



# SLOVENSKI STANDARD

## SIST EN ISO 18750:2018

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Nadomešča:

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**Inteligentni transportni sistemi - Kooperativni sistem - Lokalni dinamični zemljevidi (ISO 18750:2018)**

Intelligent transport systems - Cooperative ITS - Local dynamic maps (ISO 18750:2018)

Intelligente Transportsysteme - Kooperative Systeme - Festlegung eines globalen Konzeptes für lokale dynamische Karten (ISO 18750:2018)

Systèmes intelligents de transport - Systèmes ITS - Cartes dynamiques locales (ISO 18750:2018)

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**ICS:**

03.220.20	Cestni transport	Road transport
35.240.60	Uporabniške rešitve IT v prometu	IT applications in transport

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**EN ISO 18750**

June 2018

ICS 03.220.20; 35.240.60

Supersedes CEN ISO/TS 18750:2015

English Version

**Intelligent transport systems - Co-operative ITS - Local  
dynamic map (ISO 18750:2018)**

Systèmes de transport intelligents - Systèmes  
intelligents de transport coopératifs - État des  
connaissances des cartes (ISO 18750:2018)

Intelligente Transportsysteme - Kooperative Systeme -  
Festlegung eines globalen Konzeptes für lokale  
dynamische Karten (ISO 18750:2018)

This European Standard was approved by CEN on 12 June 2018.

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## European foreword

This document (EN ISO 18750:2018) 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.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by December 2018, and conflicting national standards shall be withdrawn at the latest by December 2018.

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.

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# INTERNATIONAL STANDARD

**ISO  
18750**

First edition  
2018-05

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## Intelligent transport systems — Co-operative ITS — Local dynamic map

*Systèmes de transport intelligents — Systèmes intelligents de  
transport coopératifs — État des connaissances des cartes*

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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](http://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](http://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 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by ISO/TC 204, *Intelligent transport systems*.

This first edition cancels and replaces the first edition (ISO/TS 18750:2015), which has been technically revised.

## Introduction

An essential property of cooperative intelligent transport systems (C-ITS), see ISO TR 17465-1[17], is the sharing of data between different ITS applications providing different ITS services to the users. This approach replaces the traditional approach where each application is operated in an isolated environment, i.e. referred to as "silo - approach". The C-ITS approach enables synergies in components of an ITS station unit, e.g. sharing of communication tools, improves overall performance and reliability, and reduces overall cost. In order to protect the interests of the various ITS applications, C-ITS implements the concept of an ITS station operated as a bounded secured managed domain.

The sharing of data between applications is achieved by subscribe/publish mechanisms, where at least two mechanisms are distinguished, i.e. one allowing ITS-S application processes to subscribe to standardized messages from ITS message sets (direct forwarding upon reception of such messages in an ITS station unit), and one using a local dynamic map (LDM) as repository of standardized data objects. Such data objects stored in an LDM are named LDM Data Objects (LDM-DOs). LDM-DOs provide self-consistent information on real objects existing at a given geo-location during a given lifetime-interval. Authorized ITS-S application processes may add LDM-DOs to an LDM, and may retrieve LDM-DOs from an LDM. Retrieval of LDM-DOs may be performed in queries and by means of subscription. A subscription will result in automatic notifications of selected LDM Data Objects either in defined time intervals, or event driven.

This document introduces the usage of LDMs, and specifies the LDM for global usage in C-ITS.

Initial implementations of LDMs were in the EU research projects CVIS[40] and Safespot[42].

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# Intelligent transport systems — Co-operative ITS — Local dynamic map

## 1 Scope

This document:

- describes the functionality of a "Local Dynamic Map" (LDM) in the context of the "Bounded Secured Managed Domain" (BSMD);
- specifies:
  - general characteristics of LDM Data Objects (LDM-DOs) that may be stored in an LDM, i.e. information on real objects such as vehicles, road works sections, slow traffic sections, special weather condition sections, etc. which are as a minimum requirement location-referenced and time-referenced;
  - service access point functions providing interfaces in an ITS station (ITS-S) to access an LDM for:
    - secure add, update and delete access for ITS-S application processes;
    - secure read access (query) for ITS-S application processes;
    - secure notifications (upon subscription) to ITS-S application processes;
    - management access:
      - secure registration, de-registration and revocation of ITS-S application processes at LDM;
      - secure subscription and cancellation of subscriptions of ITS-S application processes;
  - procedures in an LDM considering:
    - means to maintain the content and integrity of the data store;
  - mechanisms supporting several LDMs in a single ITS station unit.

## 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/IEC 8824-1, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation*

ISO/IEC 8825-2, *Information technology — ASN.1 encoding rules: Specification of Packed Encoding Rules (PER) — Part 2*

ISO/IEC 9646-7, *Information technology — Open Systems Interconnection — Conformance testing methodology and framework — Part 7: Implementation Conformance Statements*

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

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## 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:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

### 3.1 data integrity

property that data has not altered or destroyed in an unauthorized manner

[SOURCE: ISO 24534-5]

### 3.2 International Atomic Time

time since 00:00:00 UTC, 1 January, 2004, identical with UTC except that no leap seconds need to be added

### 3.3 LDM Area of Interest

location requirement used in the filter process of queries and automatic notifications

### 3.4 LDM Area of Maintenance

information on the operational location area of an LDM used by LDM maintenance

Note 1 to entry: ETSI EN 302 895<sup>[30]</sup> restricts the LDM Area of Maintenance to "geographical area specified by the LDM for LDM maintenance".

### 3.5 LDM Permissions

information on how a specific ITS-S application process may use an LDM

### 3.6 LDM Data Object

location-referenced and time-referenced representation of a real object that is self-explanatory without any further context information

### 3.7 LDM Data Object ID

identifier of an LDM Data Object which is unique in an LDM

### 3.8 LDM Data Dictionary

dictionary of LDM Data Object Types

### 3.9 LDM Data Object Type

identifier of the type of information contained in an LDM Data Record

### 3.10 Location Validity

information indicating a location at which an LDM Data Object is valid

### 3.11 Time Validity

information indicating a time interval during which an LDM Data Object is valid

**3.12****LDM Time of Interest**

time requirement used in the filter process of queries and automatic notifications

**3.13****Local Dynamic Map**

entity consisting of LDM Data Objects, services and interfaces for manipulating these LDM Data Objects

**3.14****location reference**

uniquely identifiable description of position or area in the real world

**3.15****metadata**

data about data

Note 1 to entry: The term "metadata" is ambiguous as it is used for fundamentally different concepts. Structural metadata is information related to the design and specification of data structures; it is also referred to as "data about the containers of data". Descriptive metadata is information on instances of data, i.e. the data content; it is also referred to as "data about data content".

**3.16****Time of Creation**

time when an LDM Data Record was created and updated

**3.17****Time of Deletion**

time when an LDM Data Record may be deleted and will no longer be considered by the LDM search functionality

**3.18****Time of Generation**

time when the content of the LDM Data Object information field was created

Note 1 to entry: This is different to the time, when the LDM Data Object was written into an LDM.

## 4 Symbols and abbreviated terms

BSMD	Bounded Secured Managed Domain
BSME	Bounded Secured Managed Entity
IAT	International Atomic Time
ICS	Implementation Conformance Statement
ITS	Intelligent Transport Systems
ITS-SCU	ITS Station Communication Unit
ITS-SU	ITS Station Unit
IUT	Implementation Under Test
LDM	Local Dynamic Map
LDM-DD	LDM Data Dictionary
LDM-DT	LDM Data Type