about privacy may request different time periods.

9.13 Backup systems

For the voice calls between vehicles and the TPSP operators, the TPSP shall offer a highly available telecommunication line. The TPSP shall be connected to any fixed telecommunications telephone operator by at least two separate physical routings, connected via at least two different switching centres.

The TPSP shall have a secure electric power supply for the event that the normal electric supply is not working.

9.14 Availability of the technical chain

The availability of the system, within the TPSP area of responsibility including the *data* transmission part and the ACD or equivalent subsystem, shall be higher than 99 % (in time) each month.

TPSPs shall maintain a *data* record to accurately reflect their performance statistics in this respect.

9.15 Technical quality management procedures

Any failure of the TPSP system shall be reported using a quality follow-up report. Any failure shall be examined by the TPSP and the relevant corrections shall be effected inside the system. The number of incidents shall be followed by the TPSP each month, and shall be recorded in a quality follow-up file.

10 Transmission of the emergency to the PSAPs

10.1 General requirements

In the event that the *TPS-eCall responder* decides that a PSAP needs to be notified about the emergency, a method is needed to pass on the emergency details to the relevant PSAP as part of a *TPS-eCall notification*.

The basic need is to transmit all the information about the emergency, including at least all the *data elements* specified as mandatory in EN 15722.

A key part of the *TPS-eCall* is therefore the interface between TPSP acting as a *TPS-eCall notifier*, and the PSAP.

The following methods are proposed as options for achieving this interface.

Each is described, along with some advantages associated with each method.

There are two aspects of a *TPS-eCall notification* from a TPSP to a PSAP: the voice call, and the *data* transmission protocol. The description below is given separately for the transfer of voice and transfer of *data*.

10.2 Relevant contact details

When a TPSP is accepted by a relevant authority it shall have access to up-to-date PSAP details. These details shall include the geographic area for which they are responsible, a *PSAP emergency telephone number* and an indicator as to whether they accept electronic *data*, the format supported and if necessary the *PSAP emergency TSD-push address* and any necessary security access details. In case of any subsequent changes the TPSP shall be informed. Ideally, these details should be available in a centralised manner.

The receiving telephone equipment shall be capable of extracting a Caller-Identifier from the received voice call, and providing this for use in subsequent processes (e.g. for use in case a call-back is necessary later).

The security of the *PSAP emergency TSD-push address* shall be achieved using standardised, commonly used methods.

The *PSAP emergency TSD-push address* may be different for each PSAP, or the same *PSAP emergency TSD-push address* may be used centrally to support multiple PSAP's, according to national or local PSAP organisations.

10.3 Voice communication

As soon as the TPSP has qualified the need for the alert of the *most appropriate PSAP*, the *TPS-eCall notifier* shall establish a voice call with the PSAP.

The 'TPS-eCall receiver' shall be responsible for making every effort to maintain the voice communication with the vehicle as long as this is required by the situation, and at least until the PSAP has been notified and has confirmed receipt of all information, and until the PSAP operator or the *vehicle occupants* agree that the call can be terminated.

The *TPS-eCall notifier* TPSP shall be responsible for making every effort to maintain the voice communication between the PSAP and the occupants of the vehicle as long as this is required to complete the *TPS-eCall notification* and to receive confirmation that all information has been received, at least until the PSAP operator agrees that the call can be terminated.

NOTE   There may be times when the communication link is too poor or busy or equipment is damaged to successfully achieve a voice communication.

10.4 Push transfer of a TPS-eCall set of data (TSD)

A standardised transfer method shall be used as a minimum which is conformant to the description and reference implementation included in Annex A, common to all TPSPs who operate in compliance with this European Standard, in order to enable the PSAP to receive the TSD in a standard machine-readable format so that the PSAP can easily interpret this information.

The *PSAP emergency TSD-push address* as provided in 10.2 shall support the above standardised transfer method, in order to enable a TPSP, when required, to 'push' the 'TSD' to the appropriate location at the PSAP.

NOTE 1   The TSD includes the MSD.

The TPSP shall post the TSD to the *PSAP emergency TSD-push address*.

The PSAP's call-centre systems shall access the received TSD, by reference to a unique *TPS-eCall* identifier as defined in 7.4.3 or 7.4.2, e.g. received via the voice-call. The identification is unique across all vehicles, service providers, and incidents. Using this reference identification, it shall be possible for a PSAP to refer to a *TPS-eCall set of data* associated with a specific *TPS-eCall*.

The PSAP shall subsequently route the emergency call *data* to the same operator(s) handling the voice call.

NOTE 2   Although the requirements refer to the transfer of a *TPS-eCall set of data* (TSD), this includes the transfer of a *Minimum Set of Data* (MSD).

The TPSP also provides corresponding standardised web services for the PSAP via a 'PSAP access address' to allow the PSAP to request a retransmission of *data*, or to inform the TPSP that the PSAP has finished processing the *TPS-eCall*. Detailed descriptions and reference implementations are included in Annex A.
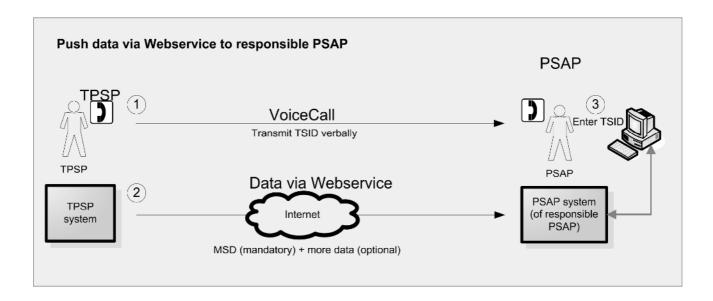

Figure 3 — Transfer of a 'TSD' and use of the *TPS-eCall-SID* using a local PSAP entry point
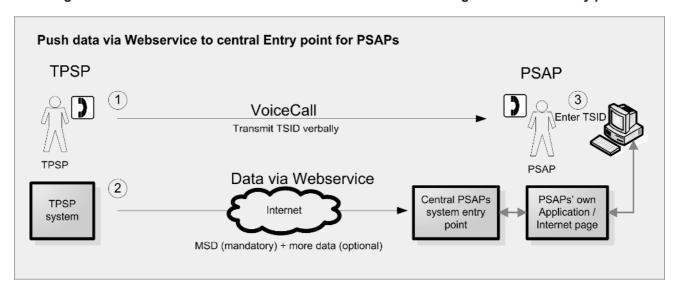

Figure 4 — Transfer of a TSD and use of the *TPS-eCall-SID* using a central PSAP entry point

NOTE 3   The *TPS-eCall-SID* is designed to be appropriate for forwarding verbally to a PSAP operator, to allow less-equipped PSAPs to refer to a specific *TPS-eCall set of data* for a current or recent incident. It allows a more efficient transmission than the long 'TPS eCall UID'.

10.5 Transitional arrangements

While the principal purpose of this deliverable is to specify the operating requirements for *TPS-eCall* support, it is recognised that some equipment installed in vehicles today does not yet have the capability for the full

compliant *TPS-eCall* service provision. Even more importantly, there will also be a period of time where not all PSAPs are equipped to handle the fully automatic *TPS-eCall*. In some cases, these situations might pertain for only a short while, in other cases, they may pertain for several years.

In the meantime, there is equipment in some vehicles and there are PSAPs in every country in Europe, so significant opportunities to save lives and mitigate injuries already exist. However, in order to ease the burden of PSAPs, it would be better if this task is approached in a consistent manner.

Where a *TPS-eCall* system supports all requirements contained in the main body of this standard, but in certain countries the necessary PSAP infrastructure is not yet implemented to support automatic electronic *data* transfer from a TPSP, then such a system may still be deemed *TPS-eCall* compliant.

Two examples of transitional methods are described in Annex B.

11 Test and conformance requirements

Where a TPS-eCall system supports all requirements contained in the main body of this European Standard, but in certain countries, the necessary PSAP infrastructure is not yet fully implemented to support automatic electronic data transfer from a TPSP, then such a system may still be described as TPS-eCall compliant.

12 Marking, labelling and packaging

Aftermarket systems shall clearly indicate the brand of the equipment manufacturer and its country of origin and sale on a label and shall provide a serial number.

Annex A
(normative)

Standardised data interface between TPSP and PSAP

A.1 Summary

This annex contains a description and reference implementations for standardised interfaces to allow a PSAP to receive a TSD from a TPSP, and for a TPSP to receive associated requests and responses from the PSAP.

The interface structure is designed to offer similar functions as described in EN 16062, so that controlling applications can treat *data* exchange for *pan-European eCall* and *TPS-eCall* in a similar manner.

The *TPS-eCall* web service API requires communication initiated from both peers (TPSP and PSAP). This requires a web service server on both peers, and a web service client on both peers.

In cases that TPSP needs to start the communication, the TPSP is the client and the PSAP is the server.

In cases that PSAP needs to start the communication, the PSAP is the client and the TPSP is the server.

NOTE   This same interface definition and reference implementation could be used for forwarding *eCall data* (regardless whether it is from a *TPS-eCall* or a *pan-European eCall*) between any two bodies, e.g. from one PSAP to another, or from a central PSAP to another relevant organization. For example in case of a *pan-European eCall*, which is routed to the wrong PSAP due to GSM cell coverage, even across borders. The only requirement would be that the sender and receiver implement and integrate the relevant Web Services, and that the sender knows the address and login parameters of the destination (PSAP).

A.2   Functionalities

The API provides the following functions:

Table A.1 — API provided functions

API method	Description	Server
Login(username, password, tpspLoginInfo):SID	Authorization using username, password and tpspLoginInfo.	PSAP
Login(username, password):SID	Authorization using username and password.	TPSP
Logout(SID)	End the session with session id = SID.	TPSP and PSAP
pushIND(SID, TPS-eCall-UID)	Initiation: Used to indicate that there is new/updated TSD *data* from TPSP to PSAP.	PSAP
requestEmergencyData (SID, TPS-eCall-UID): TSD	Used for PSAP to request TSD from TPSP.	TPSP
cleardown(SID, TPS-eCall-UID)	Indicate that PSAP have finished processing the emergency call with id = *TPS-eCall-UID*.	TPSP
Ping()	Used to check if communication is ok.	TPSP and PSAP

SID: Session id (created and returned by login() method).

The following figure illustrates the above web service messages.
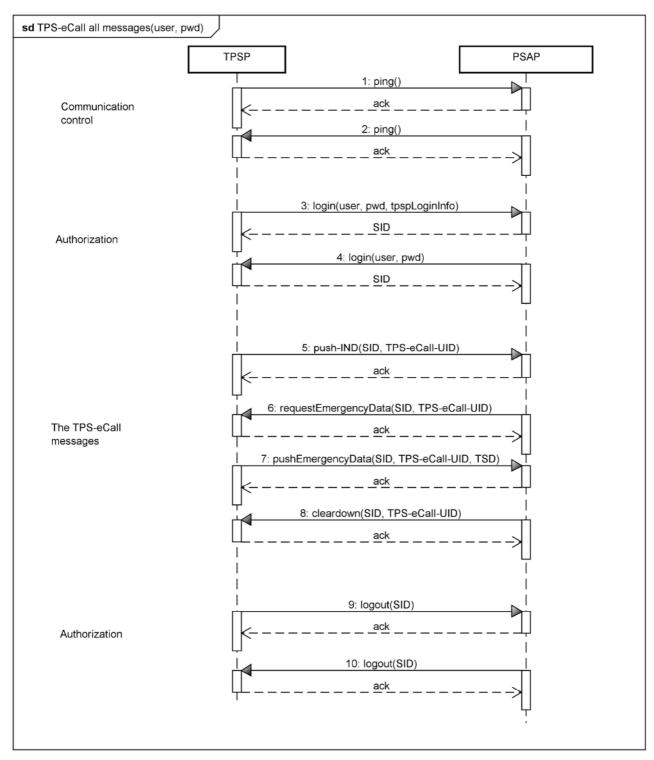
Figure A.1 — Web service messages

A.2.1 The application acknowledgement (ack)

The response from methods with the name ack in the figure above is error/status code. All methods that expect login() will return an ack, the login() will return SID.

Table A.2 — Error/Status codes

Code	Description
0	OK
1	Error 1
2	Error 2
…	…
10	Error 10

A.2.2 Authorization

To authorize the uses of the web service, a login/logout message is used. A user is defined by a username and a password. The session between the login/logout could include multiple *TPS-eCall* cases. A session could continue over several days. The login/logout should be implemented on both TPSP and PSAP.

The login call by TPSP includes a tpspLoginInfo object. This object contains login information (*username*, *password* and *address* to the TPSP web service server) for the PSAP to use for its login function towards TPSP.

The response from a login is the sessionId (SID), if the SID = null, the login has failed. The session id is created by the server and should be unique (e.g. SID = username + timestamp in milliseconds). The SID is used in the *TPS-eCall* messages. If the SID becomes invalid the system (PSAP or TPSP) shall renew the SID, this is done by a new login() call.

The response from a logout (the ack) is an error/status code, ack = 0 = ok.

Both TPSP and PSAP shall request for a login.

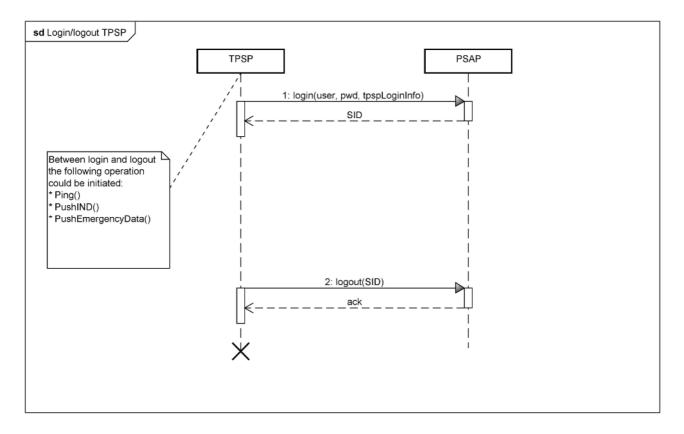The following figures illustrate the authorization process.

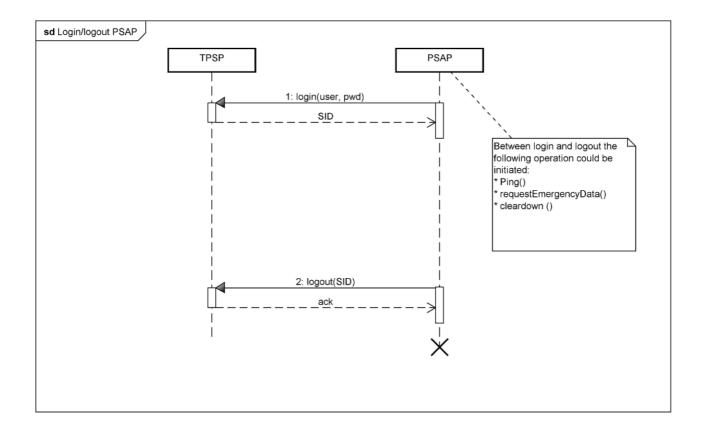**Figure A.2 — TPSP Login/logout from/to PSAP web service**

Figure A.3 — PSAP Login/logout to/from TPSP web service
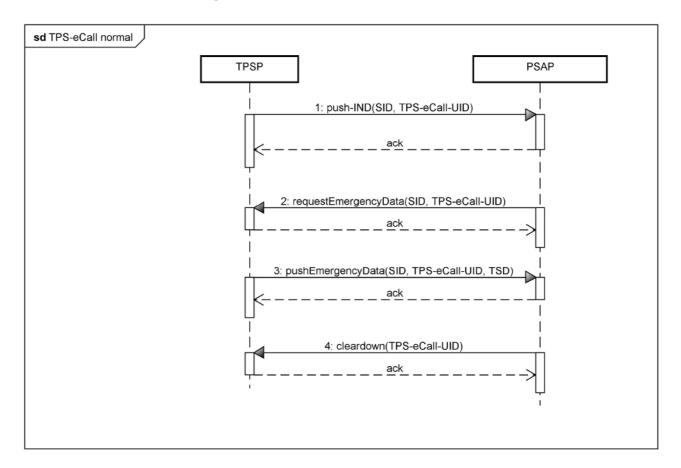
A.2.3 The TPS-eCall messages

Figure A.4 — Normal *TPS-eCall* flow

A.2.3.1 Push-INITIATION

To inform PSAP about a new *TPS-eCall* the TPSP will send a push-IND(SID, *TPS-eCall-UID*) message. This includes the *TPS-eCall-UID* as an argument. This *TPS-eCall-UID* will then be used by the PSAP in further conversaion with the TPSP. The SID is the session id returned from login(). The PSAP shall return ack=0 if this message was success fully received, otherwise ack>0 the TPSP is recommended to make retries with te following retry parameters:

— Max number of retries = 10
— Time between retries = 500 milliseconds

A.2.3.2 Request emergency data

The function requestEmergencyData (SID, *TPS-eCall-UID*) will alert the TPSP to send emergency *data* with the *TPS-eCall* with id = *TPS-eCall-UID*. The SID is the session id returned from login(). The TPSP shall return ack=0 if this message was success fully received, otherwise ack>0 the PSAP is recommended to make retries with te following retry parameters:

— Max number of retries = 5
— Time between retries = 700 milliseconds

A.2.3.3 Push emergency data

The function pushEmergencyData (SID, *TPS-eCall-UID*, TSD) shall only be call by the TPSP after receiving an requestEmergencyData() from the PSAP. The TSD will be populated by the TPSP with all relevant/available (latest known) *data* every time pushEmergencyData() is called. The PSAP shall return ack=0 if this message was success fully received, otherwise ack>0 the TPSP is recommended to make retries with te following retry parameters:

— Max number of retries = 5
— Time between retries = 800 milliseconds

A.2.3.4 Clear down

The function clear down (SID, *TPS-eCall-UID*) will be used by the PSAP to indicate to the TPSP that they (PSAP) have finished processing the emergency call. The TPSP shall return ack=0 if this message was success fully received, otherwise ack>0.

A.2.3.5 Communication control (Ping)

The ping() function will be used to check the communication status (detect communication lost). The ping can be initiated by the TPSP or/and PSAP. By measure, the time for a ping roundtrip the communication latency will be measure. The ping does not require a SID so the ping can be called without a user login.

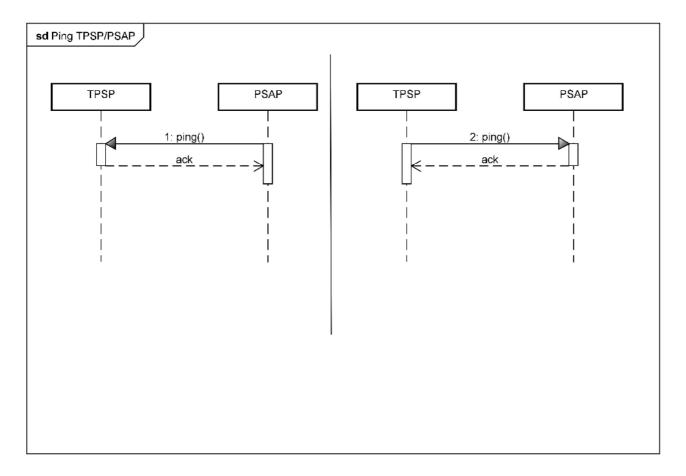The response from a ping() (the ack) is an error/status code. Ack =0 is status ok.

Figure A.5 — Ping() from PSAP and TPSP

A.2.4 The PSAP web server wsdl file reference implementation

Filename: TPSeCallPSAPService.wsdl

NOTE   This wsdl file imports the **EuECall_TPSECall.xsd** and **EuECall_MSD.xsd** descriptions later in this appendix and uses this *data* type in the variable tsdXML.
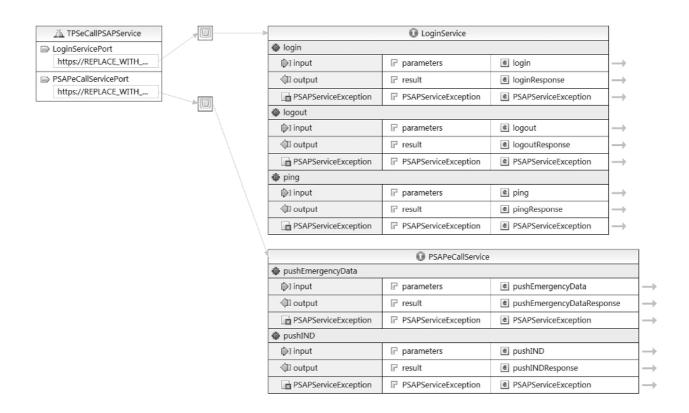

Figure A.6 — PSAP web server wsdl file reference implementation

The xml script is as follows:
```
<?xml version="1.0" encoding="utf-8"?>
<definitions name="TPSeCallPSAPService"
targetNamespace="http://euecall.eu/tpsecall/psapservice"
xmlns:tns="http://euecall.eu/tpsecall/psapservice"
xmlns="http://schemas.xmlsoap.org/wsdl/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:ns2="http://euecall.eu/tpsecall/psapservice/types">
 <types>
  <schema targetNamespace="http://euecall.eu/tpsecall/psapservice/types"
  xmlns:tps="http://euecall.eu/tpsecall/tps"
  xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:soap11-enc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:tns="http://euecall.eu/tpsecall/psapservice/types"
  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <xsd:import id="TPSECallData.xsd"
          schemaLocation="EuECall_TPSECall.xsd"
          namespace="http://euecall.eu/tpsecall/tps"/>
  <complexType name="login">
   <sequence>
    <element name="TO_Login_1" type="tns:TO_Login"
    nillable="true" />
   </sequence>
  </complexType>
  <complexType name="TO_Login">
   <sequence>
    <element name="password" type="string" nillable="true" />
```

```
      <element name="tpspLoginInfo"
      type="tns:TO_TPSP_LoginInfo" nillable="true" />
      <element name="username" type="string" nillable="true" />
    </sequence>
  </complexType>
  <complexType name="TO_TPSP_LoginInfo">
    <sequence>
      <element name="address" type="string" nillable="true" />
      <element name="password" type="string" nillable="true" />
      <element name="username" type="string" nillable="true" />
    </sequence>
  </complexType>
  <complexType name="loginResponse">
    <sequence>
      <element name="result" type="tns:TO_SessionId"
      nillable="true" />
    </sequence>
  </complexType>
  <complexType name="TO_SessionId">
    <sequence>
      <element name="id" type="string" nillable="true" />
    </sequence>
  </complexType>
  <complexType name="PSAPServiceException">
    <sequence>
      <element name="description" type="string"
      nillable="true" />
      <element name="errorCode" type="int" />
    </sequence>
  </complexType>
  <complexType name="logout">
    <sequence>
      <element name="TO_SessionId_1" type="tns:TO_SessionId"
      nillable="true" />
    </sequence>
  </complexType>
  <complexType name="logoutResponse">
    <sequence />
  </complexType>
  <complexType name="ping">
    <sequence />
  </complexType>
  <complexType name="pingResponse">
    <sequence>
      <element name="result" type="int" />
    </sequence>
  </complexType>
  <complexType name="pushEmergencyData">
    <sequence>
      <element name="TO_SessionId_1" type="tns:TO_SessionId"
      nillable="true" />
      <element name="TO_TPS_eCallUID_2"
      type="tns:TO_TPS_eCallUID" nillable="true" />
      <element name="TO_TSD_3" type="tns:TO_TSD"
      nillable="true" />
    </sequence>
  </complexType>
  <complexType name="TO_TPS_eCallUID">
    <sequence>
      <element name="uid" type="string" nillable="true" />
    </sequence>
  </complexType>
  <complexType name="TO_TSD">
    <sequence>
      <element name="tsdXML" type="tps:TPSECallSetOfData_Type" nillable="true" />
    </sequence>
  </complexType>
  <complexType name="pushEmergencyDataResponse">
    <sequence>
      <element name="result" type="int" />
    </sequence>
  </complexType>
  <complexType name="pushIND">
    <sequence>
      <element name="TO_SessionId_1" type="tns:TO_SessionId"
      nillable="true" />
      <element name="TO_TPS_eCallUID_2"
      type="tns:TO_TPS_eCallUID" nillable="true" />
    </sequence>
  </complexType>
  <complexType name="pushINDResponse">
    <sequence>
      <element name="result" type="int" />
    </sequence>
  </complexType>
```

```
    <element name="login" type="tns:login" />
    <element name="loginResponse" type="tns:loginResponse" />
    <element name="PSAPServiceException"
    type="tns:PSAPServiceException" />
    <element name="logout" type="tns:logout" />
    <element name="logoutResponse" type="tns:logoutResponse" />
    <element name="ping" type="tns:ping" />
    <element name="pingResponse" type="tns:pingResponse" />
    <element name="pushEmergencyData"
    type="tns:pushEmergencyData" />
    <element name="pushEmergencyDataResponse"
    type="tns:pushEmergencyDataResponse" />
    <element name="pushIND" type="tns:pushIND" />
    <element name="pushINDResponse" type="tns:pushINDResponse" />
  </schema>
</types>
<message name="LoginService_login">
  <part name="parameters" element="ns2:login" />
</message>
<message name="LoginService_loginResponse">
  <part name="result" element="ns2:loginResponse" />
</message>
<message name="PSAPServiceException">
  <part name="PSAPServiceException"
  element="ns2:PSAPServiceException" />
</message>
<message name="LoginService_logout">
  <part name="parameters" element="ns2:logout" />
</message>
<message name="LoginService_logoutResponse">
  <part name="result" element="ns2:logoutResponse" />
</message>
<message name="LoginService_ping">
  <part name="parameters" element="ns2:ping" />
</message>
<message name="LoginService_pingResponse">
  <part name="result" element="ns2:pingResponse" />
</message>
<message name="PSAPeCallService_pushEmergencyData">
  <part name="parameters" element="ns2:pushEmergencyData" />
</message>
<message name="PSAPeCallService_pushEmergencyDataResponse">
  <part name="result" element="ns2:pushEmergencyDataResponse" />
</message>
<message name="PSAPeCallService_pushIND">
  <part name="parameters" element="ns2:pushIND" />
</message>
<message name="PSAPeCallService_pushINDResponse">
  <part name="result" element="ns2:pushINDResponse" />
</message>
<portType name="LoginService">
  <operation name="login">
    <input message="tns:LoginService_login" />
    <output message="tns:LoginService_loginResponse" />
    <fault name="PSAPServiceException"
    message="tns:PSAPServiceException" />
  </operation>
  <operation name="logout">
    <input message="tns:LoginService_logout" />
    <output message="tns:LoginService_logoutResponse" />
    <fault name="PSAPServiceException"
    message="tns:PSAPServiceException" />
  </operation>
  <operation name="ping">
    <input message="tns:LoginService_ping" />
    <output message="tns:LoginService_pingResponse" />
    <fault name="PSAPServiceException"
    message="tns:PSAPServiceException" />
  </operation>
</portType>
<portType name="PSAPeCallService">
  <operation name="pushEmergencyData">
    <input message="tns:PSAPeCallService_pushEmergencyData" />
    <output message="tns:PSAPeCallService_pushEmergencyDataResponse" />
    <fault name="PSAPServiceException"
    message="tns:PSAPServiceException" />
  </operation>
  <operation name="pushIND">
    <input message="tns:PSAPeCallService_pushIND" />
    <output message="tns:PSAPeCallService_pushINDResponse" />
    <fault name="PSAPServiceException"
    message="tns:PSAPServiceException" />
  </operation>
</portType>
<binding name="LoginServiceBinding" type="tns:LoginService">
```

```
<soap:binding transport="http://schemas.xmlsoap.org/soap/http"
style="document" />
<operation name="login">
 <soap:operation soapAction="" />
 <input>
  <soap:body use="literal" />
 </input>
 <output>
  <soap:body use="literal" />
 </output>
 <fault name="PSAPServiceException">
  <soap:fault name="PSAPServiceException" use="literal" />
 </fault>
</operation>
<operation name="logout">
 <soap:operation soapAction="" />
 <input>
  <soap:body use="literal" />
 </input>
 <output>
  <soap:body use="literal" />
 </output>
 <fault name="PSAPServiceException">
  <soap:fault name="PSAPServiceException" use="literal" />
 </fault>
</operation>
<operation name="ping">
 <soap:operation soapAction="" />
 <input>
  <soap:body use="literal" />
 </input>
 <output>
  <soap:body use="literal" />
 </output>
 <fault name="PSAPServiceException">
  <soap:fault name="PSAPServiceException" use="literal" />
 </fault>
</operation>
</binding>
<binding name="PSAPeCallServiceBinding"
type="tns:PSAPeCallService">
 <soap:binding transport="http://schemas.xmlsoap.org/soap/http"
 style="document" />
 <operation name="pushEmergencyData">
  <soap:operation soapAction="" />
  <input>
   <soap:body use="literal" />
  </input>
  <output>
   <soap:body use="literal" />
  </output>
  <fault name="PSAPServiceException">
   <soap:fault name="PSAPServiceException" use="literal" />
  </fault>
 </operation>
 <operation name="pushIND">
  <soap:operation soapAction="" />
  <input>
   <soap:body use="literal" />
  </input>
  <output>
   <soap:body use="literal" />
  </output>
  <fault name="PSAPServiceException">
   <soap:fault name="PSAPServiceException" use="literal" />
  </fault>
 </operation>
</binding>
<service name="TPSeCallPSAPService">
 <port name="LoginServicePort"
 binding="tns:LoginServiceBinding">
  <soap:address location="https://REPLACE_WITH_ACTUAL_URL" />
 </port>
 <port name="PSAPeCallServicePort"
 binding="tns:PSAPeCallServiceBinding">
  <soap:address location="https://REPLACE_WITH_ACTUAL_URL" />
 </port>
</service>
</definitions>
```
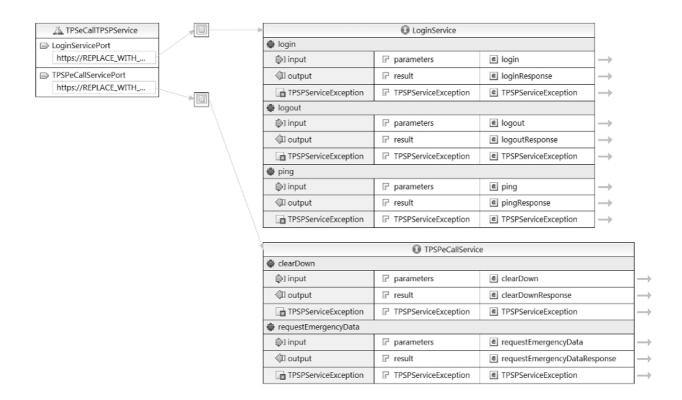
A.2.5 The TPSP web server wsdl file as reference implementation

Filename: TPSeCallTPSPService.wsdl

Figure A.7 — TPSP web server wsdl file as reference implementation

The xml script is as follows:

```xml
<?xml version="1.0" encoding="utf-8"?>
<definitions name="TPSeCallTPSPService"
targetNamespace="http://euecall.eu/tpsecall/psapservice"
xmlns:tns="http://euecall.eu/tpsecall/psapservice"
xmlns="http://schemas.xmlsoap.org/wsdl/"
xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/"
xmlns:ns2="http://euecall.eu/tpsecall/psapservice/types">
 <types>
  <schema targetNamespace="http://euecall.eu/tpsecall/psapservice/types"
  xmlns="http://www.w3.org/2001/XMLSchema"
  xmlns:soap11-enc="http://schemas.xmlsoap.org/soap/encoding/"
  xmlns:tns="http://euecall.eu/tpsecall/psapservice/types"
  xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
   <complexType name="login">
    <sequence>
     <element name="TO_Login_1" type="tns:TO_Login"
     nillable="true" />
    </sequence>
   </complexType>
   <complexType name="TO_Login">
    <sequence>
     <element name="password" type="string" nillable="true" />
     <element name="username" type="string" nillable="true" />
    </sequence>
   </complexType>
   <complexType name="loginResponse">
    <sequence>
     <element name="result" type="tns:TO_SessionId"
     nillable="true" />
```

```
      </sequence>
    </complexType>
    <complexType name="TO_SessionId">
      <sequence>
        <element name="id" type="string" nillable="true" />
      </sequence>
    </complexType>
    <complexType name="TPSPServiceException">
      <sequence>
        <element name="description" type="string"
        nillable="true" />
        <element name="errorCode" type="int" />
      </sequence>
    </complexType>
    <complexType name="logout">
      <sequence>
        <element name="TO_SessionId_1" type="tns:TO_SessionId"
        nillable="true" />
      </sequence>
    </complexType>
    <complexType name="logoutResponse">
      <sequence />
    </complexType>
    <complexType name="ping">
      <sequence />
    </complexType>
    <complexType name="pingResponse">
      <sequence>
        <element name="result" type="int" />
      </sequence>
    </complexType>
    <complexType name="clearDown">
      <sequence>
        <element name="TO_SessionId_1" type="tns:TO_SessionId"
        nillable="true" />
        <element name="TO_TPS_eCallUID_2"
        type="tns:TO_TPS_eCallUID" nillable="true" />
      </sequence>
    </complexType>
    <complexType name="TO_TPS_eCallUID">
      <sequence>
        <element name="uid" type="string" nillable="true" />
      </sequence>
    </complexType>
    <complexType name="clearDownResponse">
      <sequence>
        <element name="result" type="int" />
      </sequence>
    </complexType>
    <complexType name="requestEmergencyData">
      <sequence>
        <element name="TO_SessionId_1" type="tns:TO_SessionId"
        nillable="true" />
        <element name="TO_TPS_eCallUID_2"
        type="tns:TO_TPS_eCallUID" nillable="true" />
      </sequence>
    </complexType>
    <complexType name="requestEmergencyDataResponse">
      <sequence>
        <element name="result" type="int" />
      </sequence>
    </complexType>
    <element name="login" type="tns:login" />
    <element name="loginResponse" type="tns:loginResponse" />
    <element name="TPSPServiceException"
    type="tns:TPSPServiceException" />
    <element name="logout" type="tns:logout" />
    <element name="logoutResponse" type="tns:logoutResponse" />
    <element name="ping" type="tns:ping" />
    <element name="pingResponse" type="tns:pingResponse" />
    <element name="clearDown" type="tns:clearDown" />
    <element name="clearDownResponse"
    type="tns:clearDownResponse" />
    <element name="requestEmergencyData"
    type="tns:requestEmergencyData" />
    <element name="requestEmergencyDataResponse"
    type="tns:requestEmergencyDataResponse" />
  </schema>
</types>
<message name="LoginService_login">
  <part name="parameters" element="ns2:login" />
</message>
<message name="LoginService_loginResponse">
  <part name="result" element="ns2:loginResponse" />
</message>
```

```xml
<message name="TPSPServiceException">
 <part name="TPSPServiceException"
 element="ns2:TPSPServiceException" />
</message>
<message name="LoginService_logout">
 <part name="parameters" element="ns2:logout" />
</message>
<message name="LoginService_logoutResponse">
 <part name="result" element="ns2:logoutResponse" />
</message>
<message name="LoginService_ping">
 <part name="parameters" element="ns2:ping" />
</message>
<message name="LoginService_pingResponse">
 <part name="result" element="ns2:pingResponse" />
</message>
<message name="TPSPeCallService_clearDown">
 <part name="parameters" element="ns2:clearDown" />
</message>
<message name="TPSPeCallService_clearDownResponse">
 <part name="result" element="ns2:clearDownResponse" />
</message>
<message name="TPSPeCallService_requestEmergencyData">
 <part name="parameters" element="ns2:requestEmergencyData" />
</message>
<message name="TPSPeCallService_requestEmergencyDataResponse">
 <part name="result"
 element="ns2:requestEmergencyDataResponse" />
</message>
<portType name="LoginService">
 <operation name="login">
  <input message="tns:LoginService_login" />
  <output message="tns:LoginService_loginResponse" />
  <fault name="TPSPServiceException"
  message="tns:TPSPServiceException" />
 </operation>
 <operation name="logout">
  <input message="tns:LoginService_logout" />
  <output message="tns:LoginService_logoutResponse" />
  <fault name="TPSPServiceException"
  message="tns:TPSPServiceException" />
 </operation>
 <operation name="ping">
  <input message="tns:LoginService_ping" />
  <output message="tns:LoginService_pingResponse" />
  <fault name="TPSPServiceException"
  message="tns:TPSPServiceException" />
 </operation>
</portType>
<portType name="TPSPeCallService">
 <operation name="clearDown">
  <input message="tns:TPSPeCallService_clearDown" />
  <output message="tns:TPSPeCallService_clearDownResponse" />
  <fault name="TPSPServiceException"
  message="tns:TPSPServiceException" />
 </operation>
 <operation name="requestEmergencyData">
  <input message="tns:TPSPeCallService_requestEmergencyData" />
  <output message="tns:TPSPeCallService_requestEmergencyDataResponse" />
  <fault name="TPSPServiceException"
  message="tns:TPSPServiceException" />
 </operation>
</portType>
<binding name="LoginServiceBinding" type="tns:LoginService">
 <soap:binding transport="http://schemas.xmlsoap.org/soap/http"
 style="document" />
 <operation name="login">
  <soap:operation soapAction="" />
  <input>
   <soap:body use="literal" />
  </input>
  <output>
   <soap:body use="literal" />
  </output>
  <fault name="TPSPServiceException">
   <soap:fault name="TPSPServiceException" use="literal" />
  </fault>
 </operation>
 <operation name="logout">
  <soap:operation soapAction="" />
  <input>
   <soap:body use="literal" />
  </input>
  <output>
   <soap:body use="literal" />
```

```
    </output>
    <fault name="TPSPServiceException">
      <soap:fault name="TPSPServiceException" use="literal" />
    </fault>
   </operation>
   <operation name="ping">
    <soap:operation soapAction="" />
    <input>
      <soap:body use="literal" />
    </input>
    <output>
      <soap:body use="literal" />
    </output>
    <fault name="TPSPServiceException">
      <soap:fault name="TPSPServiceException" use="literal" />
    </fault>
   </operation>
  </binding>
  <binding name="TPSPeCallServiceBinding"
  type="tns:TPSPeCallService">
   <soap:binding transport="http://schemas.xmlsoap.org/soap/http"
   style="document" />
   <operation name="clearDown">
    <soap:operation soapAction="" />
    <input>
      <soap:body use="literal" />
    </input>
    <output>
      <soap:body use="literal" />
    </output>
    <fault name="TPSPServiceException">
      <soap:fault name="TPSPServiceException" use="literal" />
    </fault>
   </operation>
   <operation name="requestEmergencyData">
    <soap:operation soapAction="" />
    <input>
      <soap:body use="literal" />
    </input>
    <output>
      <soap:body use="literal" />
    </output>
    <fault name="TPSPServiceException">
      <soap:fault name="TPSPServiceException" use="literal" />
    </fault>
   </operation>
  </binding>
  <service name="TPSeCallTPSPService">
   <port name="LoginServicePort"
   binding="tns:LoginServiceBinding">
    <soap:address location="https://REPLACE_WITH_ACTUAL_URL" />
   </port>
   <port name="TPSPeCallServicePort"
   binding="tns:TPSPeCallServiceBinding">
    <soap:address location="https://REPLACE_WITH_ACTUAL_URL" />
   </port>
  </service>
</definitions>
```

A.2.6   XML codes of the TPS-eCall set of data for the TPSP/PSAP transmission

Three files are required in the above reference implementation:

A.2.6.1.1   EuECall_MSD.xsd
This is a formal description for an MSD in XML format. The description is in EN 15722.

A.2.6.2.2   EuECall_TPSECall.xsd
This is the formal description of the TSD, and includes (by reference) the EuECall_MSD description. It also includes a parameter containing the name of the .xsd file which describes the format of the AdditionalInfo which may also be included as part of the *data* set (ANNEX C).

A.2.6.2.3   EuECall_TPS_SetOfDataExample.xml
This is an example *data* set based around the example MSD from the MSD standard, plus examples for most other *data* fields, including AdditionalInfo.

A.3   EuECall_TPSECall.xsd

Two example means for a TPSP to transmit an emergency to a PSAP are described in xml script.

```
<?xml version="1.0" encoding="utf-8"?>
<xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema"
targetNamespace="http://euecall.eu/tpsecall/tps"
xmlns:tps="http://euecall.eu/tpsecall/tps"
xmlns:msd="http://euecall.eu/tpsecall/msd"
elementFormDefault="qualified">
 <xsd:import schemaLocation="EuECall_MSD.xsd"
 namespace="http://euecall.eu/tpsecall/msd" />
 <xsd:simpleType name="INTEGER_Type">
  <xsd:restriction base="xsd:integer" />
 </xsd:simpleType>
 <xsd:simpleType name="PrintableString_Type">
  <xsd:restriction base="xsd:string">
   <xsd:pattern value="([0-9]| |[A-Z]|[a-z]|'|\(|\)|\+|-|,|\.|/|=|\?|:)*" />
  </xsd:restriction>
 </xsd:simpleType>
<!--
 additionalInformation contains data which will be described in an extra XSD file
-->
 <xsd:simpleType name="AdditionalInformation_Type">
  <xsd:restriction base="xsd:string" />
 </xsd:simpleType>
 <xsd:complexType name="TPSECallSetOfData_Type">
  <xsd:sequence>
   <xsd:element name="tpsECallUID"
   type="tps:PrintableString_Type" />
   <xsd:element name="tpsECallSID"
   type="tps:PrintableString_Type" />
   <xsd:element name="eCallMessage" type="msd:ECallMessage_Type" />
   <xsd:element name="tpspCallbackNumber"
   type="tps:PrintableString_Type" />
   <xsd:element name="vehiclePhoneNumber"
   type="tps:PrintableString_Type" />
   <xsd:element name="presentationURL" type="xsd:anyURI" />
   <xsd:element name="additionalXmlDataURL" type="xsd:anyURI" />
   <xsd:element name="additionalInformationXSDFile"
   type="xsd:string" />
   <xsd:element name="additionalInformation"
   type="tps:AdditionalInformation_Type" />
  </xsd:sequence>
 </xsd:complexType>
 <xsd:element name="TPSECallSetOfData"
 type="tps:TPSECallSetOfData_Type" />
</xsd:schema>
```

A.4   EuECall_TPS_SetOfDataExample.xml

```
<?xml version="1.0" encoding="utf-8" ?>
<TPSECallSetOfData>
     <tpsECallUID>WMIVDSVDSYA1234560123456789</tpsECallUID>
     <tpsECallSID>ATX1234</tpsECallSID>
    <eCallMessage>
     <id>1</id>
      <msd>
        <msdStructure>
           <messageIdentifier>1</messageIdentifier>
          <control>
            <automaticActivation>
                 <true/>
             </automaticActivation>
            <testCall>
                 <false/>
             </testCall>
            <positionCanBeTrusted>
                 <true />
             </positionCanBeTrusted>
            <vehicleType>
```

```
                    <passengerVehicleClassM1 />
                </vehicleType>
            </control>
        <vehicleIdentificationNumber>
                <isowmi>WMK</isowmi>
                <isovds>VDSVDS</isovds>
                <isovisModelyear>Y</isovisModelyear>
                <isovisSeqPlant>A123456</isovisSeqPlant>
            </vehicleIdentificationNumber>
        <vehiclePropulsionStorageType>
            <gasolineTankPresent>
                    <true />
                </gasolineTankPresent>
            <electricEnergyStorage>
                    <true />
                </electricEnergyStorage >
            </vehiclePropulsionStorageType>
        <timestamp>123456789</timestamp>
        <vehicleLocation>
                <positionLatitude>173881200</positionLatitude>
                <positionLongitude>41822520</positionLongitude>
            </vehicleLocation>
        <vehicleDirection>14</vehicleDirection>
        <recentVehicleLocationN1>
                <latitudeDelta>10</latitudeDelta>
                <longitudeDelta>-10</longitudeDelta>
            </recentVehicleLocationN1>
        <recentVehicleLocationN2>
                <latitudeDelta>10</latitudeDelta>
                <longitudeDelta>-20</longitudeDelta>
            </recentVehicleLocationN2>
        <numberOfPassengers>2</numberOfPassengers>
        </msdStructure>
    <optionalAdditionalData>
            <oid>1.2.125</oid>
            <data>30304646</data>
        </optionalAdditionalData>
    </msd>
</eCallMessage>
<tpspCallbackNumber>+49893820</tpspCallbackNumber>
<vehiclePhoneNumber>+491766010</vehiclePhoneNumber>
<presentationURL>http://ec.europa.eu/information_society/activities/eSafety/forum/index_en.htm</presentationURL>
<additionalXmlDataURL />
<additionalInformationXSDFile>EuECall_TPS_AdditionalInfo.xsd</additionalInformationXSDFile>
<additionalInformation>
    <AdditionalInformationData>
        <VehicleAudioStatus>
                <bidrectionalConversation />
            </VehicleAudioStatus>
        <NumInjuredPersonsInVehicle>2</NumInjuredPersonsInVehicle>
        <NumInjuredPersonsOther>1</NumInjuredPersonsOther>
        <RiskOfSevereInjury>
                <accidentWithIncreasedRiskOfSevereInjury />
            </RiskOfSevereInjury>
        <CrashSummaryDetails>
         <FrontCrash>
                <noCrash/>
          </FrontCrash>
         <DriverSideCrash>
```

```xml
            <noCrash/>
        </DriverSideCrash>
      <PassengerSideCrash>
            <severeImpactDetected/>
        </PassengerSideCrash>
      <RearCrash>
            <noCrash/>
        </RearCrash>
     </CrashSummaryDetails>
     <RolloverCrashData>
          <no />
     </RolloverCrashData>
     <MulipleCollisionCrashData>
          <no />
     </MulipleCollisionCrashData>
     <IncidentDescription>Side collision involving one other vehicle at a junction. Passenger has breathing difficulties
          but is conscious. Passenger is trapped in the vehicle. Driver says head hurts.</IncidentDescription>
     <VehicleMake>BMW</VehicleMake>
     <VehicleSeries>F01</VehicleMake>
     <VehicleModel>750i</VehicleModel>
     <VehicleBodyType>Limousine</VehicleBodyType>
     <VehicleColour>Silver</VehicleColour>
     <VehicleLicence>M-AB 1234</VehicleLicence>
     <VehicleLocationStreet>Bluetenstrasse</VehicleLocationStreet>
     <VehicleLocationStreetNumber />
     <VehicleLocationKM />
     <VehicleLocationCity>Eching</VehicleLocationCity>
     <VehicleLocationPostcode>D-85386</VehicleLocationPostcode>
     <VehicleLocationArea>Kreis Freising</VehicleLocationArea>
     <VehicleLocationCountry>Germany</VehicleLocationCountry>
     <VehicleLocationPreviousCrossing>Bahnhofstrasse</VehicleLocationPreviousCrossing>
     <VehicleLocationNextCrossing>Daitenhauserstrasse</VehicleLocationNextCrossing>
     <CarriagewayBlockage>
          <blockingNearsideLane />
     </CarriagewayBlockage>
     <Fire>
          <no />
     </Fire>
     <Tunnel>
          <no />
     </Tunnel>
     <Trapped>
          <yes />
     </Trapped>
     <NumOccupantsInVehicle>2</NumOccupantsInVehicle>
     <LossOfConsciousness>
          <no />
     </ LossOfConsciousness>
     <BreathingProblems>
          <yes />
     </BreathingProblems>
     <OtherVehiclesInvolved>
          <yes />
     </OtherVehiclesInvolved>
     <NumFittedAirbags>10</NumFittedAirbags>
     <NumDeployedAirbags>4</NumDeployedAirbags>
   </AdditionalInformationData>
 </additionalInformation>
</TPSECallSetOfData>
```

Annex B
(informative)

Transitional arrangements

B.1 Need for transitional arrangements

10.5 refers to the need for transitional arrangements, examples of which are described below.

B.2 Multiple means

Two example means for a TPSP to transmit an emergency to a PSAP are described below:

a)   the provision of *TPS-eCall data* to a PSAP via a website;

b)   the provision of emergency *data* to a PSAP via a voice call.

B.3 Data transmission protocol between TPSP and PSAP via a website

B.3.1 General

This transitional method requires and implies:

—   that the destination PSAP operator can access and use the website;

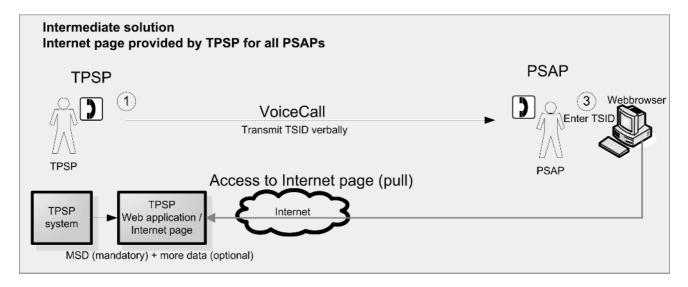—   that the *TPS-eCall* TPSP manages the login of each PSAP.

Figure B.1 — Intermediate solution

B.3.2 Protocol

The general architecture for *data* transmission via a web site is the following:

— the TPSP makes the *data* available via a web site;

— the PSAPs have a secure access to the web site, and read the page containing all the *data* about the accident.

B.3.3 Transmission of the notification by the TPSP to the PSAP

The PSAP operator is notified that there is a *TPS-eCall* by a voice call from the TPSP. Through the voice call, the TPSP provides to the PSAP the reference of the accident (*TPS-eCall-SID*) that needs to be taken in charge by the PSAP.

B.3.4 Access of the PSAP to the web site

The PSAP can only access the emergency call related information with the reference number (*TPS-eCall-SID* or *TPS-eCall-UID* as defined in 7.4.2 or 7.4.3) provided by the TPSP. The PSAP cannot access the other accidents because it does not know the relevant codes. Access to the emergency call information should be protected against hacking attempts. The level of security should be appropriate to the stored information in accordance with EU regulations on privacy and *data* protection.

B.3.5 Textual and/or graphical representation of emergency call details

Where the TPSP provides access to a textual and/or graphical representation of the emergency call details (e.g. for transfer of a *TPS-eCall set of data* via TPSP internet website), the following requirements should be observed:

The TPSP should provide a restricted access website containing the TSD content, presented in a user friendly textual and/or graphical format (e.g. as an HTML page).

The web page presentation should allow the user (PSAP operator) to easily choose any official language of the country where the incident has occurred (e.g. by clicking on an appropriate flag graphic).

It is recommended that all the major languages of the EU are supported.

By default, the information should be presented in the standard language for the incident location.

The information should include all mandatory elements of the MSD described in EN 15722.

The information should include all optional elements of the MSD described in EN 15722, if the relevant information is reliably available.

It is recommended that coordinates are shown in both commonly used formats show below:

  DD°MM'SS.SS" (N/S); DDD°MM'SS.SS" (W/E) and

  +/- DD.DDDDDDD +/-DD.DDDDDDD

It is recommended that the timestamp should be shown in the following standard format:

  YYYY-MM-DD HH:MM:SS (UTC)

A local time at the incident location may also be shown if this is clearly labelled to avoid confusion with the UTC timestamp.

As the information is being shown in human-readable form, the following element is not relevant and does not need to be displayed; Format field.

All other *data elements* should be shown using the local language equivalent of the textual description for the contents/format of the MSD *data concept* in EN 15722, e.g. 'passenger vehicle (Class M1)' or 'Automatic activation'.

Data elements may also be additionally shown in graphical or coloured format where appropriate to aid interpretation.

It is recommended that, in addition to the coordinates described in the MSD, the vehicle location is also shown as a textual street address.

It is recommended that, based on the vehicle's travelling direction, the previous and next crossing streets or junction numbers are shown textually to help describe the vehicle location.

It is recommended that the vehicle location and vehicle direction are also shown clearly on a graphical and detailed street map.

It is recommended that, where available, recent vehicle locations are also shown clearly on the same graphical map presentation. The TPSP should take care that the representation chosen allows a clear distinction between recent vehicle locations and the current vehicle location.

It is recommended that this map can be easily zoomed in and out.

Where available, it is recommended that the following additional information is also shown:

— vehicle brand, vehicle model series, vehicle model;

— vehicle colour (as communicated to the TPSP);

— name of the service provider providing these details.

Additional information may be shown at the discretion of the TPSP so long as this information does not adversely affect the clarity of the display of the 'standard' information elements. The TPSP should take care that any additional information is appropriate for the typical skills of the rescue chains of Europe and should avoid excessive detail.

It is recommended that the MSD should also be available in the standard ASN1 PER encoded format described in EN 15722, shown as a hex string with 2 characters (0-9 or A-F) per byte, msb first.

It is recommended that the TSD should also be available in standard machine-readable format as described in this standard.

It is recommended that an easy method to print the details onto a single A4 sheet should be provided.

B.4 Transmission of an emergency to a PSAP with a voice call

B.4.1 Principles

Where the PSAP is unable to receive *data* electronically, the TPSP operator should call the *most appropriate PSAP*, and verbally provide all the relevant information about the emergency.

B.4.2 Order of the information

In order to provide a standard and efficient way for this transmission, the order for transmission of the information should be the following:

1) type of emergency (If known through 'IVS dataset' or via the voice call with the car occupants). In particular whether it is a manual or automatic *TPS-eCall*;

2) vehicle location, vehicle direction, (and in case of low position confidence, position confidence);

3) number of wounded people (if known – e.g. through the voice call with the car occupants);

4) details of known or suspected injuries;

5) timestamp of incident event;

6) number of known fastened seat belts (if such information is provided in the 'IVS dataset');

7) number of cars involved in the accident (if known – e.g. through the voice call with the car occupants);

8) vehicle brand, model and colour (if known by the TPSP – e.g. derived via the VIN, or through the voice call with the car occupants);

9) whether people are/are not responding to the voice call with the vehicle, and when known, the language of the *vehicle occupant*;

10) *TPSPCallbackNumber* in case of further queries and *VehiclePhoneNumber*;

11) name of the TPSP and the *TPS-eCalls* operator in charge of this accident;

12) if required by the PSAP; VIN, vehicle type, vehicle propulsion storage type.

NOTE   It may be agreed in advance with a PSAP that some or all of this information should be provided without a need for them to ask for it on a case-by-case basis.

B.4.3 Acknowledgement

A verbal handover procedure should be used to ensure correct communication between the TPSP operator and the PSAP operator.

EXAMPLE

Question TPSP operator: "*Have you received all relevant data?*"

Answer PSAP operator: "*Yes, I have received all data. {Summary of received data}.*"

Question TPSP operator : *May I close the call?*."

Answer PSAP operator: "*Yes, the call can be closed*."

Confirmation TPSP operator: "*OK. I will hang up. Good-Bye*."

NOTE   Also refer to 10.3.

Annex C
(informative)

XML Code for additional information

This is a proposed formal description for the additional information which the TPSP might want to send to the PSAP. It allows the PSAP to automatically interpret the additional information sent in the TSD.

```xml
<?xml version="1.0" encoding="UTF-8" ?>
 <xsd:schema xmlns:xsd="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified">
    <!--
    Some basic types
    -->
    <xsd:complexType name="ENUMERATED_Type" />
    <xsd:simpleType name="PrintableString_Type">
      <xsd:restriction base="xsd:string">
         <xsd:pattern value="([0-9]| |[A-Z]|[a-z]|'|\(|\)|\+|-|,|\.|/|=|\?|:)*" />
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="ShortPrintableString_Type">
      <xsd:restriction base="xsd:string">
         <xsd:pattern value="([0-9]| |[A-Z]|[a-z]|'|\(|\)|\+|-|,|\.|/|=|\?|:)*" />
         <xsd:maxLength value="255" />
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="ShortString_Type">
      <xsd:restriction base="xsd:string">
         <xsd:maxLength value="255" />
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="INTEGER_Type">
       <xsd:restriction base="xsd:integer" />
    </xsd:simpleType>
    <xsd:simpleType name="SHORT_Type">
      <xsd:restriction base="INTEGER_Type">
         <xsd:minInclusive value="0" />
         <xsd:maxInclusive value="254" />
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:simpleType name="AGE_Type">
      <xsd:restriction base="INTEGER_Type">
         <xsd:minInclusive value="0" />
         <xsd:maxInclusive value="254" />
      </xsd:restriction>
    </xsd:simpleType>
    <xsd:complexType name="YesNoUnknown_Type">
      <xsd:choice>
         <xsd:element name="yes" type="ENUMERATED_Type" />
         <xsd:element name="no" type="ENUMERATED_Type" />
         <xsd:element name="unknown" type="ENUMERATED_Type" />
      </xsd:choice>
    </xsd:complexType>
    <xsd:complexType name="VehicleAudioStatus_Type">
      <xsd:choice>
```

```xml
        <xsd:element name="unknown" type="ENUMERATED_Type" />
        <xsd:element name="bidrectionalConversation" type="ENUMERATED_Type" />
        <xsd:element name="vehicleOccupantsAudible" type="ENUMERATED_Type" />
        <xsd:element name="backgroundSoundsAudible" type="ENUMERATED_Type" />
        <xsd:element name="noAudioFromVehicle" type="ENUMERATED_Type" />
        <xsd:element name="noConnectionWithVehicle" type="ENUMERATED_Type" />
      </xsd:choice>
  </xsd:complexType>
<xsd:complexType name="RiskOfSevereInjury_Type">
    <xsd:choice>
        <xsd:element name="unknown" type="ENUMERATED_Type" />
        <xsd:element name="accident" type="ENUMERATED_Type" />
        <xsd:element name="accidentWithIncreasedRiskOfSevereInjury" type="ENUMERATED_Type" />
      </xsd:choice>
  </xsd:complexType>
<xsd:complexType name="CarriagewayBlockage_Type">
    <xsd:choice>
        <xsd:element name="unknown" type="ENUMERATED_Type" />
        <xsd:element name="blockingNearsideLane" type="ENUMERATED_Type" />
        <xsd:element name="blockingFarsideLane" type="ENUMERATED_Type" />
        <xsd:element name="blockingMiddleLane" type="ENUMERATED_Type" />
        <xsd:element name="blockingMultipleLanes" type="ENUMERATED_Type" />
        <xsd:element name="roadside" type="ENUMERATED_Type" />
        <xsd:element name="off-Road" type="ENUMERATED_Type" />
      </xsd:choice>
  </xsd:complexType>
<xsd:complexType name="Airbag_Type">
    <xsd:choice>
        <xsd:element name="unknown" type="ENUMERATED_Type" />
        <xsd:element name="notEquipped" type="ENUMERATED_Type" />
        <xsd:element name="notFired" type="ENUMERATED_Type" />
        <xsd:element name="fired" type="ENUMERATED_Type" />
      </xsd:choice>
  </xsd:complexType>
 <xsd:complexType name="SeatPosition_Type">
    <xsd:choice>
        <xsd:element name="unknown" type="ENUMERATED_Type" />
        <xsd:element name="driverSeat" type="ENUMERATED_Type" />
        <xsd:element name="frontPassengerSeat" type="ENUMERATED_Type" />
        <xsd:element name="rearDriverSideSeat" type="ENUMERATED_Type" />
        <xsd:element name="rearCentreSeat" type="ENUMERATED_Type" />
        <xsd:element name="rearPassengerSideSeat" type="ENUMERATED_Type" />
        <xsd:element name="secondRowDriverSideSeat" type="ENUMERATED_Type" />
        <xsd:element name="secondRowCentreSeat" type="ENUMERATED_Type" />
        <xsd:element name="secondRowPassengerSideSeat" type="ENUMERATED_Type" />
      </xsd:choice>
  </xsd:complexType>
 <xsd:complexType name="Gender_Type">
    <xsd:choice>
        <xsd:element name="unknown" type="ENUMERATED_Type" />
        <xsd:element name="male" type="ENUMERATED_Type" />
        <xsd:element name="female" type="ENUMERATED_Type" />
      </xsd:choice>
  </xsd:complexType>
 <xsd:complexType name="PassengerDetails_Type">
    <xsd:sequence>
      <xsd:element name="SeatPosition" type="SeatPosition_Type" minOccurs="0" />
      <xsd:element name="Injured" type=" YesNoUnknown_Type " minOccurs="0" />
      <xsd:element name="Age" type="AGE_Type" minOccurs="0" />
```

```xml
              <xsd:element name="Gender" type="Gender_Type" minOccurs="0" />
          </xsd:sequence>
       </xsd:complexType>
    <xsd:complexType name="ImpactSeverity_Type">
        <xsd:choice>
            <xsd:element name="unknown" type="ENUMERATED_Type" />
            <xsd:element name="noCrash" type="ENUMERATED_Type" />
            <xsd:element name="impactDetected" type="ENUMERATED_Type" />
            <xsd:element name="severeImpactDetected" type="ENUMERATED_Type" />
        </xsd:choice>
      </xsd:complexType>
    <xsd:complexType name="CrashSeverity_Type">
        <xsd:sequence>
            <xsd:element name="FrontCrash" type="ImpactSeverity_Type" minOccurs="0" />
            <xsd:element name="DriverSideCrash" type="ImpactSeverity_Type" minOccurs="0" />
            <xsd:element name="PassengerSideCrash" type="ImpactSeverity_Type"
                minOccurs="0" />
            <xsd:element name="RearCrash" type="ImpactSeverity_Type" minOccurs="0" />
         </xsd:sequence>
      </xsd:complexType>
    <xsd:complexType name="SeatOccupation_Type">
        <xsd:choice>
            <xsd:element name="unknown" type="ENUMERATED_Type" />
            <xsd:element name="unoccupied" type="ENUMERATED_Type" />
            <xsd:element name="occupied" type="ENUMERATED_Type" />
            <xsd:element name="childSeat" type="ENUMERATED_Type" />
            <xsd:element name="notFitted" type="ENUMERATED_Type" />
        </xsd:choice>
      </xsd:complexType>
    <xsd:complexType name="SeatOccupationSummary_Type">
        <xsd:sequence>
            <xsd:element name="driverOccupation" type="SeatOccupation_Type" />
            <xsd:element name="frontPassengerOccupation" type=" SeatOccupation _Type" />
            <xsd:element name="rearDriverSideOccupation" type=" SeatOccupation _Type" />
            <xsd:element name="rearCentreOccupation" type=" SeatOccupation _Type" />
            <xsd:element name="rearPassengerSideOccupation" type=" SeatOccupation _Type"
                />
            <xsd:element name="secondRowDriverSideOccupation" type=" SeatOccupation
                _Type" />
            <xsd:element name="secondRowCentreOccupation" type=" SeatOccupation _Type" />
            <xsd:element name="secondRowPassengerSideOccupation" type=" SeatOccupation
                _Type" />
        </xsd:sequence>
      </xsd:complexType>

    <!--
    The XML data behind AdditionalInformation
    -->
    <xsd:complexType name="AdditionalInformationData_Type">
      <xsd:sequence>
          <xsd:element name="VehicleAudioStatus" type="VehicleAudioStatus_Type" minOccurs="0" />
          <xsd:element name="NumInjuredPersonsInVehicle" type="SHORT_Type" minOccurs="0" />
          <xsd:element name="NumInjuredPersonsOther" type="SHORT_Type" minOccurs="0" />
          <xsd:element name="RiskOfSevereInjury" type="RiskOfSevereInjury_Type" minOccurs="0" />
          <xsd:element name="CrashSummaryDetails" type="CrashSeverity_Type"
              minOccurs="0" />
          <xsd:element name="RolloverCrashData" type="YesNoUnknown_Type" minOccurs="0"
              />
```

```
<xsd:element name="MultipleCollisionCrashData" type="YesNoUnknown_Type"
    minOccurs="0" />
<xsd:element name="NumDetectedCrashes" type=" SHORT_Type " minOccurs="0" />
<xsd:element name="KnownSeatOccupation" type=" SeatOccupationSummary_Type"
    minOccurs="0" />
<xsd:element name="IncidentDescription" type="xsd:string" minOccurs="0" />
<xsd:element name="VehicleMake" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleSeries" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleModel" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleBodyType" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleManufactureDate" type="ShortString_Type"
    minOccurs="0" />
<xsd:element name="VehicleColour" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLicence" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLocationStreet" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLocationStreetNumber" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLocationKM" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLocationCity" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLocationPostcode" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLocationArea" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLocationCountry" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLocationPreviousCrossing" type="ShortString_Type" minOccurs="0" />
<xsd:element name="VehicleLocationNextCrossing" type="ShortString_Type" minOccurs="0" />
<xsd:element name="CarriagewayBlockage" type="CarriagewayBlockage_Type" minOccurs="0" />
<xsd:element name="Fire" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="FuelLeakage" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="Tunnel" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="Trapped" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="DangerousGoods" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="OccupantEjection" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="Rollover" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="MultipleCollision" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="NumOccupantsInVehicle" type="SHORT_Type" minOccurs="0" />
<xsd:element name="NumChildrenInVehicle" type="SHORT_Type" minOccurs="0" />
<xsd:element name="NumElderlyInVehicle" type="SHORT_Type" mnOccurs="0" />
<xsd:element name="PassengerDetails" type="PassengerDetails_Type" minOccurs="0" />
<xsd:element name="LossOfConsciousness" type="YesNoUnknown_Type"
    minOccurs="0" />
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<xsd:element name="HeavyBleeding" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="BreathingProblems" type="YesNoUnknown_Type" minOccurs="0" />
<xsd:element name="SpecialMedicalConditions" type="YesNoUnknown_Type"
    minOccurs="0" />
<xsd:element name=" SpecialMedicalConditionDetails" type="xsd:string"
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<xsd:element name="OtherVehiclesInvolved" type="YesNoUnknown_Type"
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<xsd:element name="OtherPeopleInvolved" type="YesNoUnknown_Type"
    minOccurs="0" />
<xsd:element name="NumFittedAirbags" type="SHORT_Type" minOccurs="0" />
<xsd:element name="NumDeployedAirbags" type="SHORT_Type" minOccurs="0" />
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<xsd:element name="AirbagDeploymentFrontPassenger" type="Airbag_Type" minOccurs="0" />
<xsd:element name="AirbagDeploymentThoraxDriverSide" type="Airbag_Type" minOccurs="0" />
<xsd:element name="AirbagDeploymentThoraxPassengerSide" type="Airbag_Type" minOccurs="0" />
<xsd:element name="AirbagDeploymentKneeDriverSide" type="Airbag_Type" minOccurs="0" />
<xsd:element name="AirbagDeploymentKneePassengerSide" type="Airbag_Type" minOccurs="0" />
<xsd:element name="AirbagDeploymentHeadDriverSide" type="Airbag_Type" minOccurs="0" />
<xsd:element name="AirbagDeploymentHeadPassengerSide" type="Airbag_Type" minOccurs="0" />
```

```
            <xsd:element name="AirbagDeploymentRearDriverSide" type="Airbag_Type" minOccurs="0" />
            <xsd:element name="AirbagDeploymentRearPassengerSide" type="Airbag_Type" minOccurs="0" />
            <xsd:element name="OperatorComments" type="xsd:string" minOccurs="0" />
        </xsd:sequence>
    </xsd:complexType>
    <xsd:element name="AdditionalInformationData" type="AdditionalInformationData_Type" />
</xsd:schema>
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