SLOVENSKI STANDARD
SIST-TS CEN/TS 17363:2019

01-november-2019

Inteligentni transportni sistemi - Izbirni dodatni podatki eKlica - Povezan koncept podatkov o mobilni telefonski številki

Intelligent transport systems - ECall optional additional data - Linked mobile phone number data concept

Intelligente Verkehrssysteme - Optionale zusätzliche eCall-Daten - Verbundenes Mobilfunknummer Datenkonzept

Élément introductif - Élément central - Élément complémentaire

Ta slovenski standard je istoveten z: CEN/TS 17363:2019

ICS:

13.200	Preprečevanje nesreč in katastrof	Accident and disaster control
35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport

SIST-TS CEN/TS 17363:2019 **en,fr,de**

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 17363

August 2019

ICS 13.200; 35.240.60

English Version

Intelligent transport systems - ECall optional additional data - Linked mobile phone number data concept

Élément introductif - Élément central - Élément complémentaire

Intelligente Verkehrssysteme - Optionale zusätzliche eCall-Daten - Datenkonzept für verbundene Mobilfunknummer

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Ref. No. CEN/TS 17363:2019 E

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European foreword

This document (CEN/TS 17363:2019) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

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Introduction

This document complements EN 15722:2015, *Intelligent transport systems — ESafety — ECall minimum set of data* and provides an "Optional Additional Data" concept to be transmitted as part of the MSD transmission in accordance with EN 15722:2015.

In the event that a vehicle triggers a 112 eCall, the MSD is sent to a "public safety answering point" (PSAP).

The PSAP operator decodes the MSD data (usually, but not necessarily, automatically placed on the operator's screen). The operator is put in wireless communication (via a mobile phone connection) with the occupants of the vehicle.

However, sometimes, the operator does not receive any response from the vehicle. This may be due to one of three reasons:

a) The equipment has failed/has a fault;

b) The occupants are dead, unconscious or otherwise unable to speak;

c) The occupants have left the vehicle and moved to a place of safety (for example behind a crash barrier or well away from the road [this would often be the advice given by a PSAP in any event]).

NOTE 1 The communications media and means of transferring the eCall MSD are not defined in this document. See the list of referenced Standards.

As, by this stage, the Minimum Set of Data (MSD) has already been successfully sent; it is usually relatively easy to detect an in-vehicle system problem (the line has gone totally silent, indicating a dropped call, or there is some interference noise etc.).

If the line appears to be operational, the responding PSAP has a dilemma. He/she has no way to determine whether the cause is (b), where it is essential to quickly get emergency response to the scene, or (c), in which case it may not even be necessary to send an emergency response to the scene.

Based on experience with pre-eCall emergency call systems using cellular telephone links, experience is that more than 90 % of the time, the reason is (c), but without further information, the PSAP cannot take that risk and is to send emergency response to the site.

However, current generation vehicles generally now provide the possibility for a 'Bluetooth' link between the mobile phone of the occupants and the car. Thus, when the registered phone user enters, or is in close proximity, to the vehicle (usually, but not always, activated when the ignition is turned on) his/her mobile phone connects via Bluetooth to the vehicle's audio system No information about the user itself, or her/his phone number is exchanged, as this information is neither known to the mobile phone nor is it part of any Bluetooth exchange mechanism. That said, the vehicle does know, at any time, which registered user phones are in or near the vehicle and linked to it at the time of the incident.

If, by means of prior consent, the user who registers his/her phone with the vehicle system enters his/her phone number, it is possible to provide the PSAP with that phone number as an "Optional Additional Data" (OAD) concept as part of the MSD.

In the event of a 'silent' call, the PSAP is therefore able to telephone the mobile phone number that was linked to the vehicle at the time of the incident. It is expected that this will significantly reduce the number of 'silent' calls.

This addition does not enable the vehicle to be tracked or logged in any way other than any other linked mobile telephone, and, of course, in 112 eCall, the eCall phone connection to the network does not occur at all until after the event (triggering of eCall).

NOTE 2 This specification provides an optional additional concept as part of the MSD sent to the PSAP, it does not involve making any direct connection with the telephone number provided, but simply makes that number available to the PSAP to call if available and required.

This document defines the OAD concept, requirements to ensure the user's consent to the provision of the linked phone number, any provisions to be made regarding privacy and advice to PSAPs on the use of the extra information.

1 Scope

This document defines an eCall "Optional Additional Data" concept for the "Minimum Set of Data" (MSD) to be transferred from a vehicle to a 'Public Safety Answering Point' (PSAP) in the event of a crash or emergency via an 'eCall' communication transaction.

This document defines:

a) Protocol requirements to ensure phone user consent to the provision of the linked 'phone number to the PSAP in the event of an eCall triggering incident;

b) Definition of the OAD concept "Linked mobile Telephone Number" (LTN);

c) Privacy provisions;

d) Advice to PSAPs on the use of the eCall OAD LTN;

e) Example of an in-vehicle sequence generating the LTN OAD and forwarding it as part of the MSD.

For clarity, the communications media protocols and methods for the transmission of the eCall message are not specified in this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15722:2015, *Intelligent transport systems — eSafety — eCall Minimum set of Data*

EN 16102, *Intelligent transport systems — eCall — Operating requirements for third party support*

EN ISO 24978, *Intelligent transport systems — ITS safety and emergency messages using any available wireless media — Data registry procedures*

ISO/IEC 8825 (all parts), *Information technology — ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)*

ITU E.123, *Notation for national and international telephone numbers, e-mail addresses and web addresses*

3 Terms and definitions

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

3.1
ASN.1/Abstract Syntax Notation 1
notation that describes rules and structures for representing, encoding, transmitting, and decoding data enabling representation of objects that are independent of machine-specific encoding techniques

Note 1 to Entry See EN 15722:2015, Annex B.

3.2
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 standardized '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'

3.3
minimum set of data
direct, timely data content of an eCall message to the PSAP operator receiving the emergency call containing information about the location of the incident, providing detail characterising the vehicle, and potentially sometimes also providing additional data that is deemed relevant

3.4
public safety answering point
'first level' responder to whom an emergency call/eCall is directed

3.5
(Bluetooth) registered phone
phone that has been registered (via Bluetooth)

3.6
(Bluetooth) linked phone
previously registered phone that is in the near presence of the Bluetooth car kit and linked to it, enabling bi directional access between the car and the phone

4 Conformance

In order to claim conformance with this document, communication is to be established using accepted wireless communication standards, and it is to be able to demonstrate that the MSD transferred together with any standardized optional data elements defined herein comply with the specifications of this document to the extent that such data are available from the vehicle.

5 Symbols and abbreviated terms

ASN.1	abstract syntax notation one (ISO 8824 (all parts)/ ISO 8825 (series))
EC	European Commission
EU	European Union
IVS	in-vehicle system
LTN	Linked mobile Telephone Number
MSD	minimum set of data
OAD	Optional Additional Data
PER	packed encoding rules (ASN.1)
PSAP	public safety answering point
UPER	unaligned packet encoding rules (ASN.1)

6 Requirements

6.1 General

This document describes an addendum to the standard defined in EN 15722 for the coding of the MSD message. Any requirement from EN 15722 shall be met for the exchange of information in the additional data block

It is foreseen that, over time, it is possible that other communication number links may become possible. Any OAD that does not represent a standard mobile telephone number in the format defined in 6.3 shall be defined and named separately and distinctly from the OAD concept LTN data definition specified in 6.3.

The OAD LTN shall ONLY be provided where the in-vehicle operating system can verify that the LTN handset is operational and in or near the vehicle, i.e. linked to the vehicle, at the time of the incident. The OAD LTN SHALL NOT be provided where such live validation is not in operation.

Specifically, if a system does not have this capability, but wishes to provide a user /driver telephone, number to the PSAP it shall use a different means (such as a different registered OAD) or means specified in EN 16102 or in any eCall aftermarket standards to inform the PSAP of this number.

6.2 Registration and linking of the phone

6.2.1 Registration and user consent

When acquiring use of a vehicle, the user is often given the opportunity to "register" one or more mobile phone numbers by Bluetooth wireless connection. In normal vehicle operation this then means that whenever the registered mobile phone is inside or in close proximity to the vehicle the vehicle will link with it and provide hands free access to the phone and connectivity to the vehicle audio system.

In order to enable the LTN data concept value (the linked telephone number) to be transferred to the PSAP as part of the MSD, it is required that a shortened (and translated) version of the following question is introduced in the Bluetooth registration process and that the question is fully documented in the 0uowner's manual:

"In an emergency 112-eCall (for example after a crash), if this phone is present in the vehicle at the time of the incident, do you consent to the number of this phone being provided to the emergency services in order to enable the rescue services to be able to talk with you in case you immediately leave the vehicle after the incident or the vehicle equipment is incapacitated by the incident?".

Where the user provides consent to this question by answering confirmative, then the user shall be asked to enter the number of the registered mobile phone in international format. The user shall be asked to confirm or re-enter the number to ensure correctness. The number shall then be stored.

In case the user does not give his consent to the first question, does not enter a correct phone number or does not confirm the entered phone number, no number shall be stored. In such case the OAD for linked phone numbers shall not be used for the registered phone.

While the questions need to specifically cover each and all these aspects, the exact wording and sequence used shall be at the determination and responsibility of the system supplier who shall be responsible to ensure that it meets EU privacy requirements in respect of prior consent for the use of personal information and it is fully explained in the owner's manual.

An (informative) example of the HMI can be found in Annex C.

6.2.2 Linking and unlinking

If a registered phone connects via Bluetooth, i.e. gets linked to the ca, and the user has provided a phone number and his consent to embed this in the eCall message, the phone number shall be communicated to the eCall device.

If the Bluetooth connection gets interrupted (for whatever reason) the eCall device shall be notified. The eCall device shall, in such case, forget the provided number.

6.2.3 Use of phone number in case of eCall

If the registered mobile telephone is present at the time of the incident causing the eCall to be sent, and the driver has provided consent and provided the TS11 telephone number of the mobile phone, then the MSD that is sent as part of the eCall shall contain the OAD LTN that provides this number.

If this Bluetooth-linked mobile is not present (linked by Bluetooth to the vehicle) at the time, the eCall is triggered, the OAD LTN shall not be sent as part of the MSD.

NOTE To be clear, at the time that this document is being developed, the OAD LTN is not required by the eCall regulations, but the OAD LTN is a service that the equipment provider can provide to its clients and the PSAP receiving an eCall.

6.3 Distribution of MSD data

The MSD shall be transmitted as described in EN 15722. An (informative) scheme explaining the process can be found in Annex D.

7 Concepts and formats

7.1 MSD data concepts and representation

The MSD, as defined in EN 15722, is a direct, timely message to the PSAP operator receiving the emergency call.

The MSD has an optional additional data block that will be used to add information elements containing information about the phone number of (one of) the occupants.

The MSD is represented in 'Abstract Syntax Notation' (ASN.1) using the 'Unaligned Packed Encoding Rules' (UPER) as defined in ISO/IEC 8825-2 using the ASN1 definitions defined in EN 15722:2015 Annex A. The message shall be sent in the sequence also defined in Annex A.

The information about the phone number of (one of) the occupants of the vehicle sending the MSD shall be represented in ASN.1 UPER as well, following the provision made in above named Annex.

7.2 Linked phone number optional additional data concept 'Object Identifier'

The object identifier uniquely identifies the format and meaning of the data which follows in the optional additional data concept.

Both the syntax of the data structure and the semantic meaning of the content is referenced via this identifier so that it can be usefully applied.

The uniqueness of each specific relative identifier is ensured by a specific international standardisation body, and maintained in a data registry operated in accordance with EN ISO 24978. These identifiers are all relative to a specific root. And the root of all eCall relative OID's shall be the same.

eCall has been allocated the OID 1.0.14817.106.2.1. Within this, arc '.2' has been defined to contain 'Optional Additional Data concepts'. The OID for this deliverable shall be 1.0.14817.106.2.1.2.5. To be able to differentiate between versions, this OID is extended with an extra arc. The resulting OID is 1.0.14817.106.2.1.2.5.1.

The OID for 'Optional Additional Data concepts' (1.0.14817.106.2.1.2) is fixed and shall not be transmitted over the air as part of the optional additional data. The MSD data element 'OID' is defined as RELATIVE-OID and shall contain 5.1 if this concept is used.

For further detail regarding the use of OIDs in eCall, see EN 15722.

7.3 Linked phone number optional additional data concept 'data'

The objective of this data concept is to provide the PSAP with the phone number of (one of) the occupants of the vehicle at the time of the incident. The number provided shall be in ITU E.123 international notation **without** the plus sign, i.e. only the country code and the local number (without a leading zero if present).

The data concept will not take up more than the minimum amount of bytes available for the optional additional data; as such, there is no risk of the complete MSD to exceed the maximum number of bytes allowed by using this data concept.

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

7.4.1 General

The following subclauses provide the definition of the minimum set of data that shall be sent from the vehicle in case of an emergency call.

7.4.2 Basic contents of MSD

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

Table 1 – Contents/format of the MSD data concept

M – Mandatory data field
O – Optional data field.

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

This document describes the contents of the optionalAdditionalData block.