
**Intelligent transport systems —
Cooperative ITS —**

**Part 1:
Terms and definitions**

Systèmes intelligents de transport — Coopérative ITS —

Partie 1: Termes et définitions
iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/TR 17465-1:2014

<https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-45d61e3c70c4/iso-tr-17465-1-2014>



iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/TR 17465-1:2014](https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-45d61e3c70c4/iso-tr-17465-1-2014)

<https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-45d61e3c70c4/iso-tr-17465-1-2014>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2014

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Terms and definitions	1
3 Symbols and abbreviated terms	2
4 Cooperative-ITS	3
4.1 General.....	3
4.2 Cooperative-ITS attributes and features.....	3
4.3 Perspectives of cooperative-ITS.....	4
4.4 ITS station reference architecture.....	6
4.5 Example of a vehicle based ITS station.....	8
Bibliography	9

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/TR 17465-1:2014](https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-45d61e3c70c4/iso-tr-17465-1-2014)

<https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-45d61e3c70c4/iso-tr-17465-1-2014>

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).

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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/TR 17465 consists of the following parts, under the general title *Intelligent transport systems — Cooperative-ITS*:

- Part 1: *Terms and definitions*
- Part 2: *Guidelines for standards documents*
- Part 3: *Release procedures for standards documents*

Introduction

This part of ISO/TR 17465 provides the definition of the term “Cooperative-ITS” (or “C-ITS” in its abbreviated form), and contains descriptions of C-ITS from several perspectives. It is anticipated that “C-ITS” will replace “cooperative systems” in all relevant ITS standards published after September 2012.

Although the concept of cooperative-TS is easy to understand, its implementation can be complex because of the need to provide several services using many applications, all potentially communicating with each other and sharing data in a structured manner (cf. OSI data communication model). As such, the set of standards required to implement a service will beneficially be composed of several parts. In order that users can easily find the standards information that they require, ISO/TR 17465-2 provides the outline of the common structure to be used for these multi-part standards, and a detailed description of the reference standards to be used for the creation of each part and the content of each part. ISO/TR 17465-3 will describe the “release” procedure to be adopted for future Cooperative-ITS-related standards.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/TR 17465-1:2014](https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-45d61e3c70c4/iso-tr-17465-1-2014)

<https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-45d61e3c70c4/iso-tr-17465-1-2014>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/TR 17465-1:2014](#)

<https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-45d61e3c70c4/iso-tr-17465-1-2014>

Intelligent transport systems — Cooperative ITS —

Part 1: Terms and definitions

1 Scope

This part of ISO/TR 17465 provides a definition of the term “Cooperative-ITS”. It is anticipated that “Cooperative-ITS” will be used in place of “cooperative systems” in all relevant ISO/CEN standards in the intelligent transport systems (ITS) domain. This definition is consistent with and heavily relies on the concept of an “ITS station” as specified in ISO 21217.¹⁾

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

cooperative-ITS

DEPRECATED: cooperative systems
subset of overall ITS that communicates and shares information between ITS stations and ITS applications to give advice or facilitate actions with the objective of improving safety, sustainability, efficiency, and comfort beyond the scope of stand-alone systems

Note 1 to entry: See [4.2](#) for further details. [ISO/TR 17465-1:2014](https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-)
<https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76->

Note 2 to entry: As an alternative to a “subset”, Cooperative-ITS could be viewed as a “paradigm” in overall ITS.

2.2

cooperative-ITS environment

communications environment that enables ITS stations to communicate with other ITS stations supporting sharing of data between ITS applications using whatever communications networks are available at their current locations and, if necessary, to seamlessly switch between networks as their locations change

2.3

intelligent transport system

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

2.4

ITS application

instantiation of an ITS service that involves an association of two or more complementary ITS-S application processes

Note 1 to entry: Fragments of an application can also reside in nodes that are not ITS stations.

[SOURCE: ISO 21217:2014, 3.9]

1) The same definition can also be found in EN 302 665.

2.5

ITS service

functionality provided to users of intelligent transport systems designed to increase safety, sustainability, efficiency, and/or comfort

[SOURCE: ISO 21217:2014, 3.11]

2.6

ITS station

functional entity comprised of an ITS-S facilities layer, ITS-S networking & transport layer, ITS-S access layer, ITS-S management entity, ITS-S security entity, and ITS-S applications entity providing ITS services

Note 1 to entry: From an abstract point of view, the term “ITS station” refers to a set of functionalities. The term is often used to refer to an instantiation of these functionalities in a physical unit. Often the appropriate interpretation is obvious from the context. The proper name of the physical instantiation of an ITS-S is ITS station unit (ITS-SU).

[SOURCE: ISO 21217:2014, 3.12]

2.7

ITS-S application process

element in an ITS station that performs information processing for a particular application, and uses ITS-S service to transmit and receive information

[SOURCE: ISO 21217:2014, 3.19]

2.8

ITS-S service

communication functionality of an ITS-S that provides the capability to connect to other nodes

[SOURCE: ISO 21217:2014, 3.37]

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/TR 17465-1:2014](#)

<https://standards.iteh.ai/catalog/standards/sist/2228e9c7-56b1-4aff-ad76-45d61e3c70c4/iso-tr-17465-1-2014>

2.9

local dynamic map

entity consisting of LDM data objects, services and interfaces for manipulating these LDM data objects

[SOURCE: ISO/TS 18750:—²), 3.3]

2.10

wireless communication platform

combination of hardware and software that provides facilities to enable data to be communicated by wireless transmission

2.11

wireless Internet platform

combination of hardware and software that provides facilities that enable devices to use wireless communications to access the Internet and the services available from it

2.12

bounded secured managed domain

ITS station providing elements of trust

3 Symbols and abbreviated terms

API	application programme interface
BSMD	bounded secured managed domain [SOURCE: ISO 21217:2014, Clause 4]

2) To be published.

C-ITS	cooperative-ITS
ITS	intelligent transport system
ITS-S	ITS station
LDM	local dynamic map
SDOs	standards development organizations
V2V	vehicle to vehicle communications
WCP	wireless communications platform
WIP	wireless Internet platform

4 Cooperative-ITS

4.1 General

Cooperative-ITS (C-ITS) is the terminology to be used in place of “cooperative systems” in new ITS-related standards produced by ISO, ETSI, CEN, and other ITS standards development organizations.

The definition of cooperative-ITS in [Clause 3](#) was developed through collaboration between ISO, ETSI, CEN, and representatives from other standards development organizations, and can be found in a similar version in the “Joint CEN and ETSI Response to Mandate M/453” dated 15 April 2010.

C-ITS is a subset of ITS in which ITS station units applying the principles of a bounded secured managed domain (BSMD) communicate and share information with each other to assist or enable service provision, and station units used in ITS that do not apply these BSMD principles of trust provide information to each other in an interoperable manner to offer advice and/or facilitate actions. The objective of C-ITS is to improve safety, sustainability, efficiency, and comfort above and beyond that which can be achieved without C-ITS.

C-ITS is best described in terms of ITS services and ITS applications rather than the hardware or software used to instantiate them. Note that the ITS station architecture also supports download and execution of these ITS applications via different access technologies that will enable the provision of ITS services in a manner similar to that used in smart phones.

4.2 Cooperative-ITS attributes and features

An essential attribute of C-ITS is that information is shared between different ITS-S application processes providing ITS services in a single ITS station and between different ITS-S application processes running in different ITS stations.

Cooperative-ITS is typically characterized by the following:

- the collaboration in the activities needed to provide a service by two or more ITS-S application processes in one or more ITS stations so that they can interact with each other through communication networks;
- the sharing of information among ITS stations in various roles (e.g. located in vehicular, roadside, central, and/or personal ITS subsystems);
- the sharing of information between ITS-S application processes in a single ITS station;
- the sharing of resources (communication, positioning, security,...) by ITS-S application processes in an ITS station;