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TECHNICAL REPORT

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Release 1

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Intelligent Transport Systems (ITS).

Modal verbs terminology

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1   Scope

The present document identifies the documents that form Release 1 of Cooperative ITS (C-ITS).

2   References

2.1   Normative references

Normative references are not applicable in the present document.

2.2   Informative 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 not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1]   European Commission (M/453): "Standardisation mandate addressed to CEN, CENELEC and ETSI in the field of Information and Communication Technologies to support the interoperability of Co-operative systems for Intelligent Transport in the European Community of 06 October 2009".

3   Definition of terms, symbols and abbreviations

3.1   Terms

Void.

3.2   Symbols

Void.

3.3   Abbreviations

For the purposes of the present document, the following abbreviations apply:

C-ITS   Cooperative ITS
DCC   Decentralized Congestion Control
DSRC   Dedicated Short Range Communication
EFC   Electronic Fee Collection
EV   Electric Vehicle
ITS   Intelligent Transport Systems
OSI   Open Systems Interconnection
RTTT   Road Transport and Traffic Telematics
V2I   Vehicle-to-Infrastructure
V2V   Vehicle-to-Vehicle

4 Introduction

For the development of standards which address Cooperative Intelligent Transport Systems (C-ITS) a release oriented process has been adopted.

The present document lists standards, specifications and other deliverables which have been developed to form a consistent set of standards as the basis for Release 1 including standards for interoperability developed in accordance with the work plan of the European Commission Standardisation Mandate M/453 [i.1].

Since Mandate M/453 [i.1] expects such a consistent set of standards the present document aims at facilitating the identification of these standards, hence providing guidance to implementation.

The deliverables forming Release 1 are synchronized and harmonized with similar documents prepared by other Standards Developing Organizations such as ISO/CEN, IEEE and SAE. The present document also serves as basis for defining further standardization activities which will lead to forming the Release 2 of standards related to Cooperative ITS.

5 Content Release 1

5.0 General

The deliverables forming Release 1 are based on a list of features required for deployment of Cooperative ITS. The following standards developed for interoperability in particular related to Mandate M/453 [i.1] address this deployment.

5.1 General standards

Standards developed for defining base requirements and procedures.

Table 1: General standards

Standard title	Standard number
Intelligent Transport Systems (ITS); Communications Architecture	ETSI EN 302 665 V1.1.1
Intelligent Transport Systems (ITS); Security; Security Services and Architecture	ETSI TS 102 731 V1.1.1
Intelligent Transport System (ITS); Users and applications requirements; Part 1: Facility layer structure, functional requirements and specifications	ETSI TS 102 894-1 V1.1.1
Intelligent Transport Systems (ITS); Users and applications requirements; Part 2: Applications and facilities layer common data dictionary	ETSI TS 102 894-2 V1.3.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 3: Network architecture	ETSI TS 102 636-3 V1.1.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 3: Network Architecture	ETSI EN 302 636-3 V1.2.1
Intelligent Transport Systems (ITS); Testing; Framework for conformance and interoperability testing	ETSI EG 202 798 V1.1.1
Intelligent Transport Systems (ITS); Framework for Public Mobile Networks in Cooperative ITS (C-ITS)	ETSI TR 102 962 V1.1.1

5.2 Application requirements

Standards developed for Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) message sets and applications covering both safety and traffic efficiency applications as well as Value Added Services and other comfort applications.

The application and facility layer standards are based on the following general ITS features:

- Vehicle safety:

    - driver assistance information;

    - driver assistance warning;

    - electric vehicles.

Table 2: Standards for application requirements

Standard title	Standard number
Intelligent Transport Systems (ITS); V2X Application; Part 1: Road Hazard Signalling (RHS) application requirements specification	ETSI TS 101 539-1 V1.1.1
Intelligent Transport System (ITS); V2X Application; Part 2: Intersection Collision Risk Warning (ICRW) application requirements specification	ETSI TS 101 539-2 V1.1.1
Intelligent Transport Systems (ITS); V2X Application; Part 3: Longitudinal Collision Risk Warning (LCRW) application requirements specification	ETSI TS 101 539-3 V1.1.1
Intelligent Transport Systems (ITS); Infrastructure to Vehicle Communication; Electric Vehicle Charging Spot Notification Specification	ETSI TS 101 556-1 V1.1.1
Intelligent Transport Systems (ITS); Infrastructure to Vehicle Communication; Part 2: Communication system specification to support application requirements for Tyre Information System (TIS) and Tyre Pressure Gauge (TPG) interoperability	ETSI TS 101 556-2 V1.1.1
Intelligent Transport Systems (ITS); Infrastructure to Vehicle Communications; Part 3: Communications system for the planning and reservation of EV energy supply using wireless networks	ETSI TS 101 556-3 V1.1.1
Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Definitions	ETSI TR 102 638 V1.1.1

5.3 Facilities

Facility layer standards include general message set standards and application supporting standards primarily for V2V and V2I communications.

Table 3: Base standards for facility layer functionalities

Standard title	Standard number
Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 2: Specification of Cooperative Awareness Basic Service	ETSI TS 102 637-2 V1.2.1
Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 2: Specification of Cooperative Awareness Basic Service	ETSI EN 302 637-2 V1.4.1

Standard title	Standard number
Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 3: Specifications of Decentralized Environmental Notification Basic Service	ETSI TS 102 637-3 V1.1.1
Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Part 3: Specifications of Decentralized Environmental Notification Basic Service	ETSI EN 302 637-3 V1.3.1
Intelligent Transport Systems (ITS); Vehicular Communications; Basic Set of Applications; Local Dynamic Map (LDM)	ETSI EN 302 895 V1.1.1

Table 4: Testing standards for facility layer functionalities

Testing Standard title	Standard number
Intelligent Transport Systems (ITS); Testing; Conformance test specifications for Cooperative Awareness Basic Service (CA); Part 1: Test requirements and Protocol Implementation Conformance Statement (PICS) pro forma	ETSI TS 102 868-1 V1.4.1
Intelligent Transport Systems (ITS); Testing; Conformance test specifications for Cooperative Awareness Basic Service (CA); Part 2: Test Suite Structure and Test Purposes (TSS & TP)	ETSI TS 102 868-2 V1.4.1
Intelligent Transport Systems (ITS); Testing; Conformance test specifications for Cooperative Awareness Basic Service (CA); Part 3: Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)	ETSI TS 102 868-3 V1.4.1
Intelligent Transport Systems (ITS); Testing; Conformance test specifications for Decentralized Environmental Notification Basic Service (DEN); Part 1: Test requirements and Protocol Implementation Conformance Statement (PICS) pro forma	ETSI TS 102 869-1 V1.5.1
Intelligent Transport Systems (ITS); Testing; Conformance test specifications for Decentralized Environmental Notification Basic Service (DEN); Part 2: Test Suite Structure and Test Purposes (TSS & TP)	ETSI TS 102 869-2 V1.5.1
Intelligent Transport Systems (ITS); Testing; Conformance test specifications for Decentralized Environmental Notification Basic Service (DEN); Part 3: Abstract Test Suite (ATS) and Protocol Implementation eXtra Information for Testing (PIXIT)	ETSI TS 102 869-3 V1.5.1
Intelligent Transport Systems (ITS); Testing; Part 1: Conformance test specification for Co-operative Awareness Messages (CAM); CAM validation report	ETSI TR 103 061-1 V1.2.1
Intelligent Transport Systems (ITS); Testing; Part 2: Conformance test specification for Decentralized Environmental Notification basic Service Message (DENM); DENM validation report	ETSI TR 103 061-2 V1.2.1

5.4 Network and Transport

Standards for the network and transport layer related to protocols such as:

- basic transport protocols;

- geoNetworking;

- IPv6.

Table 5: Base standards for the network and transport layer

Standard title	Standard number
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 1: Requirements	ETSI TS 102 636-1 V1.1.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 1: Requirements	ETSI EN 302 636-1 V1.2.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 2: Scenarios	ETSI TS 102 636-2 V1.1.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 2: Scenarios	ETSI EN 302 636-2 V1.2.1
Intelligent Transport System (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	ETSI TS 102 636-4-1 V1.1.1
Intelligent Transport System (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	ETSI EN 302 636-4-1 V1.4.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 4: Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; Sub-part 2: Media dependent functionalities for ITS-G5A	ETSI TS 102 636-4-2 V1.1.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 5: Transport Protocols; Sub-part 1: Basic Transport Protocol	ETSI TS 102 636-5-1 V1.1.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 5: Transport Protocols; Sub-part 1: Basic Transport Protocol	ETSI EN 302 636-5-1 V2.2.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 6: Internet Integration; Sub-part 1: Transmission of IPv6 Packets over GeoNetworking Protocols	ETSI TS 102 636-6-1 V1.1.1
Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 6: Internet Integration; Sub-part 1: Transmission of IPv6 Packets over GeoNetworking Protocols	ETSI EN 302 636-6-1 V1.2.1