TECHNICAL REPORT

ISO/TR 17427-8

First edition
2015-11-01

Intelligent transport systems — Cooperative ITS —

Part 8: Liability aspects

Systèmes intelligents de transport — Systèmes intelligents de transport coopératifs —

Partie 8: Aspects relatifs à la responsabilité

Reference number
ISO/TR 17427-8:2015(E)

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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).

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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: Roles 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]

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Further technical reports in this series are expected to follow. Please also note that these TRs are expected to be updated from time to time as the C-ITS evolves.

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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*' are 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* 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 system*s (*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.

It is important to understand that *C-ITS* is not an end in itself, but a combination of techniques, protocols, systems and sub-systems to enable 'cooperative'/collaborative service provision, but as these aspects of transport technology advance, the issue of who is liable in the event of a crash will likely become more complex.

The question of how liability will be resolved in the event of *C-ITS* system failure will be important in providing certainty to drivers, manufacturers, insurers and road managers. It may be that, rather than technical difficulties, uncertainty regarding liability issues could prove the largest deterrent to investment in *C-ITS* service provision.

*C-ITS application*s will need adequate 'audit trails' in order to trace causation. The so called "human factors" will need to be carefully considered and taken into consideration.

This means that manufacturers and services providers of *C-ITS* technology need to carefully consider the safety risks of their systems and qualify their risk carefully, and road network managers will need to assess the risk implications of providing infrastructure-based *C-ITS* solutions.

We are also in a situation where expectations of system performance and liability implications are likely to change as *C-ITS application*s move from being advisory systems to overriding driver actions, and the liability issues are different between these types of system.

The purpose of this Technical Report is to identify potential critical liability issues that *C-ITS* service provision may introduce; to consider how to control, limit or mitigate such liability issues, and to limit the risk of exposure to the financial consequences of liability issues.

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.

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Intelligent transport systems — Cooperative ITS —

Part 8:
Liability aspects

1 Scope

The scope of this Technical Report is an informative document to identify potential critical liability issues that *C-ITS* service provision may introduce; to consider strategies for how to control, limit or mitigate such liability issues; and to give pointers, where appropriate, to standards deliverables existing that provide specifications for all or some of these aspects, and to limit the risk of exposure to the financial consequences of liability issues.

The objective of this Technical Report is to raise awareness of and consideration of such issues. This Technical Report does not provide specifications for solutions of these issues.

2 Terms and definitions

2.1
application
app
software application

2.2
application service
service provided by a service provider accessing data from the *IVS*, in the case of *C-ITS* (2.3), 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 providers instruction

2.3
cooperative ITS
C-ITS
group of *ITS* technologies where service provision is enabled, or enhanced by, the use of 'live', present situation related, 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)

2.4
core system
combination of enabling technologies and services that will provide the foundation for the support of a distributed, diverse set of applications (2.1), and *application* transactions which work in conjunction with 'External Support Systems' such as 'Certificate Authorities'

Note 1 to entry: The system boundary for the core system is not defined in terms of devices or agencies or vendors, but by the open, standardized interface specifications that govern the behaviour of all interactions between core system users.

2.5
global navigation satellite system
GNSS
comprises several networks of satellites that transmit radio signals containing time and distance data that can be picked up by a receiver, allowing the user to identify the location of its receiver anywhere around the globe

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2.6
in-vehicle system
IVS
hardware, firmware and software on board a vehicle that provides a platform to support *C-ITS* (2.3) service provision, including that of the *ITS-station* (2.8) (ISO 21217), the facilities layer, data pantry and on-board 'apps'

2.7
intelligent transport systems
ITS
transport systems in which advanced information, communication, sensor and control technologies, including the Internet, are applied to increase safety, sustainability, efficiency, and comfort

2.8
ITS-station
entity in a communication network [comprised of *application* (2.1), facilities, networking and access layer components] that is capable of executing ITS-S *application* processes, comprised of an ITS-S facilities layer, ITS-S networking & transport layer, ITS-S access layer, ITS-S management entity and ITS-S security entity, which adheres to a minimum set of security principles and procedures so as to establish a level of trust between itself and other similar *ITS-stations* with which it communicates

3 Abbreviations and acronyms

ABS	anti-lock braking system
ACC	adaptive cruise control
ADAS	advanced driver assistance systems
C-ITS	cooperative intelligent transport systems, cooperative ITS
CA	certificate authority
CVIS	cooperative vehicle-infrastructure systems (EC Project)
EC	European Commission
ESC	electronic stability control
EU	European Union
GTR	global technical requirement (UNECE)
ITS	intelligent transport systems (2.7)
IVS	in-vehicle system (2.6)
UNECE	United Nations Economic Commission for Europe
V2V	vehicle to vehicle
V2I	vehicle to/from infrastructure

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