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Intelligent transport systems — Spatio-temporal data dictionary for cooperative ITS and automated driving systems 2.0

Systèmes de transport intelligents — Dictionnaire de données spatio-temporelles pour les systèmes de conduite automatisée 2.0 et les STI coopératifs

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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*.

This second edition cancels and replaces the first edition (ISO/TR 21718:2017), which has been technically revised. The main changes since the last edition are the following:

— task force team have collaborated with SAE, and combined the SAE deliverable and the first edition;

— the list of the data concept names described in SAE J 2735: 2016 have been included as Annex B.

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.

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Introduction

Cooperative ITS and automated driving systems as energy-saving technology have attracted much attention. These systems are expected to reduce traffic congestion and achieve smoother transportation.

Recently, car manufacturers, car parts manufacturers and IT companies have started driving tests for automated driving systems on the public road. Several car manufacturers have released the schedule of commercial viability and automated driving systems and are expected to put it into practical use within two or three years.

In the existing ITS applications, geographical information are optimally designed for individual systems. Thus, a large amount of resources are required in order to create, provide and maintain this information.

In the future, spatio-temporal data for ITS which includes static and dynamic temporal-spatial data will be required for Cooperative ITS and automated driving systems. In order to create, provide and maintain these data, much more resources will be required.

Spatio-temporal data can be used for different types of application systems. A common understanding and sharing of spatio-temporal data is formulated by this data dictionary. For instance, spatio-temporal data for ITS includes location information or has relationships with location.

Standardization of spatio-temporal data dictionary is expected to contribute to research and development and dissemination of cooperative ITS and automated systems by stakeholders.

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Intelligent transport systems — Spatio-temporal data dictionary for cooperative ITS and automated driving systems 2.0

1 Scope

This document is a compilation of terms to be contained in a spatio-temporal data dictionary for cooperative-ITS and automated driving systems.

This data dictionary includes static data (e.g. map, road signs and buildings) and dynamic data (e.g. traffic condition, accident reports).

This document is an updated and expanded version of ISO/TR 21718:2017.

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:

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

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

3.1
aggregate domain
data concept that defines a grouping of data elements and/or data frames

3.2
data concept
item that may be stored in a data dictionary that refers to an abstraction or thing in the natural world that can be identified with explicit boundaries and meaning and whose properties and behaviour all follow the same rules

Note 1 to entry: Data concepts can be classified into the following types: object class, value domain, data element, aggregate domain, data frame, message, interface dialogue, dictionary document, or module.

3.3
data concept type
categorization of the kind of data concept

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3.4
data dictionary
listing of data concepts and their meta-attributes in a consistent format

3.5
data element
data concept represented by a specific value domain that describes a single atomic property about an object class

Note 1 to entry: A data element is composed of an object class, a property of the represented object class and a value domain.

3.6
data frame
data concept represented by a specific aggregate domain that describes information of interest through a useful grouping of more atomic properties about one or more object classes

Note 1 to entry: The grouping may be a set, sequence, or a choice.

3.7
dynamic data
data which has short life-span data such as a position of vehicle

3.8
message
data concept that is a grouping of data elements, data frames, or data elements and data frames that is used to convey a complete set of information

Note 1 to entry: For the purposes of this document, a message is an abstract description; it is not a specific instance.

3.9
module
data concept that contains the formal syntactic definition, and optionally the semantic definition, of a defined set of other data concepts that are all version-controlled as a single unit

Note 1 to entry: A module can be represented in multiple languages (e.g., ASN.1 or XML Schema) and compiled by computer systems.

3.10
source
document or other reference that was used to develop the pertinent data concept

3.11
spatio-temporal (adjective)
relating to both space and time

3.12
static data
data which do not change automatically

3.13
value domain
data concept that defines a set of permissible values

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