



# SLOVENSKI STANDARD SIST-TS CEN/TS 17496:2021

01-maj-2021

---

## Kooperativni inteligentni transportni sistemi - Komunikacijski profili

Cooperative intelligent transport systems - Communication profiles

Intelligente Verkehrssysteme - Kommunikationsprofile für eine sichere Verbindung zwischen zuverlässigen Geräten

Systèmes intelligents de transport - Interface véhicule sécurisée - Profils de communication pour connexion sécurisée entre une station ITS et un véhicule

Ta slovenski standard je istoveten z: **CEN/TS 17496:2021**

<https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021>

### ICS:

35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport
-----------	----------------------------------	------------------------------

**SIST-TS CEN/TS 17496:2021**

**en,fr,de**

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST-TS CEN/TS 17496:2021](#)

<https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021>

TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

**CEN/TS 17496**

February 2021

ICS 35.240.60

English Version

**Cooperative intelligent transport systems -  
Communication profiles**

Systèmes intelligents de transport - Profils de  
communication

Kooperative intelligent Verkehrssysteme -  
Kommunikationsprofile

This Technical Specification (CEN/TS) was approved by CEN on 30 November 2020 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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

[SIST-TS CEN/TS 17496:2021](https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021)

<https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021>



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

**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

<b>Contents</b>	<b>Page</b>
European foreword.....	4
Introduction .....	5
1 Scope.....	6
2 Normative references.....	6
3 Terms and definitions .....	7
4 Symbols and abbreviations .....	7
5 Object identifiers.....	8
6 Architecture .....	8
7 Communication profiles and protocol stacks - overview .....	9
7.1 Definitions and methodology .....	9
7.2 Contexts .....	10
7.2.1 ITS-SCPs related to communications between ITS-SCUs .....	10
7.2.2 ITS-SCPs related communications between ITS-SUs.....	10
7.2.3 ITS-SCPs related to SCNs.....	10
8 ITS communication protocols.....	11
8.1 ITS-CP identifiers .....	11
8.2 Initially identified ITS-SCPs.....	11
8.2.1 ITS-S access layer .....	11
8.2.2 ITS-S networking and transport layer.....	13
8.2.3 ITS-S facilities layer.....	14
8.2.4 ITS-S security entity .....	16
8.2.5 ITS-S management entity .....	16
8.2.6 Combinations of ITS-S layers and entities.....	16
9 ITS-S communication protocol stacks .....	17
9.1 ITS-SCPS identifiers.....	17
9.2 Initially identified ITS-SCPSs.....	17
9.2.1 ITS-SCPS for “ITS station-internal management communications” .....	17
9.2.2 ITS_SCPS for “SCN-access” .....	17
9.2.3 ITS-SCPS for “M5 service announcement” .....	19
9.2.4 ITS-SCPS for “Secure sessions involving Internet “ .....	20
9.2.5 ITS-SCPS for “Secure broadcast of messages with the ETSI ITS-G5 Release 1 stack” .....	21
9.2.6 ITS-SCPS for ” IPv6 localized communications” .....	22
10 ITS-S communication profiles .....	22
10.1 ITS-SCP identifiers .....	22
10.2 Initially identified ITS-SCPs.....	23
10.2.1 ITS station-internal management communications.....	23
10.2.2 Access to an SCN for diagnostics purposes.....	24
10.2.3 Service announcement.....	25
10.2.4 General secure sessions involving Internet .....	26
10.2.5 Secure broadcast of ETSI road safety messages with the ITS-G5 Release 1 stack .....	27
Annex A (normative) ASN.1 module .....	28
A.1 Overview .....	28

<b>A.2</b>	<b>Module SISNprofiles.....</b>	<b>28</b>
	<b>Bibliography .....</b>	<b>34</b>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[SIST-TS CEN/TS 17496:2021](https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021)  
<https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021>

**CEN/TS 17496:2021 (E)****European foreword**

This document (CEN/TS 17496:2021) has been prepared by 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.

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 organisations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

**iTeh STANDARD PREVIEW  
(standards.iteh.ai)**

[SIST-TS CEN/TS 17496:2021](https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021)

<https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021>

## Introduction

ITS Station Communication Profiles, see EN ISO 17423 and EN ISO 17419, used for communications between (trusted) devices simplify achieving

- interoperability between ITS station units,
- and portability of ITS applications (that provide the ITS services).

Examples of trusted devices, i.e. ITS-secured communication nodes, are ITS-station units specified in ISO 21217, which fully covers ETSI EN 302 665 [32]. Four implementation contexts of communication nodes in ITS communications networks are identified in ISO 21217, each comprised of ITS-station units taking on a particular role; personal, vehicular, roadside, or central. Such ITS station units participate in a wide variety of ITS services related to e.g. sustainability, road safety and transportation efficiency.

An ITS station unit can be composed of ITS station communication units from different vendors where each ITS station communication unit is linked to a different configuration and management centre specified in ISO 24102-2 [21] and EN ISO 17419. Station-internal management communications between ITS station communication units of the same ITS station unit is specified in ISO 24102-4 [22].

The identification of ITS station communication profiles specified in this document is generically applicable to all kind of communications including broadcast information dissemination and sessions, e.g. sessions between ITS station units, sessions between ITS station communication units of the same ITS station unit, sessions between roadside ITS station units and a cloud platform, and between vehicle ITS station units and a cloud platform, including communications sessions compatible with extended vehicles standards developed by ISO TC 22 (ISO 20077 series [12]).

[SIST-TS CEN/TS 17496:2021](https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021)

<https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-585c227f48af/sist-ts-cen-ts-17496-2021>

## CEN/TS 17496:2021 (E)

### 1 Scope

This document specifies a methodology to define ITS-S communication profiles (ITS-SCPs) based on standardized communication protocols to interconnect trusted devices. These profiles enable secure information exchange between such trusted devices, including secure low-latency information exchange, in different configurations. The present document, in order to exemplify the methodology, also normatively specifies some ITS-SCPs based on the methodology, yet without the intent of covering all possible cases. Further ITS-SCPs can be specified at a later stage.

Configurations of trusted devices for which this document defines ITS-SCP's include:

- a) ITS station communication units (ITS-SCU) of the same ITS station unit (ITS-SU), i.e. station-internal communications;
- b) an ITS-SU and an external entity such as a sensor and control network (SCN), or a service in the Internet;
- c) ITS-SUs.

The specifications given in this document can be equally applied to secured and unsecured communications, being groupcast and unicast communications, being localized or networked communications.

### 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.

EN ISO 17419, *Intelligent transport systems — Cooperative systems — Globally unique identification (ISO 17419)*

EN ISO 17423, *Intelligent transport systems — Cooperative systems — Application requirements and objectives (ISO 17423)*

ISO 21217, *Intelligent transport systems — Station and communication architecture*

ISO/IEC 8825-1, *Information technology — ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER) — Part 1:*



### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 17419, EN ISO 17423, ISO 21217, and the following, 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

##### **ITS-S communication profile**

parameterized ITS-S communication protocol stack

[SOURCE: EN ISO 17423:2018, definition 3.6]

#### 3.2

##### **ITS communication protocol**

communication protocol applicable in ITS

#### 3.3

##### **ITS-S communication protocol stack**

consistent set of ITS-S communication protocols enabling communications between an ITS-SCU and other nodes which may be identified by a registered globally unique reference number

[SOURCE: EN ISO 17423:2018, definition 3.7]

### 4 Symbols and abbreviations

CSP	communication service parameter [SOURCE: EN ISO 17423]
ITS-CP	ITS communication protocol
ITS-SCP	ITS station communication profile [SOURCE: EN ISO 17423]
ITS-SCPS	ITS station communication protocol stack [SOURCE: EN ISO 17423]
ITS-SCU	ITS station communication unit [SOURCE: ISO 21217]
ITS-SU	ITS station unit [SOURCE: ISO 21217]
IRN	infrastructure/roadside network
IVN	in-vehicle network
SCN	sensor and control network
SSTD	secure session between trusted devices
OID	object identifier

**CEN/TS 17496:2021 (E)****5 Object identifiers**

The following OIDs are used in this document and shall be as specified below:

- 1) Identifying this document:

{ iso(1) identified-organization(3) cen(162) cp17496 (17496) }

- 2) Identifying ASN.1 module specifications of this document

{ iso(1) identified-organization(3) cen(162) cp17496 (17496) asn1 (1) }

- 3) Identifying an ITS communications protocol:

{ iso(1) identified-organization(3) cen(162) cp17496 (17496) commProtocol (2) }

- 4) Identifying an ITS-S communication protocol stack (ITS-SCPS)

{ iso(1) identified-organization(3) cen(162) cp17496 (17496) its-scps (3) }

- 5) Identifying an ITS-S communications profile (ITS-SCP)

{ iso(1) identified-organization(3) cen(162) cp17496 (17496) its-scp (4) }

**6 Architecture**

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

This document considers the ITS station and communication architecture specified in ISO 21217, and specifies globally unique identifiers of ITS-S communication profiles (ITS-SCPs), e.g.:

- interconnecting ITS-SCUs in an ITS-SU
- interconnecting ITS-SUs, and for,
- interconnecting an ITS-SU with a SCN,

using OIDs identifying

- ITS communication protocols,
- ITS-S communication protocol stacks (ITS-SCPS),
- ITS-S communication profiles (ITS-SCP),

also specified in this document. The approach is based on the methodology for protocol parameters CSP\_Protocol and CSP\_SpecificCommsProts specified in EN ISO 17423 and illustrated in 7.1.

## 7 Communication profiles and protocol stacks - overview

### 7.1 Definitions and methodology

An ITS-SCP is defined in EN ISO 17423 as a “parameterized ITS-S communication protocol stack”. EN ISO 17423 further specifies how ITS-S application processes can present their communication needs by means of “Communication Service Parameters” (CSP) to the ITS-S management, and how the ITS-S management selects applicable ITS-S communication profiles. This document uses the following two CSPs for specifying ITS-SCPs:

a) CSP\_Protocol:

Identification of a complete non-parameterized communication protocol stack by means of a globally unique registered communication protocol stack identifier of ASN.1 type `ProtocolReq:: = ITSprotocolStackID`, with `ITSprotocolStackID` specified in EN ISO 17419.

NOTE 1 EN 17419 specifies `ITSprotocolStackID` as an INTEGER.

b) CSP\_SpecificCommsProts:

Identification of selected non-parameterized communications protocol stack elements by means of a sequence of protocol identifiers of ASN.1 type `SpecCommProts:: = SEQUENCE OF ITSprotID`, with `ITSprotID` specified in EN 17419 as a sequence of a ITS-S protocol location of ASN.1 type `ItsProtocolLocation` followed by an ITS protocol identifier of ASN.1 type `ItsProtocolIdentifier`; see Table 1 and Clause 8.

NOTE 2 EN ISO 17419 specifies `ItsProtocolIdentifier` as an INTEGER.

<https://standards.iteh.ai/catalog/standards/sist/65a25678-0606-4901-a9c0-583c227148a1/sist-ts-cen-ts-17496-2021>  
**Table 1 — Named Integer values of `ItsProtocolLocation` as specified in EN ISO 17419**

ITS-S layer or entity (ISO 21217:2014)	ItsProtocolLocation <sup>a</sup>	
	Acronym	Value
ITS-S access layer	“acLayer”	1
ITS-S networking and transport layer	“ntLayer”	2
ITS-S facilities layer	“fcLayer”	4
ITS-S management entity	“mgEntity”	8
ITS-S security entity	“scEntity”	16
other location	“other”	32

<sup>a</sup> For ITS protocols residing in more than one layer or entity, the acronym to be used in the context of this document is “several” with a value given by the sum of the values of the respective layers and entities. Alternatively, the parts of such an ITS protocol may be identified separately.

The methodology for specifying ITS-SCPs in this document is given by the following steps:

- 1) Identify ITS communication protocols (ITS-CPs) by means of an OID reference to the standard or specification of the protocol based on the methodology for `CSP_SpecificCommsProts` specified in EN ISO 17423; see 8.1.

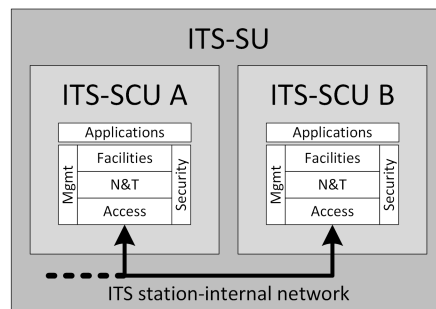
## CEN/TS 17496:2021 (E)

- 2) Identify ITS-SCPs by means of an OID reference to a set of ITS-CPs based on the methodology for CSP\_Protocol specified in EN ISO 17423; see 9.1.
- 3) Identify ITS-SCPs by means of an OID reference to an ITS-SCPs and parameterization information, see 10.1.

## 7.2 Contexts

### 7.2.1 ITS-SCPs related to communications between ITS-SCUs

An example of an ITS-SCP for the links between ITS-SCUs of the same ITS-SU, see Figure 1, is presented in 10.2.1.



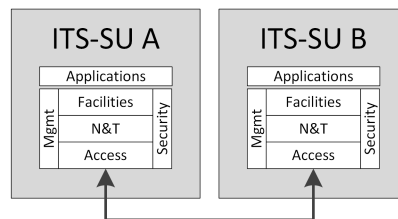
**Figure 1 — Interconnection of ITS-SCUs in an ITS-SU**  
(standards.iteh.ai)

### 7.2.2 ITS-SCPs related communications between ITS-SUs

SIST-TS CEN/TS 17496:2021

An example of an ITS-SCP for the link between ITS-SUs, see Figure 2, is presented in 10.2.3

585c227f48af/sist-ts-cen-ts-17496-2021



**Figure 2 — Interconnection of ITS-SUs**

### 7.2.3 ITS-SCPs related to SCNs

An example of an ITS-SCP for the link between ITS-SUs (ITS-SCUs) and the interface towards sensor and control networks, see Figure 3, is presented in 10.2.2.