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Intelligent transport systems — ITS central data dictionaries

Part 2: Governance of the Central ITS Data Concept Registry

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National foreword

This British Standard is the UK implementation of ISO 14817-2:2015.

The UK participation in its preparation was entrusted to Technical Committee EPL/278, Intelligent transport systems.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Intelligent transport systems — ITS central data dictionaries —

Part 2: Governance of the Central ITS Data Concept Registry

Systèmes intelligents de transport — Dictionnaires de données centrales des ITS —

Partie 2: Gouvernance du registre central de concept des données des ITS

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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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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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 204, *Intelligent transport systems*.

This first edition of ISO 14817-2, together with ISO 14817-1, cancels and replaces ISO 14817:2002, which has been technically revised.

ISO 14817 consists of the following parts, under the general title *Intelligent transport systems — ITS central data dictionaries*:

— *Part 1: Requirements for ITS data definitions*

— *Part 2: Governance of the Central ITS Data Concept Registry*

— *Part 3: Object identifier assignments for ITS data concepts*

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Introduction

Background

This International Standard has been developed by ISO/TC 204, in order to provide a framework for the documentation and registration of data that passes through system interfaces within the Intelligent transport systems (ITS) domain. It is designed to maximize interoperability and facilitate information re-use across system interfaces.

Vision statement

This International Standard envisions a harmonized approach to ITS data concepts to promote maximum interoperability of data within the ITS sector by the creation and maintenance of the "Central ITS Data Concept Registry" (CIDCR), supported by interface and application specific ITS data dictionaries, created and maintained in a common and interoperable form, and to ensure the minimization of duplication by clear rules for data concept definition and data concept registry management.

Mission statement

The mission is to develop tools that will promote a holistic, integrated approach involving vehicle technology, infrastructure, and the road user to increase transport safety and efficiency. Specifically, this International Standard defines the principles and concepts; scope; field of application; rules and procedures; definition and concept of operation for the CIDCR and ITS functional data dictionaries; and makes provision for the migration of data concepts from ITS functional data dictionaries to the CIDCR so as to maximize interoperability and minimize proliferation of similar (but inconsistently defined) data concept entries.

This International Standard defines the framework, formats, and procedures used to define information and information exchanges within the ITS sector. This International Standard is designed to be used by the ITS community at large, but should be of special interest to application developers, equipment providers, and data concept registry managers.

This International Standard specifies a set of meta-attributes for ITS data concepts, as well as associated conventions and schemes that enable the description, standardization and management of all exchanged ITS data. Through consistent use of these common structures and associated conventions and schemes, interchange of data and information among the various ITS functional subsystems via their specific application systems can be maximized. This International Standard also supports re-use of data elements and other data concepts across various ITS functional subsystems and their specific application systems

The formats and processes defined within this International Standard are consistent with implementation(s) of the ISO ITS System Architecture defined in the ISO 14813 Standardization deliverables, particularly parts that discuss core TICS reference architecture and example elaboration. This does not preclude the application of data concept registries using alternative international, regional or national system architecture methodologies or techniques, indeed, common formats and processes will ease migration and interoperability between such approaches.

The ITS data concepts that populate the CIDCR or data dictionary may originate from a 'Computer-Aided Software Engineering' (CASE) tool implementation of the ISO 14813 ITS Reference Architecture, from International Standards for ITS, from National implementations for ITS, or from the submission by relevant users. Data dictionary entries are not limited to those generated by object oriented methodologies.

Overview of Central ITS Data Concept Registry

The scope of ITS applications covers numerous ISO/TC 204 functional areas as well as national and regional ITS organizations, each having an established group of stakeholders. The international integration of ITS applications is one of the major development issues, so that data defined and gathered in one of these functional areas (e.g. traffic management, traveller information) can be applied

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in another. For this type of interoperability the definition of data that can persist across different functional areas must be standardized. The CIDCR meets this requirement.

The CIDCR supports the standardization and harmonization of data concepts (e.g. data elements) from different stakeholder groups. The ITS stakeholder community is large and diverse as evidenced by the number of working groups within ISO/TC 204 and the number of national or regional ITS bodies participating. The definition of key data elements will arise from numerous sources. Moreover different groups will have an interest in the definition of the same data concept, which could lead to the prospect of duplicate or similar definitions being developed. The CIDCR will assist in promoting the reuse of previously defined data and minimizing data duplication.

The complete ITS distributed system will be very large, both in geographic extent and in the number and diversity of the application areas, inevitably leading to the independent development of sub-systems. In this context, a second major purpose of the CIDCR is to document and register interface dialogues. This process provides the main foundation for interoperability, by also focusing on those data concepts which cross an interface, but which are not necessarily harmonized throughout ITS. The semantics of data concepts may be documented by recording the associations of the data models in which they participate.

The operational concept of the data concept registration is described in the following subclauses. See Annex A for specific procedural details.

Document overview

This clause provides an overview of this International Standard. Clause 1 identifies the scope of this part of ISO 14817. Clause 2 identifies requirements for conformance to this part of ISO 14817. Clause 3 identifies references required for proper implementation of this part of ISO 14817. Clause 4 defines terms used in this part of ISO 14817 and Clause 5 lists the abbreviations.

The requirements for the CIDCR begin in Clause 6 with an overview of the concept of operations. A framework describing the registration of different types of data concepts in the CIDCR and the registration status levels are presented.

Clause 7 identifies the management of the CIDCR and identifies the major actors that interface with the registry and their responsibilities. Clause 8 then identifies the administrative meta-attributes associated with each data concept.

The annexes to this part of ISO 14817 describe the specific details for implementing the requirements introduced in Clause 6 to Clause 8. Annex A details when specific meta-attributes are required for each type of data concept. Annex B defines the process used for quality control within the CIDCR, Annex C defines the registration status levels and Annex D defines the rules for version control. Finally, Annex E defines guidelines for harmonization.

The Bibliography includes a list of documents related to this part of ISO 14817.

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Intelligent transport systems — ITS central data dictionaries —

Part 2: Governance of the Central ITS Data Concept Registry

1 Scope

This part of ISO 14817 specifies the registration process to enter data concepts into the Central ITS Data Concept Registry (CIDCR).

The CIDCR is designed to include data concepts that conform to ISO 14817-1. These data concepts may be derived from the system architecture defined in ISO 14813, but may also support data concepts using alternative International, Regional or National System Architecture methodologies or techniques.

2 Conformance

This part of ISO 14817 prescribes a conceptual model, but not a physical implementation. Therefore, the meta model need not be physically implemented exactly as specified. However, it should be possible to map unambiguously to and from the implementation and the meta model.

A conforming implementation shall support all processes defined by this part of ISO 14817.

3 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 14817-1, *Intelligent transport systems — ITS central data dictionaries — Part 1: Requirements for ITS data definitions*

ISO 14817-3, *Intelligent transport systems — ITS central data dictionaries — Part 3: Object identifier assignments for ITS data concepts*

4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14817-1, ISO 14817-3 and the following apply.

4.1
data concept registration process
process by which data is formally described and provided to an approved location in the data concept registry

Note 1 to entry: This process is effected under the control of the "ITS Registrar", in accordance with the requirements of this part of ISO 14817.

4.2
ITS registrar
organizational element or an individual appointed by ISO/TC 204 to undertake the day-to-day management of the data concept registry process

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5 Symbols and abbreviated terms

ASN.1	Abstract Syntax Notation One
ANSI	American National Standards Institute
CASE	Computer-Aided Software Engineering
CCC	Change Control Committee
CIDCR	Central ITS Data Concept Registry
DCI	Data concept identifier
DD	Data Dictionary
DCR	Data Concept Registry
ExCom	Executive Committee
ID	identification
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
ITS	Intelligent transport system(s)
N/A	not applicable
OID	object identifier
OSI	Open System Interconnection
RA	Registration Authority
TC	Technical Committee
UML	Unified Modelling Language
URL	Uniform Resource Locator

6 Framework of Central ITS Data Concept Registry

The overall framework for the CIDCR is presented in Figure 1. It illustrates the relationships among the following:

— ITS architectures (and data models);

— ITS data dictionaries (that are intended to include all data concepts);

— CIDCR;

— ITS Applications.

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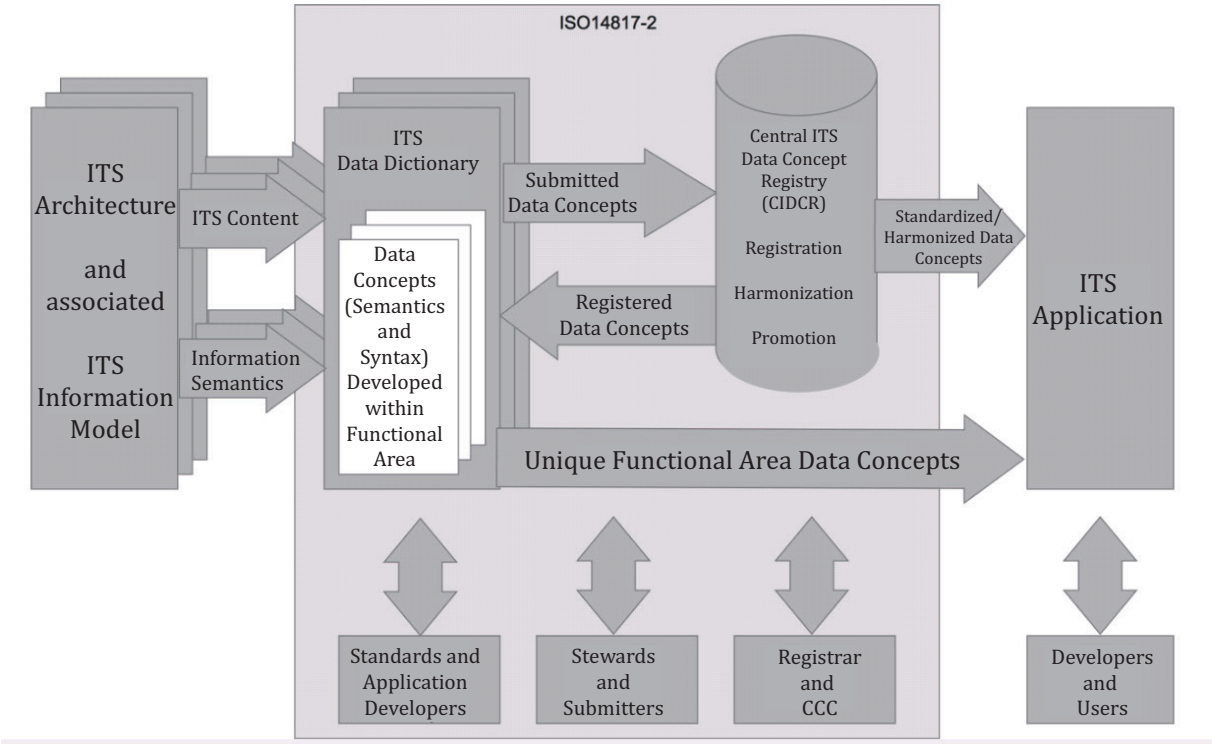

Figure 1 — CIDCR operational framework

For each of these elements, Figure 1 also lists their key functions. For data dictionaries, the CIDCR, and the applications it further identifies the key stakeholders or stakeholder groups that participate in or manage their operations. Finally, Figure 1 illustrates the information exchanged between these operational elements.

The ITS data dictionaries contain data concepts based on information flows documented in an ITS Architecture.

NOTE There may be multiple architectures, each with multiple versions that are referenced.

The data dictionaries in Figure 1 may be developed, for example, by ISO/TC 204 or regional or National "Standards Development Organizations" (SDOs), public agencies, or private companies. These data dictionaries are the responsibility of their respective SDOs, regional or National bodies. Each data dictionary shall be associated with a data steward and/or data submitter, using the process defined in this part of ISO 14817, to submit data concepts from their respective data dictionaries to the CIDCR. Furthermore, these data dictionaries should use registered data concepts from the CIDCR rather than invent new data concepts. The use of such registered data concepts will help to avoid redundancy in data concepts.

The CIDCR shall be the repository for submitted data concepts. Through the efforts of the data stewards, the registrar and the CIDCR change control committee (CCC) support identification of harmonization opportunities, recommendations for harmonization, and promotion of data concepts to higher quality levels where warranted. Finally, the CIDCR can provide data concepts to developers and other users for use in ITS applications.

Developers and other users should use data concepts from the CIDCR at the highest ("*Preferred*") quality level. The data concepts at this level are described unambiguously, harmonized across ITS sectors, and are considered representative of published data standards.

Table 1 presents a summary of the distinguishing characteristics between a data dictionary and the CIDCR.

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