



BSI Standards Publication

# Intelligent transport systems — Cooperative ITS

Part 4: Minimum system requirements  
and behaviour for core systems

**National foreword**

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REPORT

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**Intelligent transport systems —  
Cooperative ITS —**

Part 4:  
**Minimum system requirements and  
behaviour for core systems**

*Systèmes intelligents de transport — Systèmes intelligents de  
transport coopératifs —*

*Partie 4: Exigences minimales du système et comportement des  
systèmes principaux*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*.

ISO 17427 consists of the following parts, under the general title *Intelligent transport systems — Cooperative ITS*:

- Part 2: *Framework Overview [Technical Report]*
- Part 3: *Concept of operations (ConOps) for 'core' systems [Technical Report]*
- Part 4: *Minimum system requirements and behaviour for core systems [Technical Report]*
- Part 6: *'Core system' risk assessment methodology [Technical Report]*
- Part 7: *Privacy aspects [Technical Report]*
- Part 8: *Liability aspects [Technical Report]*
- Part 9: *Compliance and enforcement aspects [Technical Report]*
- Part 10: *Driver distraction and information display [Technical Report]*

The following parts are under preparation:

- Part 1: *Rules and responsibilities in the context of co-operative ITS architecture(s)*
- Part 5: *Common approaches to security [Technical Report]*
- Part 11: *Compliance and enforcement aspects [Technical Report]*
- Part 12: *Release processes [Technical Report]*
- Part 13: *Use case test cases [Technical Report]*
- Part 14: *Maintenance requirements and processes [Technical Report]*

This Technical Report provides an informative 'minimum system requirements and behaviour for core systems' for Cooperative Intelligent Transport Systems (*C-ITS*). It is intended to be used alongside ISO 17427-1, ISO/TR 17465-1 and other parts of ISO 17465, and ISO 21217. Detailed specifications for the application context will be provided by other ISO, CEN and SAE deliverables, and communications specifications will be provided by ISO, IEEE and ETSI.

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## Introduction

*Intelligent transport systems (ITS)* are transport systems in which advanced information, communication, sensor and control technologies, including the Internet, are applied to increase safety, sustainability, efficiency, and comfort.

A distinguishing feature of '*ITS*' is its communication with outside entities.

Some *ITS* systems operate autonomously, for example, 'adaptive cruise control' uses radar/lidar and/or video to characterize the behaviour of the vehicle in front and adjust its vehicle speed accordingly. Some *ITS* systems are informative, for example, 'variable message signs' at the roadside or transmitted into the vehicle, provide information and advice to the driver. Some *ITS* systems are semi-autonomous in that they are largely autonomous but rely on 'static' or 'broadcast' data, for example, *GNSS* (2.22) based 'SatNav' systems operate autonomously within a vehicle but are dependent on receiving data broadcast from satellites in order to calculate the location of the vehicle.

*Cooperative Intelligent transport systems (C-ITS)* are a group of *ITS* technologies where service provision is enabled by, or enhanced by, the use of 'live', present situation related, dynamic data/information from other entities of similar *functionality* [for example, from one vehicle to other vehicle(s)], and/or between different elements of the transport network, including vehicles and infrastructure [for example, from the vehicle to an infrastructure managed system or from an infrastructure managed system to vehicle(s)]. Effectively, these systems allow vehicles to 'talk' to each other and to the infrastructure. These systems have significant potential to improve the transport network.

A distinguishing feature of '*C-ITS*' is that data is used across *application*, service boundaries.

This Technical Report is a 'living document' and as our experience with *C-ITS* develops, it is intended that it will be updated from time to time, as and when we see opportunities to improve this Technical Report.

# Intelligent transport systems — Cooperative ITS —

## Part 4:

# Minimum system requirements and behaviour for core systems

## 1 Scope

The scope of this Technical Report is, as an informative document, to identify potential critical minimum system requirements and behaviour for core systems issues that *C-ITS* service provision may face or introduce, to consider strategies for how to identify, control, limit or mitigate such issues. The objective of this Technical Report is to raise awareness of and consideration of such issues and to give pointers, where appropriate, to subject areas and, where available, to existing standards deliverables that provide specifications for all or some of these aspects. This Technical Report does not provide specifications for solutions of these issues.

## 2 Terms and definitions

### 2.1

#### **anonymity**

lacking individuality, distinction, and recognizability within message exchanges

### 2.2

#### **anonymous certificates**

certificate which contains a pseudonym of the system user instead of their real identity in the subject of the certificate and thus preventing other system service recipients from identifying the certificate owner when the certificate is used to sign or encrypt a message in the connected vehicle/highway system (C-ITS, connected vehicle)

Note 1 to entry: The real identity of the anonymous certificates can be traced by authorized system operators by using the services of a registration authority and/or certification authority.

### 2.3

#### **application**

'app'

software application

### 2.4

#### **application service**

service provided, for example, by a service provider accessing data from the IVS within the vehicle in the case of C-ITS, via a wireless communications network, or provided on-board the vehicle as the result of software (and potentially also hardware and firmware) installed by a service provider or to a service provider's instruction

### 2.5

#### **authenticity**

property of being of undisputed origin and not a copy, authenticated, and having the origin supported by unquestionable evidence

Note 1 to entry: Something that has had its authenticity confirmed could be described as "authenticated" or "verified".