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Inteligentni transportni sistemi - e-Varnost - 1. del: Razširitev e-klica na druge kategorije vozil

Intelligent transport systems - eSafety - Part 1: Extending eCall to other categories of vehicle

Intelligente Verkehrssysteme - eSicherheit - Teil 1: Erweiterter eCall für andere Fahrzeugkategorien

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Intelligent transport systems - eSafety - Part 1: Extending eCall to other categories of vehicle

Intelligente Verkehrssysteme - eSicherheit - Teil 1: Erweiterter eCall für andere Fahrzeugkategorien

This Technical Report was approved by CEN on 1 July 2018. It has been drawn up by the Technical Committee CEN/TC 278.

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European foreword

This document (CEN/TR 17249-1:2018) has been prepared by Technical Committee CEN/TC 278 "Intelligent transport systems", the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

The present series is composed with the following parts:

— CEN/TR 17249-1, *Intelligent transport systems - eSafety - Part 1: Extending eCall to other categories of vehicle*;

— FprCEN/TS 17249-2, *Intelligent transport systems - eSafety - Part 2: eCall for HGVs and other commercial vehicles*;

— FprCEN/TS 17249-3, *Intelligent transport systems - eSafety - Part 3: eCall for Coaches and buses*;

— FprCEN/TS 17249-4, *Intelligent transport systems - eSafety - Part 4: eCall for UNECE Category T, R, S agricultural/forestry vehicles*;

— FprCEN/TS 17249-5, *Intelligent transport systems - eSafety - Part 5: eCall for UNECE Category L1 and L3 powered two-wheeled vehicles*, and

— FprCEN/TS 17249-6, *Intelligent transport systems - eSafety - Part 6: eCall for UNECE Category L2, L4, L5, L6 and L7 tricycles and quadricycles*.

Introduction

The EU ICT "Rolling Plan" issued each year by DG MOVE has for some years recognized that *eCall*, as currently regulated, services only new model vehicles of Categories M1 and N1 (cars and light vans) and should be extended to cover other categories of vehicles. The 2017 ICT Rolling Plan states:

"Standards for next generation networks are also expected in 2017 for eCall, as well as standards for other users than M1 and N1 vehicles (lightweight vehicles for the carriage of goods or passengers)…"

"ACTION 1 SDOs to develop technical specification and standards for the implementation of eCall in-vehicles of categories other than M1 and N1 and for other user types, taking into account requirements included within type-approval regulation and ongoing activities in this area (pilots, the Connecting Europe Facility (CEF), etc)."

"The next generation of standards on eCall service should take into account future developments in mobile communication networks and the IP environment, in particular LTE and IPv6 networks. Standards for the extension to other vehicles types and services should also be developed — such as heavy duty vehicles, power two wheelers or hazardous goods tracking, and other classes of vulnerable road users, taking into account requirements from type-approval regulation and the results of other initiatives in this area (pilots, the CEF, etc)."

In order to achieve its objectives, the European Commission has funded a CEN Project team, PT 0278 1507, to further this objective:

"This call for experts applies to the preparation of deliverable(s) associated with the following task(s) as defined in the Project Plan:

- *A Technical Report discussing the desirability, feasibility and problems associated with eCall for a particular class of road user*
- *A Technical Specification of parameters that can provide eCall High Level operating requirements and application protocols to support service for other classes of user…"*

This proposal addresses the EC "Rolling Plan" for ITS implementation in respect of eCall, notably:

"It is also required to analyse the need and develop standards if needed for the extension to other vehicles types and services"

Some of these additional classes are listed in article 12 of the eCall type-approval regulation, "REGULATION (EU) 2015/758 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2015 concerning type-approval requirements for the deployment of the eCall", while other potential users have not yet been classified

The additional classes of road user included in this proposal include:

- *heavy goods vehicles*
- *busses and coaches*
- *agricultural tractors*
- *P2WV (Moped/motorcycle drivers/passengers)*

This document addresses the requirement of the remit to CEN TC278 PT1507 for a "Technical Report discussing the desirability, feasibility and problems associated with eCall for a particular category of road user" and the content of this deliverable is the first of 6 associated documents parts. This Technical Report discusses the desirability, feasibility and problems associated with eCall for the identified additional categories of vehicle and provides the context and base assumption for FprCEN/TS 17249-2,

FprCEN/TS 17249-3, FprCEN/TS 17249-4, FprCEN/TS 17249-5 and FprCEN/TS 17249-6 which provide technical specifications to support eCall for these additional categories of vehicles over both circuit switched and packet switched networks.

1 Scope

This document discusses the desirability, feasibility and problems associated with *eCall* for the following categories of road user:

a) HGV/commercial vehicles;

b) coaches and busses;

c) agricultural and forestry vehicles;

d) powered 2 wheeled vehicles;

e) tricycles and quadricycles.

NOTE Regulation issues are outside the scope of this document and the associated Technical Specification (although, where appropriate regulation(s) may reference the requirements of this deliverable).

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 16062:2015, *Intelligent transport systems - Esafety - eCall high level application requirements (HLAP) using GSM/UMTS circuit switched networks*

EN 16072:2015, *Intelligent transport systems - Esafety - Pan-European eCall operating requirements*

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

CEN/TS 16405, *Intelligent transport systems – Ecall - Additional data concept specification for heavy goods vehicles*

EN 16454, *Intelligent transport systems – Esafety - ECall end to end conformance testing*

FprCEN/TS 17184, Intelligent transport systems – eSafety - eCall High level application Protocols (HLAP) using IMS packet switched networks

FprCEN/TS 17249-2, Intelligent transport systems - eSafety - Part 2: eCall for HGVs and other commercial vehicles

FprCEN/TS 17249-3, Intelligent transport systems - eSafety - Part 3: eCall for Coaches and buses

FprCEN/TS 17249-4, Intelligent transport systems - eSafety - Part 4: eCall for UNECE Category T, R, S agricultural/forestry vehicles

FprCEN/TS 17249-5, Intelligent transport systems - eSafety - Part 5: eCall for UNECE Category L1 and L3 powered two-wheeled vehicles

FprCEN/TS 17249-6, Intelligent transport systems - eSafety - Part 6: eCall for UNECE Category L2, L4, L5, L6 and L7 tricycles and quadricycles

ISO 21217:2014, *Intelligent transport systems -- Communications access for land mobiles (CALM) -- Architecture*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 16072:2015 and the following apply.

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1
112
single European emergency call number supporting Teleservice 12

[SOURCE: ETSI/TS 122 003]

3.2
112-eCall
'*eCall*' provided by a 'Teleservice 12' mobile communication network, as defined in EN 16072

3.3
ADR
European Agreement concerning the International Carriage of *dangerous goods* by Road: Accord Européen Relatif Au Transport International Des Marchandises Dangereuses Par Route (ADR)

3.4
agricultural/forestry vehicle
vehicle of category T, R, S

[SOURCE: UNECE ECE/TRANS/WP.29/78/Rev.4]

3.5
bus
coach (UNECE Category M2 & M3) which makes frequent stops with semi-random unplanned Hop-on/hop-off (3.20) characteristics, with little or no use of seat belts and on which passengers may sit or stand and passenger movement is allowed

3.6
call clear-down
termination of call and freeing up of line (usually achieved by hanging up the receiver or pressing 'end call' or similar on screen)

3.7
CAN-BUS
data-bus standard for vehicles, designed to allow microcontrollers and devices to communicate with each other in applications without a host computer

3.8
cellular network
wireless communications network (3.53) consisting of multiple adjacent access points (cells) with the capability of homogeneous transfer of a communications session instance to an adjacent cell without significant interruption to the session

3.9
coach
vehicle of UNECE categorizations M2 or M3, designed and constructed for the carriage of *passengers*, comprising more than eight seats in addition to the *driver's* seat

3.10
collision
vehicle impacts with another vehicle or object or is impacted by another vehicle or object

3.11
commercial vehicle
mechanically propelled road vehicle (vehicle type N1, N2 or N3) that is of a construction primarily suited for the carriage of goods or burden of any kind (not including people) and travelling on a road laden

Note 1 to entry: This includes vehicles designed or adapted to have a maximum weight exceeding 3 500 t, but explicitly excludes *busses* or other vehicles designed and constructed for the carriage of *passengers* (3.37) (i.e. vehicle types M1, M2 or M3).

Note 2 to entry: See also 3.43 - *Regulated Commercial Vehicle*.

3.12
data
representations of static or dynamic objects in a formalized manner suitable for communication, interpretation, or processing by humans or by machines

3.13
data concept
any of a group of data (3.12) 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

3.14
dangerous goods
(ADR)
Categories of goods carried by road defined by the 'European Agreement concerning the 'International Carriage of Dangerous Goods by Road' *(ADR)* as dangerous; these are characterized as articles or substances which are capable of posing a significant risk to health, safety or to property when transported

3.15
driver
operator in control of the vehicle and managing its movements on the road

3.16
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* (MSD) notifying that there has been an incident that requires response from the emergency services, and establishes an audio channel between the occupants of the vehicle and the most appropriate *Public Safety Answering Point* (EN 16072)

3.17
***eCall* service**
end-to-end emergency service to connect occupants of an affected vehicle to the *most appropriate PSAP* via an audio link across a PLMN together with the transfer of a *minimum set of data* to the PSAP

3.18
eCall transaction
establishment of a mobile wireless communications session across a *public wireless communications network* and the transmission of a *minimum set of data* from a vehicle to a *Public Safety Answering Point* and the establishment of an audio channel between the vehicle and the PSAP

3.19
equipment
device or *machine* that performs a specific *field* operation

[SOURCE: ISO 11783-1:2017, 3.20, modified – the original Note 1 to entry was deleted.]

3.20
Hop-on/hop-off
random ingress/egress to/from a *bus*, usually at predetermined access points (bus stops)

3.21
identifier
label, symbol or token that names or identifies an entity or a collection of *data* or the means of designating or referring to a specific instance of a *data concept*

3.22
implement
device or *machine* that performs a specific operation and which is normally attached to a *tractor*

[SOURCE: ISO 11783-1:2017, 3.30]

3.23
IMS-112-*eCall*
Pan-European *eCall* provided using IMS over packet switched cellular wireless networks (e.g. E_UTRAN/LTE, etc.)

3.24
IP-Multimedia Subsystem (IMS)
architectural framework for delivering IP multimedia services

Note 1 to entry: Historically, mobile phones have provided voice call services over a switched-circuit-style network, rather than over an IP packet-switched network.

3.25
in-vehicle equipment
equipment within the vehicle that provides or has access to in-vehicle *data* required for the *minimum set of data* and any other *data* that is to be sent as part of or complementary to the *minimum set of data* to effect the *eCall transaction* via a *public mobile wireless communications network* providing a link between the vehicle and a means of enacting the *eCall service* via a *public mobile wireless communications network*

3.26
in-vehicle system (IVS)
equipment within the vehicle that manages the *eCall* session and provides or has access to in-vehicle *data* required for the *minimum set of data* and any other *data* that is to be sent as part of or complementary to the *minimum set of data* to effect the *eCall transaction* via a *public mobile wireless communications network* providing a link between the vehicle and a means of enacting the *eCall service* via a *public mobile wireless communications network*

3.27
ISOBUS
universal protocol for electronic communication between *implements*, *tractors* and computers

3.28
ITS-station
functional entity providing ITS communication and services; comprised of an ITS-s facilities layer, ITS-s networking and transport layer, ITS-s access layer, ITS-s management entity, ITS-s security entity, and ITS-s applications entity providing ITS services

3.29
long distance coach
vehicle of UNECE categorizations M2 or M3, designed and constructed for the carriage of *passengers*, comprising more than eight seats in addition to the *driver's* seat and which is being used for interurban or cross country journeys or tours and does not support *Hop-on/hop-off* stops

3.30
machine
device that uses or applies mechanical power, which has a definite function and which performs a specific kind or kinds of work

[SOURCE: ISO 11783-1:2017, 3.33]

3.31
minimum set of data
standardized *data concept* comprising *data elements* of relevant vehicle generated *data* essential for the performance of the *eCall service* (EN 15722) containing minimum set of data (MSD)

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 characterizing the vehicle, and potentially sometimes also providing additional *data* that is deemed relevant

3.32
mobile wireless communications network
wireless communications network (3.53) with homogeneous handover between network access points (3.34)

3.33
most appropriate PSAP
PSAP defined beforehand by responsible authorities to cover emergency calls from a certain area or for emergency calls of a certain type

Note 1 to entry: See also PSAP.

Note 2 to entry: A number of different instantiations of PSAP service are supported within this document. A PSAP can be a Public Authority or a private *service provider* (3.47) operating on behalf of the responsible authorities.

3.34
network access point
beacon, antenna or similar source of signal propagation and receipt together with *equipment* to manage communication sessions with users operating within the operating reach of the *network access point* and provide connectivity for the users within the operating reach of the single *access point* to a wider communications network

Note 1 to entry: A *network access point* may but does not need to provide homogeneous or heterogeneous handover to another *network access point*.

3.35
optional additional data (OAD)

part of the Minimum Set of Data allocated for additional optional data provided in a format determined in EN 15722

Note 1 to entry: It is an 'optional' additional data field contained within and transmitted as part of the MSD; any additional data element(s) should each consist of two parts:

a) a relative 'object identifier' (OID) and

b) the data content.

The following notes are copied from EN 15722 and originally sourced from EN ISO 24978.

Note 2 to entry: Examples: Additional *data* (3.12) may contain a reference to an external source of relevant information (such as a phone number, a website URL/URI, etc. where further information may be found, or additional *data* specific to the vehicle or incident (e.g. battery temperature in the case of an electric or hybrid vehicle; number of *roll-overs* (3.45); URL/URI to the technical specifications to a particular vehicle model; etc.). *Optional additional data* should not include any *data* concerning or identifying a person (personal *data*) unless the transfer of such *data* has been explicitly and expressly prior instructed and authorized by the person who is identified by the *data* and its provision should in any event only be provided only in accordance with European Union and National privacy regulations pertaining at the time of the transfer of any such personal *data.*

Note 3 to entry: CEN/TC 278/WG 15 or a body nominated by it should allocate an 'Object Identifier' (OID) for each '*Optional additional data* concept'. Within the MSD the '*Optional Additional Data* concept' used should be identified by a 'relative OID', i.e. it will only contain the arcs of the object identifier of the concept starting below the *eCall* MSD '*Optional Additional Data* concept' object identifier. See EN 15722. Additional *data* (3.6) should be represented using an ASN.1representation definition that itself is made available to emergency services/PSAPs.

Note 4 to entry: When sending an MSD containing this additional *data* (3.12), using GSM/UMTS (EN 16062), the addition of such *data* shall never cause the total (UPER encoded) MSD message length to exceed the maximum available number of bytes (total message length = 140 bytes).