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Geografske informacije - Model domene za zemljiško administracijo (LADM) - 1. del: Generični konceptualni način (ISO/DIS 19152-1:2022)

Geographic information - Land Administration Domain Model (LADM) - Part 1: Generic Conceptual Model (ISO/DIS 19152-1:2022)

Geoinformation - Land Administration Domain Model (LADM) (ISO/DIS 19152-1:2022)

Information géographique - Modèle du domaine de l'administration des terres (LADM) - Partie 1: Modèle conceptuel générique (ISO/DIS 19152-1:2022)

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Geographic information — Land Administration Domain Model (LADM) —

Part 1:
Generic Conceptual Model

ICS: 35.240.70

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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*.

Additional parts are planned to address Valuation Information (Part 4), Spatial Plan Information (Part 5) and Implementation Aspects (Part 6) under the general title Geographic information — Land Administration Domain Model (LADM), see Annex C.

This edition of the ISO 19152 multi-part series of standards is backwards compatible to ISO 19152:2012 version of the Land Administration Domain Model.

A list of all parts in the ISO 19152 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

To achieve public policy objectives, authorities establish rules for mandating or enabling particular behaviours or outcomes. Some of these rules use territorial strategies. In the previous edition of this standard the term land administration was used in the broad sense. In this new edition of the standard a new term, with a wider meaning is introduced: georegulation, which is be defined as an activity to delimit and assert control over geographical spaces through regulations.

Through land administration/georegulation, international law, constitutional law, administrative law, private law and customary law create a multitude of geographic spaces serving multiple functions. Land administration/georegulation may be used; for examples, to delegate powers regionally, to control accessibility to a territory for security or health reasons, to organize the circulation of people, goods and information, to manage resources or for conservation purposes. These geographic spaces are juxtaposed or overlap, producing a complex legal spatial configuration.

The purpose of this International Standard is to present the fundamental notions and define the basic components and relations shared by all objects created by land administration/georegulation.

The first goal of this standard is to enable involved parties, both within one country and between different countries, to communicate, based on the shared vocabulary (that is, an ontology), implied by the model. It is not to replace existing systems, but rather to provide a formal language (the Unified Modelling Language, UML) for describing them, so that their similarities and differences can be better understood.

The second goal is to provide an extensible basis for the development and refinement of efficient and effective land administration systems, based on a Model Driven Architecture (MDA). The standard is relevant for creating standardized information services in a national or international context, where land administration domain semantics have to be shared between organizations, regions, or countries, in order to enable necessary translations. Four considerations during the design of the model were:

— it will cover the common aspects shared by objects created by land administration/georegulation all over the world;

— it will be based on the conceptual framework of ‘Cadastre 2014’ of the International Federation of Surveyors (FIG);

— it will be as simple as possible in order to be useful in practice;

— the geospatial aspects follow the ISO/TC 211 conceptual model.

This document defines the Land Administration Domain Model (LADM). This is a descriptive standard, not a prescriptive standard.

The previous version of this standard, ISO 19152:2012 concentrated on Land Registration. This is now contained in Part 2 of this standard. This document provides the general reference model for all objects of land administration/georegulation and further provides an overview of all parts. Additional parts are planned that align with the model defined in this document.

Geographic information — Land Administration Domain Model (LADM) —

Part 1: Generic Conceptual Model

1 Scope

This document:

— defines a reference Land Administration Domain Model (LADM) covering basic information-related components of land administration/georegulation;

— provides an abstract, conceptual model with packages related to:

  — parties (people and organizations);

  — basic administrative units, rights, responsibilities, and restrictions;

  — spatial units.

— provides terminology for land administration/georegulation, based on various national and international systems, that is as simple as possible in order to be useful in practice. The terminology allows a shared description of different formal or informal practices and procedures in various jurisdictions;

— provides a platform for indicators-based comparison and monitoring;

— provides a content model independent of encoding, allowing for the support of various encodings;

— provides a basis for national and regional profiles;

— enables the combining of land administration/georegulation information from different sources in a coherent manner.

The following are outside the scope of this document:

— interference with (national) land administration/georegulation laws that may have any legal implications;

— construction of external databases with party data, address data, land cover data, physical utility network data, archive data and taxation data. However, the LADM provides stereotype classes for these data sets to indicate which data set elements the LADM expects from these external sources, if available.

This document provides the concepts and basic structure for standardization in the land administration/georegulation domain. It defines a general schema that permits regulatory information to be described. It also allows for the relationship to multiple parties and groups to be expressed together with a referencing structure so that sourcing of all information systems may be maintained. This document establishes the common elements and basic schema upon which more detailed schema may be established. Other parts of ISO 19152 will address specific areas of the land administration paradigm building upon the common core schema defined in document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 19103:2015, *Geographic information — Conceptual schema language*

ISO 19105:2000, *Geographic information — Conformance and testing*

ISO 19109:2015, *Geographic information — Rules for application schema*

3 Terms, definitions and abbreviated terms

3.1 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/

3.1.1
abstract test suite
set of conformance classes that define tests for all requirements of a specification

[SOURCE: ISO 19105:2022, 3.3]

3.1.2
basic administrative unit
baunit
administrative entity, can be subject to registration (by law), or recordation [by informal right, or customary right, or another social tenure relationship], consisting of zero or more spatial units against which (one or more) unique and homogeneous rights [e.g., ownership right or *land* (3.1.8) use *right* (3.1.20)], *responsibilities* (3.1.18) or *restrictions* (3.1.19) are associated to the whole entity, as included in a *land administration* (3.1.9) system

EXAMPLE Examples are a condominium unit comprising two spatial units (e.g., an apartment and a garage), a farm lot comprising one spatial unit (e.g., parcel of land), a servitude comprising one spatial unit (e.g., the road representing the right-of-way), a land consolidation area, or a right-of-use unit with several right holders and restricted objects.

Note 1 to entry: Unique means that a right, restriction, or responsibility is held by one or more parties (e.g., owners or users) for the whole basic administrative unit. Homogeneous means that a right, restriction or responsibility ownership, use, social tenure, lease, or easement) affects the whole basic administrative unit. For a restriction zero parties are a possibility.

Note 2 to entry: A basic administrative unit may play the role of party, e.g., when the right holder is a basic administrative unit (and not a person or organization).

Note 3 to entry: A baunit should get a unique identifier when registered, or recorded.

Note 4 to entry: A baunit can consist of zero spatial units, when a *registry* (3.1.15) exists, and not a cadastre.

Note 5 to entry: Restrictions and responsibilities can be associated with their own baunits, each with their own type of spatial unit.

3.1.3
feature
abstraction of real-world phenomena

[SOURCE: ISO 19101-1:2014, 4.1.11]

3.1.4
feature type
class of *features* (3.1.3) having common characteristics

[SOURCE: ISO/DIS 19156:—[1)], 3.9]

3.1.5
fraction
pair of numbers, the top number called the numerator, the bottom number called the denominator, and a line usually separates the numerator and denominator

EXAMPLE ½ and ¾ are examples of exact fractions.

Note 1 to entry: Fraction is LADM specific: the value type of denominator should be a positive integer value > 0. The value type of numerator should be a non-negative integer value ≥ 0, and should be lower or equal than the denominator value.

3.1.6
georegulation
activity to delimit and assert control over geographical spaces through *regulations* (3.1.16)

3.1.7
group party
any number of parties, together forming a distinct entity, with each party registered

EXAMPLE A partnership (with each partner registered as a party), or two tribes (with each tribe registered as a party).

Note 1 to entry: A group party may be a *party member* (3.1.12) of another group party.

3.1.8
land
<LADM> spatial extent that is defined by RRRs [via baunit] and encompass the surface of the earth, strata, sub-strata or the marine environment

Note 1 to entry: Land can be represented in 2, 3 or 4 dimensions – points, lines, areas and volumes over time.

3.1.9
land administration
process of determining, recording and disseminating information about the relationship between people and *land* (3.1.8)

3.1.10
object identifier
oid
generic object identifier providing support in object identification

Note 1 to entry: Adapted from ISO/IEC 8824-1.

1) Under preparation. (Stage at the time of publication ISO/DIS 19156).

3.1.11
party
person or organization that plays a role in a *rights* (3.1.20), *responsibilities* (3.1.18) or *restrictions* (3.1.19) transaction

EXAMPLE An organization may be a company, a municipality, the state, a tribe, a farmer cooperation, or a church community (with each organization represented by a delegate: a director, chief, CEO, etc.).

Note 1 to entry: In order to be registered as a party not all members need to be identified and registered individually.

Note 2 to entry: A *basic administrative unit* (3.1.2) may be a party because it may hold a right of e.g., easement.

3.1.12
party member
party (3.1.11) registered and identified as a constituent of a *group party* (3.1.7)

3.1.13
profile
set of one or more base standards or subsets of base standards, and, where applicable, the identification of chosen clauses, classes, options and parameters of those base standards, that are necessary for accomplishing a particular function

Note 1 to entry: A profile valid for a whole country is named a country profile.

Note 2 to entry: A profile is derived from base standards so that by definition, conformance to a profile is conformance to the base standards from which it is derived.

[SOURCE: ISO 19106:2004, 4.5]

3.1.14
register, noun
managed collection of register items

[SOURCE: ISO 19135-1:2015, 4.1.9]

3.1.15
registry
information system on which a *register* (3.1.14) is maintained

[SOURCE: ISO 19135-1:2015, 4.1.13]

3.1.16
regulation
instrument by an authorization issued by government for mandating or enabling particular behaviours or outcomes in order to achieve public policy objectives

3.1.17
required relationship
explicit association between either spatial units, or between *basic administrative units* (3.1.2)

Note 1 to entry: Due to legal aspects, history of data, inaccurate geometries or missing geometries, geospatial overlay techniques may generate invalid, or no relationships between spatial units, which can be introduced by required relationships.

Note 2 to entry: Relationships for spatial units may be defined with ISO 19125-2 types.

3.1.18
responsibility
<LADM> formal or informal obligation on the land owner to allow or do something

EXAMPLE The responsibility to clean a ditch, to keep a snow-free pavement or to remove icicles from the roof during winter, or to maintain a monument.

Note 1 to entry: Owner implies leaseholder, usufruct holder, etc.

3.1.19
restriction
<LADM> formal or informal obligation on the land owner to refrain from doing something

EXAMPLE 1 It is not allowed to build within 200 metres of a fuel station; or, a servitude or mortgage as a restriction to the ownership right.

EXAMPLE 2 Sequestration can be registered for baunit as a restriction.

3.1.20
right
<LADM> formal or informal entitlement to own or do something

EXAMPLE Ownership right, apartment right, tenancy right, possessions, customary right, Islamic right (e.g. miri or milk), Indigenous right, or informal right.

Note 1 to entry: A right may provide a formal or informal entitlement to own or do something.

Note 2 to entry: Rights may be overlapping, or may be in disagreement.

3.1.21
source
<LADM> document providing legal and/or administrative facts on which the LA object [right, *restriction* (3.1.19), *responsibility* (3.1.18), *basic administrative unit* (3.1.2), *party* (3.1.11), or spatial unit] is based on

Note 1 to entry: Any kind of document may be added as a source according to ISO 19115:2014.

3.1.22
spatial unit
feature type (3.1.4) related to *land administration* (3.1.9)/*georegulation* (3.1.6) with associated spatial and thematic attributes

Note 1 to entry: Spatial units are structured in a way to support the creation and management of *basic administrative units* (3.1.2).

Note 2 to entry: This standard supports either 2-dimensional (2D), 3-dimensional (3D), or mixed (2D and 3D) representations of spatial attributes associated to spatial units. In addition, the spatial geometry associated with a spatial unit may be described in text ("from this tree to that river").

Note 3 to entry: In addition to spatial units represented by a single point, text, or a set of unstructured lines, a spatial unit may have an area equal to zero for administrative reasons.

Note 4 to entry: Annex B contains more background on the 2D and 3D representations of spatial units.

3.1.23
spatial unit group
any number of *spatial units* (3.1.22), considered as an entity

EXAMPLE Spatial units together forming an administrative zone such as a section, a canton, a municipality, a department, a province, or a country. Spatial units within a planning area.

Note 1 to entry: The spatial units in a spatial unit group are not necessarily continuous.

3.2 Acronyms and abbreviated terms

FIG	International Federation of Surveyors
IHO	International Hydrographic Organization