SLOVENSKI STANDARD
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Inteligentni transportni sistemi - Kooperativni sistem - Lokalni dinamični zemljevidi (ISO/DIS 18750:2017)

Intelligent transport systems - Cooperative ITS - Local dynamic maps (ISO/DIS 18750:2017)

Intelligente Transportsysteme - Kooperative Systeme - Festlegung eines globalen Konzeptes für lokale dynamische Karten (ISO/DIS 18750:2017)

Systèmes intelligents de transport - Systèmes ITS - Cartes dynamiques locales (ISO/DIS 18750:2017)

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

Systèmes intelligents de transport — Systèmes ITS --Cartes dynamiques locales

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Contents

Page

Foreword

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The committee responsible for this document is ISO/XXX

This second/third/... edition cancels and replaces the first/second/... edition (), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

ISO XXXX consists of the following parts. [Add information as necessary.]

Introduction

An essential property of cooperative intelligent transport systems (C-ITS), see ISO TR 17465-1 [15], 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 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 in 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 [38] and Safespot [40].

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, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 21217:2014, *Intelligent Transport Systems – Communications access for land mobiles (CALM) – Architecture*

ISO/IEC 8824-1:2008: "*Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation*".

ISO/IEC 8825-2:2015: "*Information technology – ASN.1 encoding rules: Specification of Packed Encoding Rules (PER)*".

ISO/IEC 9646-7: "*Information technology – Open systems interconnection – Conformance testing methodology and framework – Part 7: Implementation Conformance Statements*".

3 Terms and definitions

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

3.1
data integrity
property that data has not been 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 ETSI EN 302 895 [28] 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

[SOURCE: ISO 19115]

NOTE 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 more 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 This is different to the time, when the LDM Data Object was written into an LDM.