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Geographic information - Registration and register governance (ISO/DIS 19135:2024)

Geoinformation - Registrierung und Registerführung (ISO/DIS 19135:2024)

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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 211, *Geographic information/Geomatics*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 287, *Geographic Information*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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This third edition of ISO 19135 cancels and replaces ISO 19135-1:2015 and ISO 19135-1:2015/Amd 1:2021, which have been technically revised. ISO 19135-1:2015 was a revision of ISO 19135:2005[1)].

This document constitutes a major revision, its application is heavily generalized and no longer dictates implementation-level concerns, such as data schemas. Differences from ISO 19135-1:2015 and ISO 19135-1:2015/Amd 1:2021 are documented in Annex B.

1) Cancelled and replaced by ISO 19135-1:2015.

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Introduction

0.1 Purpose

The management and organization of information is a continual challenge for humanity, in the hope to retain and pass on knowledge to future generations.

Throughout history, this function has mostly been executed by humans, for a human audience, who have an innate ability to recognize meaning and bridge concepts across different information domains.

The advent of information systems brings the prospect of productivity increases through automation, which requires the minimization or the obsolescence of the intermediary human role in favour of direct usage of managed information by machines.

However, information systems as users of managed information, have a much lower tolerance to semantic ambiguity and a higher need for information persistence. The application of additional measures is needed, including semantic encoding, structural needs and governance requirements, to allow information systems to operate correctly with accuracy.

This document introduces the “register” as a framework, covering structure and governance requirements, that allows the establishment and management of a managed information collection that facilitates use by both human and information system users.

The information unit contained in a register is the “concept”. The changes to the understanding of the concept is realized through a series of data representations composed of “register items”.

NOTE 1 The term “register” in this document is only used to refer to a “managed collection of information”, instead of a “collection of recorded information”, which is understood in common parlance.

NOTE 2 The meaning of “registration” in this document refers to the assignment of linguistically-independent identifiers to information items, instead of the assignment of names to information items as understood in ISO/IEC JTC 1.

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0.2 Principles

This document describes an information register and associated governance processes that fulfil the following basic principles:

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— to enable persistent access to the information collection;

— to retain history of changes that occurred in the information collection;

— to protect the integrity of the information collection.

These principles are further elaborated in Clause 5.

0.3 Benefits

Management of information in accordance with this document offers several benefits, including but not limited to:

a) ability to manage and retain information throughout time

b) persistence of information access

c) integrity of information and transparency of changes through time

d) ability to cross-link and reference information across registers

Any entity may choose to establish registers that conform to this document.

0.4 Common use cases

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The register framework supports the following common use cases:

a) registration and dissemination of information produced through International Standardization processes, making them available to users in a rapid and persistent manner;

NOTE 1 Items specified in a standard or in a register may change over time either due to changes in technology or for other reasons. Published standards do not clearly document what changes may have occurred, and do not include information about earlier versions of specified items. Such information can be maintained in a register.

b) providing a mechanism to access disparate information concerning related concepts specified in different standards;

c) support of cultural and linguistic adaptability by providing a means to record, for each item, equivalent terms used in different languages, cultures, application areas and professions together with a means to make those equivalent terms publicly available.

NOTE 2 This document supports the implementation of registers that satisfy the role of an ISO Registration Authority (RA) and of an ISO Registration Agency, both of which are required to conform to defined rules in the ISO/IEC Directives. Specific ISO/TCs provide guidance for the usage of this document in this regard, such as the ISO/TC 211 Good Practices.

0.5 Concepts and content

Information comes in all shapes and sizes; it is polymorphic in nature and can be massaged into different structures depending on the original form and intended usage.

For generalization purposes, this document considers the units of information as content, that can be represented as discrete items called “register items”.

Information is inextricably linked to things in the real-world, physical or abstract concepts. Concepts are things which are manifested in real life, ideas that can be expressed or represented in information systems. This document considers that an information unit describes some aspect of a concept.

Content, which is information about concepts, can change throughout time. The description of the concept can be redefined in time, for example, through the addition of new knowledge or techniques. Concepts can also drift, where an object that represents a certain meaning in a culture may change in time. It is therefore important to be able to describe the concepts not only at the present but also of its past.

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For a register to be useful, a register needs to accurately represent the referential and temporal connections between concepts and content.

0.6 Register framework

The register framework connects the management and realization of concepts and content to meet user needs. Collectively, the concepts and content within a register are called managed information.

A register provides managed information in two planes:

— the concept plane, where concepts are defined, and relationship between concepts enunciated;

— the content plane, where information that describe concepts persist and their changes recorded.

This separation between meaning and data management allows a register to model information and the change in meaning to support persistence.

The concept plane is realized by using three primitives:

— The concept class, as a named abstraction of a concept organization system

— The concept, as an instance of the concept class

— The concept version, as a representation of the concept at a certain point in time.

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NOTE 1 Strictly speaking, the “concept class” is used to represent a concept organization system, and the system itself can be implemented using the concept, concept version, register item class and register item primitives.

NOTE 2 In previous editions, the “concept” was loosely described as the “register item series”.

The content plane is realized in two primitives:

— The register item class, as the realization of a concept class, provides a definition (a “schema”) of register items belonging to the class

— The register item, as the realization of a concept version, encodes information belonging to the concept version, according to the information structure provided by the register item class.

To provide persistence for register users in order to satisfy internal management requirements, an additional primitive is required in the register:

— The identifier is used for the persistent linking and access of all other register primitives, including the concept class, concept, concept version, register item class and the register item. Every non-identifier primitive in a register has at least one identifier.

The concept and content planes are connected via these relationships:

— every register item class is linked to its corresponding concept class, where a concept class may link to more than one register item class

— every register item is linked to its corresponding concept version, where the register item is an instance of a register item class.

The register framework is designed to work with concept organization systems in a generic way. It does not dictate or set limitations on the organization of the concept plane, for example, whether implemented as a graph or a hierarchy, or organized according to generalization of semantics or syntactic needs.

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Management of the concept and content planes are performed according to different processes:

— the concept plane is managed according to the selected semantics of the register. This can be a concept organizational system chosen by the register owner and documented in the register specification.

— the content plane is managed according to the defined structure and rules documented in the register specification by the register owner, based on this document.

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0.7 Register specification

A register specification provides the formal specification and definition of the register, including,

— the purpose of the register

— the scope of managed information in the register

— the roles and responsibilities involved in managing register content

— the processes and procedures for managing register content

— the concept organization system used in the register

— data requirements of managed information

NOTE In previous editions, the register specification was loosely referred to as the “technical standard”.

0.8 Register roles and responsibilities

This document describes six basic roles and their responsibilities involved in the management of register content.

A register that conforms with this document has all roles assigned. It is also possible for an entity to be assigned to multiple roles.

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A register specification that conforms with this document contains documentation of the roles and responsibilities of a register.

0.9 Register operations

The process of adding, modifying or removing information in a register is subject to defined governance processes, in a way that fulfils the integrity goals and persistence needs of its users.

0.10 Organization of this document

This document first defines the register and then its governance requirements.

The register is defined using a bottom-up approach. Primitives that form the basis of a register are first described. Subsequently, the more complex structures are built up using the described primitives. Finally the register is presented in its full form.

Similarly, for governance, the necessary roles are first described, then the processes, followed by documentation requirements.

0.11 Changes from previous editions

Following common practice of setting up registers in user communities, many requirements in this document have been generalized or extended.

This document no longer describes implementation-level details pertaining to a register system, such as XML schemas, as was in ISO 19135-1:2015 and ISO 19135-1:2015/Amd 1:2021.

This document does not define an encoding or technical procedures on how to implement a register.

Important changes from the previous version (ISO 19135-1:2015 with ISO 19135-1:2015/Amd 1:2021) are described in Annex B.

NOTE The XML schema in ISO/TS 19135-2:2012 was an implementation of ISO 19135:2005. ISO/TS 19135-2:2012 was withdrawn in 2019. ISO 19135-1:2015/Amd 1:2021 incorporates the provisions of the withdrawn ISO/TS 19135-2:2012 in its Annex F, which provides a link to an externally held schema. This document does not provide any XML schema.

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Geographic information — Registration and register governance

1 Scope

This document provides structural and governance requirements of a register and its management.

Register management processes include the establishment, management, operation and publication of a register.

Specifically, these processes and their procedures facilitate:

— registration of items, the assignment of unique, unambiguous, and permanent identifiers to items;

— revision management of register items and their attributes, including the status, the content, and the class definitions.

The following considerations are out of scope of this document:

— implementation details necessary for the realization of a register;

— definition of content of a register.

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2 Normative references

There are no normative references in this document.

3 Terms and definitions

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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

3.1 General

3.1.1
entity
independent person, group, body, party or organization

3.1.2
subject matter expert
entity (3.1.1) with substantial knowledge, experience and competency in a specific domain

3.1.3
identifier
linguistically independent sequence of characters capable of uniquely and permanently identifying that with which it is associated

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3.1.4
relationship
association declared between units of information

3.1.5
register
managed collection of information

Note 1 to entry: The use of the verb form “register” is discouraged when used in conjunction with the noun form “register” to prevent confusion.

Note 2 to entry: A register differs from a dataset in that is governed through defined processes.

3.1.6
register system
registry
information system on which a *register* (3.1.5) is maintained

Note 1 to entry: In the previous editions only the term “registry” is used.

Note 2 to entry: A register system can be implemented using a database system governed by a set of processes that are well-defined and rigorously maintained.

3.1.7
register specification
documented information describing governance and requirements of the *register* (3.1.5) and its contents

3.1.8
registration
process of assigning an unambiguous *identifier* (3.1.3) to an approved item

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3.1.9
composite register
hierarchical register
register (3.1.5) composed of one or more internal registers that collectively fulfils a shared purpose

Note 1 to entry: A hierarchical register is one type of a composite register.

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3.1.10
substantive change
major impact on the use of a unit of information

Note 1 to entry: The definition of major impact depends on the intended use of the unit of information. It may be defined as the alteration of semantics or technical meaning.

3.1.11
non-substantive change
clarifying change
minor impact on the use of a unit of information

Note 1 to entry: The definition of minor impact depends on the intended use of the unit of information. It may be defined as an editorial alteration of text that does not cause a system compatibility issue.

3.2 Content layer

3.2.1
managed content
information contained in a *register item* (3.2.2)

Note 1 to entry: Managed content is information that is directly managed and influenced by the governance procedures of the register. Depending on the implementation, other information can be required for the operation of the register, but is not directly managed or influenced by the governance procedures, and therefore not considered managed content.

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