TECHNICAL REPORT

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TECHNISCHER BERICHT

# CEN ISO/TR 21186-2

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English Version

# Cooperative intelligent transport systems (C-ITS) - Guidelines on the usage of standards - Part 2: Hybrid communications (ISO/TR 21186-2:2021)

Systèmes de transport intelligents coopératifs (C-ITS) - Lignes directrices sur l'utilisation des normes - Partie 2: Communications hybrides (ISO/TR 21186-2:2021)

Kooperative intelligente Verkehrssyteme (C-ITS) - Leitfäden zur Nutzung von Normen - Teil 2: Hybride Kommunikation (ISO/TR 21186-2:2021)

This Technical Report was approved by CEN on 24 October 2020. It has been drawn up by the Technical Committee CEN/TC 278.

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# European foreword

This document (CEN ISO/TR 21186-2:2021) has been prepared by Technical Committee ISO/TC 204 "Intelligent transport systems" in collaboration with Technical Committee CEN/TC 278 "Intelligent transport systems" the secretariat of which is held by NEN.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN shall not be held responsible for identifying any or all such patent rights.

## Endorsement notice

The text of ISO/TR 21186-2:2021 has been approved by CEN as CEN ISO/TR 21186-2:2021 without any modification.

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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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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 278, *Intelligent transport systems,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 21186 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

# Introduction

This document is part of a family of deliverables from Standard Development Organizations (SDOs) for Cooperative Intelligent Transport Systems (C-ITS), which is a subset of standards for Intelligent Transport Systems (ITS).

ITS aims to improve surface transportation in terms of:

— **safety**

e.g. crash avoidance, obstacle detection, emergency calls, dangerous goods;

— **efficiency**

e.g. navigation, green wave, priority, lane access control, contextual speed limits, car sharing;

— **comfort**

e.g. telematics, parking, electric vehicle charging, infotainment;

— **sustainability**

by applying information and communication technologies (ICT).

In the European Union, the legal framework is given by the European Commissions Mandate M/453 on C-ITS[53], the European Commission Directive 2010/40[52], and the European Commission Mandate M/546[54].

The whole set of standards for deployment of C-ITS is difficult to understand by developers of equipment and software, especially ITS application software, and thus guidelines explaining a beneficial choice of standards (C-ITS Release), the purpose and interaction of standardized features, beneficial implementation approaches and guidance in developing ITS applications are a prerequisite for a fair and open market allowing early deployment of interoperable and future-proof solutions.

The ISO 21186 series provides necessary guidelines in multiple parts, each dedicated to a specific purpose:

— Part 1: Standardization landscape and releases[14];

— Part 2: Hybrid communications (this document);

— Part 3: Security[15].

This document can be complemented by further parts as required, for example:

— Usage of the service announcement protocol specified, for example, in ISO 22418;

— Dynamically extendable data and protocol parameters ("Information Object Classes" and "Information Object Sets"; based on ASN.1 type CLASS);

— Usage of the GTDM framework specified in ISO/TS 21184[1]).

The purpose of this document is thus to inform about relevant standards and to describe the functionalities of the ITS station architecture defined in support for hybrid communication technologies. It is intended to serve as a guideline to structure the development of new C-ITS standards and to harmonize the deployment of C-ITS services relying on the use of hybrid communication technologies. It also intends to give support to the developers of standards defining C-ITS services and to the developers of C-ITS solutions and ITS applications complying with the ITS station architecture and its set of functionalities supporting hybrid communications.

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1) Under preparation. Stage at the time of publication: ISO/PRF TS 21184:2021.

At time of writing this document, no applicable Intellectual Property Rights (IPR) issues were known related to this document. However, this document references standards, for which IPRs are known. Information on such IPRs is expected to be provided in those respective standards, which might be from any one of the Standards Development Organisations working on ITS or C-ITS.

Referencing other SDOs and their respective deliverables in no way is to be understood as an endorsement, but rather as an informative piece of information.

More details on the C-ITS domain can be found in the Brochure cited in Reference [58].

# Cooperative intelligent transport systems (C-ITS) — Guidelines on the usage of standards —

## Part 2: Hybrid communications

## 1 Scope

This document serves as a guideline explaining the concept of hybrid communications and support functionalities for Cooperative ITS services deployed in conformance with the ITS station architecture and related Cooperative ITS standards.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

**3.1**
**access technology**
technology employed in a communication interface to access a specific medium

[SOURCE: ISO 21217:2020, 3.1]

**3.2**
**communication adaptation layer**
**CAL**
set of protocols and functions to adapt access technologies to the *ITS-S networking and transport layer* (3.20)

[SOURCE: ISO 21217:2020, 3.3]

**3.3**
**hybrid communications**
composition of multiple access technologies and communication protocols combined to provide complementary or redundant communication channels

[SOURCE: ISO 21217:2020, 3.7]

**3.4**
**hybrid communication support**
feature of an ITS station used to combine multiple access technologies and protocols

[SOURCE: ISO 21217:2020, 3.8]