INTERNATIONAL STANDARD

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Intelligent transport systems (ITS) — Location referencing for geographic databases —

Part 1:
General requirements and conceptual model

Systèmes de transport intelligents (ITS) — Localisation pour bases de données géographiques —

Partie 1: Exigences générales et modèle conceptuel

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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).

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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

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 third edition cancels and replaces second edition (ISO 17572-1:2015), which has been technically revised.

The main changes are as follows:

— Annex C has been significantly reduced;

— Annex D, Annex E and Annex F have been deleted;

— cross-references have been updated throughout the document to refer to the most recent edition of the relevant publication;

— various minor editorial modifications have been made throughout.

A list of all parts in the ISO 17572 series can be found on the ISO website.

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

A location reference (LR) is a unique identification of a geographic object. In a digital world, a real-world geographic object can be represented by a feature in a geographic database. An example of a commonly known location reference is a postal address of a house. Examples of object instances include a particular exit ramp on a particular motorway, a road junction or a hotel. For efficiency reasons, location references are often coded. This is especially significant if the location reference is used to define the location for information about various objects between different systems. For intelligent transport systems (ITS), many different types of real-world objects are addressed. Amongst these, location referencing of the road network, or components thereof, is a particular focus.

Communication of a location reference for specific geographic phenomena, corresponding to objects in geographic databases, in a standardized, unambiguous manner is a vital part of an integrated ITS system in which different applications and sources of geographic data are used. Location referencing methods (LRM, methods of referencing object instances) differ by applications, by the data model used to create the database or by the enforced object referencing imposed by the specific mapping system used to create and store the database. A standardized location referencing method allows for a common and unambiguous identification of object instances representing the same geographic phenomena in different geographic databases produced by different vendors, for varied applications and operating on multiple hardware/software platforms. If ITS applications using digital map databases are to become widespread, it is necessary for data referencing across various applications to be possible. Information prepared on one system, such as traffic messages, needs to be interpretable by all receiving systems. A standardized method to refer to specific object instances is essential in achieving such objectives.

LR activities are currently supported by Japanese, Korean, Australian, Canadian, US and European ITS bodies. Japan has developed a link specification for vehicle information and communication systems (VICS). In Europe, the radio data system – traffic message channel (RDS-TMC) traffic messaging system has been developed. In addition, methods have been developed and refined in the EVIDENCE and AGORA projects based on intersections identified by geographic coordinates and other intersection descriptors. In the US, standards for location referencing have been developed to accommodate several different location referencing methods.

This document provides specifications for location referencing for ITS systems (although other committees or standardization bodies can subsequently consider extending it to a more generic context). Other LR methods for transport protocol experts group (TPEG) and geographic information are defined in the following documents:

— ISO/TS 21219-21, *Intelligent transport systems — Traffic and travel information via transport protocol experts group, generation 2 (TPEG2) — Part 21: Geographic location referencing (TPEG-GLR)*

— ISO/TS 21219-22, *Intelligent transport systems — Traffic and travel information (TTI) via transport protocol experts group, generation 2 (TPEG2) — Part 22: OpenLR location referencing (TPEG2-OLR)*

— ISO 19148, *Geographic information — Linear referencing*

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Part 1:
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1 Scope

The ISO 17572 series specifies location referencing methods (LRMs) that describe locations in the context of geographic databases and that are intended for use in locating transport-related phenomena both in an encoder system and from the decoder side. This document defines what is meant by such objects and describes the reference in detail, including whether or not components of the reference are mandatory or optional, and their characteristics.

The ISO 17572 series specifies three different LRMs:

— pre-coded LRM (pre-coded profile);

— dynamic LRM (dynamic profile);

— precise relative LRM (precise relative profile).

The ISO 17572 series does not define a physical format for implementing the LRM. However, the requirements for physical formats are defined.

The ISO 17572 series does not define details of the location referencing system (LRS), i.e. how the LRMs are to be implemented in software, hardware or processes.

This document specifies the following general LRM-related subjects:

— requirements of an LRM;

— conceptual data model for LRMs;

— inventory LRMs (see Annex A).

This document also provides:

— examples of conceptual model use (see Annex B);

— a comparison of definitions with ISO/TC 211 (see Annex C).

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 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/

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