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Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 3: Specifications of Decentralized Environmental Notification Basic Service

Táto norma obsahuje anglickú verziu európskej normy.
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Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Intelligent Transport Systems (ITS).

The present document is part 3 of a multi-part deliverable covering Vehicular Communications; Basic Set of Applications, as identified below:

ETSI TS 102 637-1: "Functional Requirements";

ETSI EN 302 637-2: "Specification of Cooperative Awareness Basic Service";

ETSI EN 302 637-3: "Specifications of Decentralized Environmental Notification Basic Service".

The specification of the Decentralized Environmental Notification (DEN) basic service was initially developed in the European Car-to-Car Communication Consortium (C2C-CC) Manifesto [i.2] and in C2C-CC Message description: Decentralized Environmental Notification Message [i.3]. The service was evaluated by several initiatives, such as the C2C-CC demonstration in 2008, by ETSI Plugtest events and European projects including PRE-DRIVE C2X, DRIVE C2X, SafeSpot, CVIS, CoVeL, SCORE@F, simTD, etc. These evaluation efforts have provided feedback to ETSI TC ITS.

The present document replaces ETSI TS 102 637-3 [i.16] in whole. It includes improvements and enhancements of the DEN basic service specifications in ETSI TS 102 637-3 [i.16] according to the feedback provided by the various initiatives.

National transposition dates	
Date of adoption of this EN:	7 November 2018
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Date of withdrawal of any conflicting National Standard (dow):	31 January 2020

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the [ETSI Drafting Rules](#) (Verbal forms for the expression of provisions).

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Introduction

ITS use cases are distributed over multiple instances of ITS stations (ITS-S). ITS-Ss interact in the ITS networks to provide a large diversity of co-operating customer services that satisfy different types of functional and operational requirements.

ETSI TC ITS has defined a "Basic Set of Applications" (BSA) in ETSI TR 102 638 [i.1] that can be deployed within a three-year time frame after the completion of their standardization. In BSA, the Road Hazard Warning (RHW) application is composed of multiple use cases with the objective to improve road safety and traffic efficiency using vehicle-to-vehicle and vehicle-to-infrastructure communication technologies. ETSI TC ITS defines the decentralized environmental notification (DEN) basic service that supports the RHW application.

The DEN basic service is an application support facility provided by the facilities layer. It constructs, manages and processes the Decentralized Environmental Notification Message (DENM). The construction of a DENM is triggered by an ITS-S application. A DENM contains information related to a road hazard or an abnormal traffic conditions, such as its type and its position. The DEN basic service delivers the DENM as payload to the ITS networking & transport layer for the message dissemination. Typically for an ITS application, a DENM is disseminated to ITS-Ss that are located in a geographic area through communications among ITS stations. At the receiving side, the DEN basic service of an receiving ITS-S processes the received DENM and provides the DENM content to an ITS-S application. This ITS-S application may present the information to the driver if information of the road hazard or traffic condition is assessed to be relevant to the driver. The driver is then able to take appropriate actions to react to the situation accordingly.

1 Scope

The present document provides specification of the DEN basic service, which is in support of the RHW application.

More specifically, the present document specifies the syntax and semantics of the "Decentralized Environmental Notification Message" (DENM) and the DENM protocol handling.

The DEN basic service may be implemented in an vehicle ITS-S, a road side ITS-S, a personal ITS-S or a central ITS-S.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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The following referenced documents are necessary for the application of the present document.

- [1] SAE J2735 (2009-11-19): "Dedicated Short Range Communications (DSRC) Message Set Dictionary".

NOTE: Available at: http://standards.sae.org/j2735_200911/.

- [2] ETSI EN 302 665 (V1.1.1): "Intelligent Transport Systems (ITS); Communications Architecture".
- [3] ETSI TS 102 636-3 (V1.1.1): "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 3: Network Architecture".
- [4] ETSI EN 302 931 (V1.1.1): "Intelligent Transport Systems (ITS); Vehicular Communications; Geographical Area Definition".
- [5] ETSI TS 102 894-2 (V1.3.1): "Intelligent Transport Systems (ITS); Users and applications requirements; Part 2: Applications and facilities layer common data dictionary".
- [6] Recommendation ITU-T X.691/ISO/IEC 8825-2 (12-1997): "Information technology - ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)".
- [7] ETSI EN 302 637-2 (V1.4.1): "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 2: Specification of Cooperative Awareness Basic Service".
- [8] ETSI EN 302 636-2 (V1.2.1): "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 2: Scenarios".

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The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

- [i.1] ETSI TR 102 638 (V1.1.1): "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Definitions".
 - [i.2] Car2Car Communication Consortium (2007-08): "Car2Car Communication Consortium Manifesto", Version 1.1.
- NOTE: Available at <http://www.car-2-car.org>.
- [i.3] Car2Car Communication Consortium: "Message description: Decentralized Environmental Notification Message", Version 1.0.
 - [i.4] ETSI TS 101 539-1: "Intelligent Transport Systems (ITS); V2X Applications; Part 1: Road Hazard Signalling (RHS) application requirements specification".
 - [i.5] ETSI TS 101 539-2: "Intelligent Transport Systems (ITS); V2X Applications; Part 2: Intersection Collision Risk Warning (ICRW) application requirements specification".
 - [i.6] ETSI TS 101 539-3: "Intelligent Transport Systems (ITS); V2X Applications; Part 3: Longitudinal Collision Risk Warning (LCRW) application requirements specification".
 - [i.7] ETSI EN 302 895: "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Local Dynamic Map (LDM)".
 - [i.8] ETSI EN 302 636-4-1: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 4: Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; Sub-part 1: Media-Independent Functionality".
 - [i.9] ETSI EN 302 636-5-1: "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 5: Transport Protocols; Sub-part 1: Basic Transport Protocol".
 - [i.10] TISA specification TAWG11071 (2011-11-07, drafted to potentially become ISO/TS 21219 Part 15): "Intelligent Transport Systems (ITS) - Traffic and Travel Information (TTI) via Transport Protocol Experts Group, Generation 2 (TPEG2) - Part 15: Traffic Event Compact (TPEG2-TEC-3.1/001)".
 - [i.11] ISO EN 17419: "Intelligent Transport Systems - Cooperative Systems - Classification and management of ITS applications in a global context".
 - [i.12] ETSI TS 102 723-5: "Intelligent Transport Systems (ITS); OSI cross-layer topics; Part 5: Interface between management entity and facilities layer".
 - [i.13] ETSI TS 102 723-8: "Intelligent Transport Systems (ITS); OSI cross-layer topics; Part 8: Interface between security entity and network and transport layer".
 - [i.14] ETSI TS 102 723-11 (V1.1.1): "Intelligent Transport Systems (ITS); OSI cross-layer topics; Part 11: Interface between networking and transport layer and facilities layer".
 - [i.15] ISO 3779 (2011-07): "Road vehicles - Vehicle identification number (VIN) Content and structure".
 - [i.16] ETSI TS 102 637-3: "Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 3: Specifications of Decentralized Environmental Notification Basic Service".
 - [i.17] ETSI TS 103 097 (V1.3.1): "Intelligent Transport Systems (ITS); Security; Security header and certificate formats".
 - [i.18] ETSI TR 102 965 (V1.1.1): "Intelligent Transport Systems (ITS); Application object identifier (ITS-AID); Registration list".

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