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ISO/DTS 14812

Intelligent transport systems — **Vocabulary**

Systèmes de transport intelligents — Vocabulaire

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Foreword

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

This second edition cancels and replaces the first edition (ISO/TS 14812:2022), which has been technically revised. The main changes are as follows:

- the following terms and groups of terms have been modified:
 - information security terms (3.1.14) iso/190a9aed-18c0-48fa-aeee-b6cd54f17aa9/iso-dts-14812
 - connected vehicle roadside equipment (3.2.3.3)
 - connected vehicle (3.2.3.7)
 - device component terms (3.2.10)
 - carriageway (3.3.1.5)
 - single carriageway (3.3.1.7)
 - dual carriageway (3.3.1.8)
 - multiple carriageway (3.3.1.9)
 - motorway (3.3.1.21)
 - physical traffic separator (3.3.2.1)
 - kerb (3.3.2.4)
 - footpath (3.3.3.3)
 - sidewalk (3.3.3.4)
 - escalator (3.3.3.5)

moving walkway (3.3.3.6) pedestrian crossing (3.3.3.7)shared space (3.3.3.8) block-face (3.3.3.9) alley (3.3.5.11) — road identifier (3.3.5.12)service road (3.3.5.13)service alley (<u>3.3.5.14</u>) facility terms (3.3.7)kerbside usage terms (3.3.8)road equipment terms (3.3.9)geographic feature (3.4.1.7)point destination (3.4.1.8)area destination (3.4.1.9) coordinate tuple (3.4.1.10)point coordinates (3.4.1.11) network location (3.4.2.8) geographic descriptor (3.4.2.9) cument Preview infrastructure descriptor (3.4.2.10) jurisdictional terms (3.4.3) vulnerable road user (3.6.1.5) — protected road user (3.6.1.6)anonymized vehicle reference (3.7.2.3) vehicle equipment (3.7.2.4) — vehicle fuel type (3.7.2.5) vehicle identifier (3.7.2.6) — vehicle load type (3.7.2.7) vehicle registration plate identifier (3.7.2.8) gross vehicle mass (3.7.2.9)gross vehicle mass rating (3.7.2.10)payment terms (3.8.1)

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.

Introduction

The definitions found in this document have been formulated in accordance with ISO International Standards such as ISO 704 and are based on a consistent concept model. It is recognized that the contents of this document are not exhaustive and that terminology evolves over time.

In most cases, the definitions provided within this document are suitable for general application throughout intelligent transport systems (ITS). In those circumstances where a term is intended for a specific domain of discourse or where the term can be used in multiple domains, the intended context is indicated at the beginning of the definition as bracketed text (e.g. "<ITS-S>").

In addition to a Bibliography, this document provides an index that provides an alphabetical listing of all preferred, admitted and deprecated terms contained in this document.

Other standardization groups and organizations are encouraged to adopt the terminology in this document to promote better understanding of terms among ITS professionals worldwide. The terms and definitions contained within this document can be searched online at ISO's Online Browsing Platform available at https://www.iso.org/obp.

Additional related terms can be found in ISO/IEC/IEEE 24765.

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Intelligent transport systems — Vocabulary

1 Scope

This document defines terms relating to intelligent transport systems (ITS).

2 Normative references

There are no normative references in this document.

3 Terms and definitions

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

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

3.1 Core terms

3.1.1 Entity terms

NOTE Figure A.1 depicts the concept model for the terms defined in this subclause.

3.1.1.1

entity

 $concrete\ or\ abstract\ thing\ that\ exists,\ did\ exist,\ or\ can\ possibly\ exist,\ including\ associations\ among\ these\ things$

EXAMPLE/stan *Person* (3.1.1.6), object, event, idea, process, etc. - 18c0-48fa-aeee-b6cd54f17aa9/iso-dts-14812

3.1.1.2

immaterial entity

entity (3.1.1.1) that does not occupy three-dimensional space

EXAMPLE Idea, process, organization, etc.

3.1.1.3

material entity

entity (3.1.1.1) that occupies three-dimensional space

Note 1 to entry: All material entities have certain characteristics that can be described and therefore this concept is important for ontology purposes.

3.1.1.4

non-biological entity

material entity (3.1.1.3) that is not and has never been a living organism

3.1.1.5

biological entity

material entity (3.1.1.3) that was or is a living organism

3.1.1.6

person

biological entity (3.1.1.5) that is a human being

3.1.2 General system terms

NOTE Figure A.2 depicts the concept model for the terms defined in this subclause.

3.1.2.1

system

combination of interacting *elements* (3.1.3.10) organized to achieve one or more stated purposes

3.1.2.2

transport system

system (3.1.2.1) of infrastructure elements (3.1.3.10) and optionally vehicles (3.7.1.1) that are jointly designed to move material entities (3.1.1.3) from an origin to a destination

Note 1 to entry: Transport systems can also include any supporting system, such as information and control systems.

3.1.2.3

surface transport system

transport system

transport system (3.1.2.2) designed to move material entities (3.1.1.3) across the surface or near-surface of the Earth

Note 1 to entry: A surface transport system can include tunnels, *bridges* (3.3.7.3) and similar *elements* (3.1.3.10).

Note 2 to entry: There is not complete agreement on the precise limitations of a "surface transport system" within the ITS community. Currently, the term is almost exclusively applied to ground-based travel of goods and people over significant distances. The term is viewed as including ferry systems, which often form an integral part of a local surface transport system; it is less clear if it includes long-distance sea-fairing ships. The term "surface transport systems" is also generally limited to transport systems that cover a considerable distance (e.g. factory conveyance technologies are not often referred to as "surface transport systems"). It has been suggested that air travel, which is arguably a transport system designed to move physical entities between points on the surface of the Earth, ought to be included in the scope of the term, but this perspective is not universally accepted. It is expected that the exact limitations of the term will be further refined as ITS matures.

Note 3 to entry: Due to the defined scope of ITS, the term "transport system" is intended to be interpreted as being synonymous with the term "surface transport system" unless explicitly specified otherwise.

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intelligent transport system log/standards/iso/f90a9aed-18c0-48fa-aeee-b6cd54f17aa9/iso-dts-14812 ITS

intelligent transportation system

system (3.1.2.1) comprised of information, communication, sensor and control technologies and that is designed to benefit a *surface transport system* (3.1.2.3)

Note 1 to entry: "Intelligent transportation system" is the American English equivalent.

Note 2 to entry: Benefits potentially include, but are not limited to, increased safety, sustainability, efficiency and comfort.

Note 3 to entry: The full term (i.e. "intelligent transport system") is often used when the noun is used as a subject, whereas the abbreviated term (i.e. "ITS") is often used to modify another noun (e.g. "Intelligent transport systems provide ITS services.").

3.1.2.5

cooperative ITS

C-ITS

subset of *intelligent transport systems* (3.1.2.4) where information is shared among *ITS stations* (3.2.7.3) in a manner that enables its use by multiple *ITS services* (3.5.3.1)

3.1.3 General architecture terms

NOTE <u>Figure A.3</u> depicts the concept model for the terms defined in this subclause.

3.1.3.1

architecture

system architecture

<system> fundamental concepts or properties of a *system* (3.1.2.1) in its *environment* (3.1.3.11) embodied in its *elements* (3.1.3.10), *relationships* (3.1.6.8) and in the principles of its design and evolution

3.1.3.2

architecture description

work product used to express an architecture (3.1.3.1)

[SOURCE: ISO/IEC/IEEE 42010:2022, 3.3]

3.1.3.3

architecture framework

conventions, principles and practices for the description of *architectures* (3.1.3.1) established within a specific domain of application or community of *stakeholders* (3.1.3.4)

EXAMPLE 1 Generalised Enterprise Reference Architecture and Methodologies (GERAM) [ISO 15704] is an architecture framework.

EXAMPLE 2 Reference Model of Open Distributed Processing (RM-ODP) [ISO/IEC 10746 series] is an architecture framework.

[SOURCE: ISO/IEC/IEEE 42010:2022, 3.4, modified — the preferred term from ISO/IEC/IEEE 42010, "architecture description framework", has been shortened to "architecture framework" in this document. Notes 1 and 2 to entry have been removed and replaced with new Notes to entry.]

3.1.3.4

stakeholder

system stakeholder

<system> individual, team, organization or *classes* (3.1.12.2) thereof, having an interest in a system (3.1.2.1)

3.1.3.5

concern

system concern

<system> interest in a system (3.1.2.1) relevant to one or more of its stakeholders (3.1.3.4)

Note 1 to entry: A concern pertains to any influence on a system in its *environment* (3.1.3.11), including developmental, technological, business, operational, organizational, political, economic, legal, regulatory, ecological and social influences.

3.1.3.6

architecture viewpoint

work product establishing the conventions for the construction, interpretation and use of *architecture views* (3.1.3.7) to frame specific system *concerns* (3.1.3.5)

3.1.3.7

architecture view

work product expressing the *architecture* (3.1.3.1) of a *system* (3.1.2.1) from the perspective of specific system *concerns* (3.1.3.5)

3.1.3.8

model kind

conventions for a type of modelling

Note 1 to entry: Examples of model kinds include *data flow* (3.1.7.1) diagrams, *class* (3.1.11.2) diagrams, Petri nets, balance sheets, organization charts and state transition models.

3.1.3.9

architecture model

work product representing one or more *architecture views* (3.1.3.7) and expressed in a format governed by a *model kind* (3.1.3.8)

3.1.3.10

element

architecture element

<architecture> component member of an architecture model (3.1.3.9) included in an architecture view (3.1.3.7)

3.1.3.11

environment

system environment

<system> context determining the setting and circumstances of all influences upon a system (3.1.2.1)

Note 1 to entry: The environment of a system includes developmental, technological, business, operational, organizational, political, economic, legal, regulatory, ecological and social influences.

3.1.4 Architecture view terms

NOTE Figure A.4 depicts the concept model for the terms defined in this subclause.

3.1.4.1

communications view

architecture view (3.1.3.7) from the communications viewpoint (3.1.4.2)

Note 1 to entry: Within ITS, the preferred model for describing the communications view is based on the *ITS-S reference* architecture (3.1.9.4).

3.1.4.2

communications viewpoint

architecture viewpoint (3.1.3.6) used to frame concerns (3.1.3.5) related to all layers of the Open Systems Interconnection (OSI) stack and related management and security issues

3.1.4.3

enterprise view

architecture view (3.1.3.7) from the enterprise viewpoint (3.1.4.4)

3.1.4.4

enterprise viewpoint

architecture viewpoint (3.1.3.6) used to frame the policies, funding incentives, working arrangements and jurisdictional structure that support the technical layers of the architecture (3.1.3.1)

3.1.4.5

functional view

architecture view (3.1.3.7) from the functional viewpoint (3.1.4.6)

3.1.4.6

functional viewpoint

architecture viewpoint (3.1.3.6) used to frame *concerns* (3.1.3.5) related to the definition of *processes* (3.1.7.2) that perform surface transport functions and *data flows* (3.1.7.1) shared between these processes

3.1.4.7

physical view

architecture view (3.1.3.7) from the physical viewpoint (3.1.4.8)

Note 1 to entry: The term "deployment view" is sometimes used within the broader ICT community, but the term "physical view" is preferred to prevent confusion between the physical view of a reference architecture and any part of a *deployment architecture* (3.1.9.3).

3.1.4.8

physical viewpoint

architecture viewpoint (3.1.3.6) used to frame concerns (3.1.3.5) related to the assignment of functionality to physical objects (3.1.8.1) and the interfaces among these physical objects

3.1.5 Architecture — Communication view terms

NOTE Figure A.5 depicts the concept model for the terms defined in this subclause.

3.1.5.1

application entity

ITS-S application entity

DEPRECATED: information layer

part of the ITS station reference architecture (3.1.9.4) that is responsible for providing ITS-related functionality

Note 1 to entry: Within the US, the National Transportation Communications for ITS Protocol (NTCIP) standards identify an "information layer" on top of the traditional OSI stack. However, the purpose of this layer includes both information configuration and functionality. The ITS-S reference architecture separates these two roles between the *management entity* (3.1.5.6) and the application entity.

3.1.5.2

access layer

link layer

subnet layer

communications layer that corresponds to the physical and data link layers of the OSI model

Note 1 to entry: Within the Internet Engineering Task Force (IETF), the term "link layer" is used to describe the same functionality as the access layer.

Note 2 to entry: Within the US, the National Transportation Communications for ITS Protocol (NTCIP) standards use the term "subnet layer" to describe the same functionality as the access layer.

3.1.5.3

ITS-S access laver

communications layer in the *ITS station reference architecture* (3.1.9.4) corresponding to the physical and data link layers of the OSI model for ITS communications

3.1.5.4

transnet layer

ITS-S networking and transport layer

networking and transport layer

communications layer in the *ITS station reference architecture* (3.1.9.4) corresponding to the network and transport layers of the OSI model

Note 1 to entry: The full name of this layer is the networking and transport layer, but the term "transnet layer" provides a more concise name.

3.1.5.5

facilities laver

ITS-S facilities layer

DEPRECATED: application layer

communications layer in the *ITS station reference architecture* (3.1.9.4) corresponding to the session, presentation and application layers of the OSI model

Note 1 to entry: Within the US, the National Transportation Communications for ITS Protocol (NTCIP) standards call the facilities layer the "application layer". However, as this term is easily confused with both the OSI application layer and the *application entity* (3.1.5.1), it is preferable to avoid the term and to qualify it when used (e.g. OSI application layer).

3.1.5.6

management entity

ITS-S management entity

part of the ITS station reference architecture (3.1.9.4) that is responsible for management and configuration of all layers and entities within the ITS-S

3.1.5.7

security entity

ITS-S security entity

part of the *ITS station reference architecture* (3.1.9.4) that is responsible for providing communication security and *system* (3.1.2.1) security

3.1.6 Architecture — Enterprise view terms

NOTE <u>Figure A.6</u> depicts the concept model for the terms defined in this subclause.

3.1.6.1

enterprise object

element (3.1.3.10) within an enterprise view (3.1.4.3) that represents an organization or individual

3.1.6.2

resource

enterprise view resource

<enterprise view> element (3.1.3.10) that represents an entity (3.1.1.1) that is managed, operated, referenced
and/or used to develop and provide ITS (3.1.2.4)

3.1.6.3

document

uniquely identified unit of information for human use

EXAMPLE A report, specification, manual or book, in printed or electronic form.

Note 1 to entry: A document can be a single information item, or part of a larger information item.

[SOURCE: ISO/IEC/IEEE 15289:2019, 3.1.10]

3.1.6.4

interaction

enterprise view interaction

<enterprise view> element (3.1.3.10) that represents coordination between two enterprise objects (3.1.6.1)

3.1.6.5

<u>180/D18 14812</u>

formal coordination hai/catalog/standards/iso/f90a9aed-18c0-48fa-aeee-b6cd54f17aa9, enterprise view formal coordination

<enterprise view> interaction (3.1.6.4) between two enterprise objects (3.1.6.1) governed by a documented
agreement

EXAMPLE A road operator can enter into formal agreement(s) with the owner of a road (3.3.5.1) and the owner(s) of the associated roadside (3.3.1.10) equipment.

3.1.6.6

informal coordination

enterprise view informal coordination

<enterprise view> interaction (3.1.6.4) between two enterprise objects (3.1.6.1) governed by an understanding
that is not documented in a formal agreement between the two parties

3.1.6.7

role

enterprise view role

<enterprise view> element (3.1.3.10) that represents the specified responsibilities between an enterprise object (3.1.6.1) and another enterprise view (3.1.4.3) element

3.1.6.8

relationship

enterprise view relationship

<enterprise view> element (3.1.3.10) that represents an association between two resources (3.1.6.2)