

STN P	Inteligentné dopravné systémy Kooperatívne inteligentné dopravné systémy (IDS) IDS zariadenia stanice na prenos informácií medzi IDS stanicami (ISO/TS 17429: 2017)	STN P CEN ISO/TS 17429 01 8666
------------------	--	--

Intelligent transport systems - Cooperative ITS - ITS station facilities for the transfer of information between ITS stations (ISO/TS 17429:2017)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 09/17

Táto predbežná STN je určená na overenie. Pripomienky zasielajte ÚNMS SR najneskôr do 30. 04. 2019.

Obsahuje: CEN ISO/TS 17429:2017, ISO/TS 17429:2017

125416

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2017
Podľa zákona č. 264/1999 Z. z. o technických požiadavkách na výrobky a o posudzovaní zhody a o zmene a doplnení niektorých zákonov v znení neskorších predpisov sa slovenská technická norma a časti slovenskej technickej normy môžu rozmnožovať alebo rozširovať len so súhlasom slovenského národného normalizačného orgánu.

TECHNICAL SPECIFICATION

CEN ISO/TS 17429

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

April 2017

ICS 03.220.01; 35.240.60

English Version

Intelligent transport systems - Cooperative ITS - ITS
station facilities for the transfer of information between
ITS stations (ISO/TS 17429:2017)

Systèmes intelligents de transport - ITS coopératifs -
Fonctionnalités des stations ITS pour le transfert
d'information entre stations ITS (ISO/TS 17429:2017)

Intelligente Transportsysteme - Kooperative Systeme -
Profile zur Informationsverarbeitung und -
übertragung zwischen ITS-Stationen für Anwendungen
bezogen auf das Verkehrsinfrastruktur Management,
zur Steuerung und Führung (ISO/TS 17429:2017)

This Technical Specification (CEN/TS) was approved by CEN on 19 September 2016 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents	Page
European foreword.....	3

European foreword

This document (CEN ISO/TS 17429:2017) 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 [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO/TS 17429:2017 has been approved by CEN as CEN ISO/TS 17429:2017 without any modification.

**Intelligent transport systems —
Cooperative ITS — ITS station facilities
for the transfer of information
between ITS stations**

*Systèmes intelligents de transport — ITS coopératifs —
Fonctionnalités des stations ITS pour le transfert d'information entre
stations ITS*





COPYRIGHT PROTECTED DOCUMENT

© ISO 2017, Published in Switzerland

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
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Abbreviated terms	4
5 Conformance	4
6 Overview	5
6.1 Motivations.....	5
6.1.1 Communication services.....	5
6.1.2 General purpose ITS station facilities layer services.....	6
6.1.3 Information sharing services.....	7
6.2 Technical specification overview.....	8
6.2.1 Architecture elements.....	8
6.2.2 ITS-S application processes.....	9
6.2.3 Communication Profile Handler (CPH).....	10
6.2.4 Facilities Services Handler (FSH).....	11
6.2.5 Content Subscription Handler (CSH).....	12
6.2.6 Service access points (SAP).....	12
6.2.7 Application data unit and protocol data unit.....	12
7 General requirements	13
8 Requirements for the “ITS-S application Processes”	13
8.1 ITS-S-AP: Requirements for data transmission.....	13
8.2 ITS-S-AP: Requirements for publishing and subscribing to data objects.....	13
8.3 ITS-S-AP: Flow type registration.....	14
8.4 ITS-S-AP: Transmitting data.....	14
8.5 ITS-S-AP: Receiving data.....	14
8.6 ITS-S-AP: Publishing data objects.....	14
8.7 ITS-S-AP: Subscribing to the reception of data objects.....	15
8.8 ITS-S-AP: Stopping the reception of data objects.....	15
8.9 ITS-S-AP: Receiving data objects.....	15
9 Requirements for the Communication Profile Handler	15
9.1 CPH: Initialization.....	15
9.2 CPH: Management of communication profiles.....	16
9.2.1 CPH: Communication flow profile parameters.....	16
9.2.2 CPH: Updating communication flow profile parameters.....	17
9.2.3 CPH: Reporting communication flow statistics.....	18
9.3 CPH: Processing data sent by ITS-S application processes.....	18
9.3.1 CPH: Processing TransmitFlowData instructions.....	18
9.3.2 CPH: Checking for a corresponding communication flow profile.....	19
9.3.3 CPH: Checking for an available path.....	19
9.3.4 CPH: Performing address resolution.....	19
9.3.5 CPH: Checking for ITS-S facilities services.....	20
9.3.6 CPH: Transmission to the NF-SAP.....	20
10 Requirements for the Facilities Services Handler	20
10.1 FSH: Initialization.....	20
10.2 FSH: ITS-S facilities layer protocol data unit format (ITS-FPDU).....	21
10.3 FSH: Execution of facilities services.....	21
10.4 FSH: Transmission to the NF-SAP.....	22
10.5 FSH: Reception of messages.....	22

11	Requirements for the Content Subscription Handler	22
11.1	CSH: Initialization	22
11.2	CSH: processing content publication from ITS-S-AP	23
11.3	CSH: processing content subscription from ITS-S-AP	24
11.4	CSH: processing content subscription cancellation from ITS-S-AP	24
11.5	CSH: transmitting content to ITS-S-AP	24
11.6	ITS-S generic data container format	24
12	FA-SAP service primitive functions	25
12.1	Overview	25
12.2	Error codes	25
12.3	TransmitFlowData	26
12.4	ReceiveFlowData	26
12.5	PublishContent	27
12.6	SubscribeContent	28
12.7	CancelContent	28
12.8	ReceiveContent	29
13	NF-SAP service primitive functions	29
13.1	ReceiveNTSDU	29
13.2	TransmitNTSDU	30
Annex A (normative) ASN.1 modules		31
Annex B (informative) Profiles		37
Bibliography		42

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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

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

Introduction

ITS station units compliant with the ITS station reference architecture specified in ISO 21217 may engage in Cooperative ITS (C-ITS) activities involving data exchanges between ITS stations in a variety of roles. Such data exchanges include, but are not limited to:

- data collected by the roadside infrastructure and transmitted to traffic control centers, possibly after aggregation,
- roadside equipment configured from the control centers to process a given set of data or issue messages to vehicles,
- roadside events reported to control centers, and
- broadcast transmission of vehicle status and event messages (e.g. CAM) to nearby ITS stations.

An example of an ITS station unit engaged in a C-ITS activity is a roadside ITS station unit collecting traffic-related information generated by road sensors and/or by vehicle ITS station units. The collected data can often serve other purposes than the originally intended one. For example, the cooperative awareness message (CAM) from the ETSI C-ITS message set generated for traffic-safety applications can be collected by roadside ITS station units for exploitation by traffic efficiency applications in traffic control centers (e.g. central ITS stations). The same information is thus used to improve road safety, as well as traffic efficiency and also to reduce greenhouse gas emissions.

The exploitation of such exchanges for purposes not initially intended is made possible once this exchange of information is performed in a standardized way through an ITS station facilities layer that is able to recognize messages from specific message sets (e.g. DATEX II, TPEG, C-ITS message sets) with data according to data object specifications from data dictionaries (e.g. the common ETSI data dictionary) and to forward them to applications which have an interest therein and have subscribed to the delivery of such message(s) and data. A Communication Profile Handler (CPH), a Facilities Services Handler (FSH) and a Content Subscription Handler (CSH) are defined in this Technical Specification to serve this purpose.

Outside of this Technical Specification, the commonly used term “message set” is used to indicate a collection of “messages” used in the exchange of information between peer ITS station units (see ISO/TS 17419). These messages are composed of structures sometime referred to as “data frames” and/or “data objects” which are in turn composed of objects called “data elements” (see SAE J2735). Herein, a slightly different lexicon is adopted. The term “data dictionary” is used to indicate a collection of “messages”, including “data object” from which the messages are composed. Thus, herein, “data objects” are synonymous with “data frames” and “data elements”. However, in this Technical Specification, the terms are used with the precise meaning to distinguish messages and data objects from which messages are constructed.

The functionalities specified in this Technical Specification include a Communication Profile Handler (CPH), a Facilities Services Handler (FSH), and a Content Subscription Handler (CSH). These functionalities are intended to enable, and be invoked by, technology-agnostic ITS applications and to facilitate the deployment of C-ITS applications that share information. In particular, these functionalities allow an application to

- specify a set of facilities layer services to be applied to its data units (ADUs),
- allow ITS station management to select the optimum communication profile (as a function of time) for any or all of its data flows, and
- publish information to and subscribe to information from a central repository (the CSH) in a standardized way that enables sharing of information between applications (the definition of C-ITS).

These functionalities provide a toolkit facilitating the specification of standards and the development of ITS applications [e.g. In-Vehicle Signage (ISO/TS 17425), Contextual Speed (ISO/TS 17426), Point of

Interest, Probe Data, IVI, LDM synchronization, remote ITS station configuration, and ITS applications for freight, logistics, public transportation, etc.] complying with the set of Cooperative ITS standards.

Intelligent transport systems — Cooperative ITS — ITS station facilities for the transfer of information between ITS stations

1 Scope

This Technical Specification specifies generic mechanisms enabling the exchange of information between ITS stations for applications related to Intelligent Transport Systems. It complies with the ITS station reference architecture (ISO 21217) and defines the following ITS station facilities layer functionalities:

- Communication Profile Handler (CPH);
- Content Subscription Handler (CSH);
- Facilities Services Handler (FSH).

These functionalities are used by ITS-S application processes (ITS-S-AP) to communicate with other ITS-S application processes and share information. These functionalities describe

- how lower-layer communication services assigned to a given data flow are applied to the service data units at the various layers in the communication protocol stack (CPH, see [6.2.3](#)),
- how content from data dictionaries can be published and subscribed to by ITS-S application processes (CSH, see [6.2.5](#)),
- how well-known ITS station facilities layer and management services can be applied to application process data units (FSH, see [6.2.4](#)), relieving (ITS-S) application processes from having to implement these services on their own,
- how service access points (SAP) primitives specified in ISO 24102-3 are used,
- service primitives for the exchange of information between ITS-S application processes and the ITS station facilities layer (FA-SAP), and
- a set of communication requirements and objectives (profiles) using the methods defined in ISO/TS 17423 to select the level of performance (best effort or real-time, etc.), confidence and security (authentication, encryption, etc.) for information exchange between ITS stations, such as data provision, event notification, roadside configuration, map update.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 17419, *Intelligent transport systems — Cooperative systems — Classification and management of ITS applications in a global context*

ISO/TS 17423, *Intelligent transport systems — Cooperative systems — ITS application requirements and objectives for selection of communication profiles*

ISO 21217, *Intelligent transport systems — Communications access for land mobiles (CALM) — Architecture*

ISO 24102-3, *Intelligent transport systems — Communications access for land mobiles (CALM) — ITS station management — Part 3: Service access points*

ISO 24102-6, *Intelligent transport systems — Communications access for land mobiles (CALM) — ITS station management Part 6: Path and flow management*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN