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Geografske informacije - Model domene za zemljiško administracijo (LADM) - 4. del: Informacije o vrednotenju (ISO/DIS 19152-4:2024)

Geographic information - Land Administration Domain Model (LADM) - Part 4: Valuation information (ISO/DIS 19152-4:2024)

Geoinformationen - Land Administration Domain Model (LADM) - Teil 4: Informationen zur Bewertung (ISO/DIS 19152-4:2024)

Information géographique - Modèle du domaine de l'administration des terres (LADM) - Partie 4: Informations d'évaluation (ISO/DIS 19152-4:2024)

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Geographic information — Land Administration Domain Model (LADM) —

Part 4: Valuation information

Information géographique — Modèle du domaine de l'administration territoriale (LADM) —

Partie 4: Informations sur l'évaluation

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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).

Additional parts are planned to address Generic conceptual model (Part 1), Land registration (Part 2), Marine georegulation (Part 3), Spatial plan information (Part 5) and Implementation aspects (Part 6) under the general title Geographic information — Land Administration Domain Model (LADM).

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

Property valuation is the process of estimating the value at a particular moment of time. It is performed by public and private sector actors for several Land administration (LA) processes, such as property taxation, compensation on expropriation, land readjustment, land consolidation, public value capture, insurance assessment, real estate financing, and property transactions.

Appropriate systems are required for fair and timely valuation of tenure rights in order to promote broader social, economic, environmental and sustainable development objectives. One of the key components of an effective valuation system is access to information on the nature and extent of property units together with the location and physical characteristics. In other words, uniform and accurate valuation of property units require correct, complete, and up-to-date property data. Therefore, property valuation systems require the establishment of links between a number of public registries that keep and maintain information about property units, such as cadastre, land registry, planning and permitting registries, and building and dwelling registries.

The fundamental element underpinning immovable property valuation are public registries, which accommodate regular data maintenance and updating of property characteristics, ownership details and transaction information. It is important for valuation processes to ensure that property units and rights have been unambiguously identified. This is supported by the land administration systems including cadastre and land registry. ISO 19152:2012 Land Administration Domain Model (LADM), the first edition of LADM, is a descriptive conceptual model that provides a reference for land administration systems. However, it focuses on legal, geometric and administrative aspects of land administration but considers the semantics of value component of LA out of the scope. On the other hand, the edition I of LADM provides a solid and flexible base for representing property valuation information.

This International Standard defines property valuation system related information in the context of LA, and as an extension of LADM, see ISO 19152-1:2024 and ISO 19152-2:—[1)]. The LADM Part 4 — Valuation information is a conceptual model, and not a data product specification (in the sense of ISO 19131).

The first goal of the Part 4 — Valuation information 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. This standard is not to replace existing property valuation systems, but rather to provide formal language 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 property valuation systems, based on a Model Driven Architecture (MDA). The LADM Part 4 — Valuation information is designed to represent all stages of administrative property valuation, namely identification of properties, assessment of properties through single or mass appraisal procedures, recording transaction prices, generation and representation of sales statistics, and dealing with appeals. Part 4 — Valuation information may provide public bodies a common basis for the development of local and/or national information models and databases, enabling the integration of valuation databases with land administration databases, and can act as a guide for the private sector. It is noted that the LADM Part 4 — Valuation information is designed especially for representing and refining administrative valuations (e.g., recurrently immovable property taxation, compensation on expropriation, land readjustment, land consolidation and public value capture), however, it can be also used for the other purposes.

The standard is relevant for creating standardized information services in local, national, or regional context, where valuation domain semantics have to be shared between organizations 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 value component of land administration all over the world (see the questionnaire conducted for this purpose at https://wiki.tudelft.nl/bin/view/Research/ISO19152/ValuationQuestionnaire);

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

1) Under preparation.

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

— the geospatial aspects follow the ISO/TC 211 conceptual model, and the valuation aspects follow the international property valuation standards.

The scope of this International Standard is specified in Clause 1. Normative references are presented in Clause 2. The terms, definitions, and abbreviations are introduced in Clause 3. Conformance requirements in relation to this document is specified in Clause 4, and a conformance test is specified in Annex A. Clause 5 provides the notation. Clause 6 gives a global overview of classes of Part 4 – Valuation Information. Clause 7 introduces the classes, attributes, and associations in detail. Annex B presents an extension of the model (i.e., profiles) for representing 2D and 3D spatial analysis conducted for property valuation processes. A set of informative examples using instance level diagrams is available in Annex C. Annex D gives an overview about the relationships between this part of LADM and international property valuation standards and guidelines. Annex E presents code lists as a basis to describe flexible enumeration. A set of country profiles is presented Annex F. Annex G presents an overview of how the International Property Measurement Standards (IPMS) can be used within the content of this part of the LADM. A bibliography is given at the end of the document.

Geographic information — Land Administration Domain Model (LADM) —

Part 4: Valuation information

1 Scope

This document:

a) builds on the models established in ISO 19152-1:2024 and ISO 19152-2:—[2] to cover valuation aspect of LADM;

b) defines an abstract conceptual model covering:

   1) values (assessed values, valuation procedures, mass valuation);

   2) transaction prices;

   3) sales statistics;

   4) valuation units (parcel, building, condominium unit, valuation unit group).

c) provides terminology for valuation component of 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;

d) specifies a content model independent of encoding, that can be employed as a basis for local, national, and regional profiles for valuation processes; and

e) enables the combining of valuation information from different sources in a coherent manner.

The following is outside the scope of this International Standard:

— interference with (national) property valuation related regulations that may have any legal implications.

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 4217, *Codes for the representation of currencies*

ISO 9836:2017, *Performance standards in building — Definition and calculation of area and space indicators*

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

ISO 19105:2022, *Geographic information — Conformance and testing*

ISO 19107:2019, *Geographic information — Spatial schema*

2) Under preparation.

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

ISO 19152-1:2024, *Geographic information — Land Administration Domain Model (LADM) — Part 1: Generic conceptual model*

ISO 19152-2:—[3)], *Geographic information — Land Administration Domain Model — Part 2: Land registration*

OGC *Land and Infrastructure Conceptual Model Standard (LandInfra)*

International Property Measurement Standards (*IPMS*)

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 19152-1, ISO 19152-2 and the following 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
appraisal
<LADM> process of estimating value of property

3.2
accessory part
privately owned building part, generally attached to one or more condominium unit

EXAMPLE Accessory part may a garage in the basement, a shop on the ground floor, a shop or other.

[SOURCE: OGC LandInfra]

3.3
assessed value
<LADM> monetary worth of property

Note 1 to entry: The assessed value of a property is generally used for tax purposes. On the other hand, the value of a property can be assessed for other purposes such as compensation on expropriation, land readjustment, land consolidation, public value capture, insurance assessment and so on.

Note 2 to entry: The assessed value of a property may be equal to market value.

3.4
building
construction works that has the provision of shelter for its occupants or contents as one of its main purposes, usually partially or totally enclosed and designed to stand permanently in one place

Note 1 to entry: Buildings are constructions above and/or underground which are intended or used for the shelter of humans, animals, things, the production of economic goods or the delivery of services and that refer to any structure permanently constructed or erected on its site.

3) Under preparation.

Note 2 to entry: Buildings may be used for dwelling (e.g., detached and semi-detached), industrial, retail or other purposes. A condominium building contains condominium units established according to condominium schemes. A whole building or a part of a building may be subject to a valuation. A building may be considered as a complementary part of parcel(s) and may be valued separately from the parcels on which they are located. A building may represent a condominium building, which consists of (i) condominium units (e.g., apartments, shops); (ii) accessory parts assigned for exclusive use (e.g., garages, storage areas); (iii) and joint facilities covering parcel, structural components (e.g., foundations, roofs), accession areas (e.g., entrance halls, spaces), and other remaining areas of buildings (e.g., staircases, heating rooms).

[SOURCE: ISO 6707-1:2020, 3.1.13, modified — Note 1 to entry has been deleted; Note 1 and 2 to entry has been added.]

3.5
condominium unit
one or more privately owned building parts and has a share in the commonly owned joint facilitates

Note 1 to entry: This includes compounds of one or more condominium building elements.

Note 2 to entry: Condominium is a concurrent ownership of real property that has been divided into private and common portions, and the privately owned part is made up of clearly demarcated parts of a building.

[SOURCE: OGC LandInfra, 4.8.4, modified — definition is slightly modified; Note 1 and 2 to entry is added.]

3.6
cost approach
<LADM> valuation of property based on estimates of costs

Note 1 to entry: This approach estimates the value of property by: (a) estimating the cost of construction based on replacement or reproduction cost new, or trended historical cost (often adjusted by a local multiplier); (b) subtracting depreciation; and (c) adding the estimated land value.

3.7
income approach
<LADM> valuation of property on the basis of its income stream

Note 1 to entry: This is a valuation approach which involves any valuation method whereby the capital value is found by capitalising or discounting the estimated future income to be derived from the property, whether this income is rent or whether it is income generated by the business that is carried out on the property.

3.8
market value
highest price that a ready, willing and able buyer will pay and the lowest price a seller will accept

[SOURCE: ISO/IEC TR 27016:2014, 3.14]

3.9
mass appraisal
<LADM> process of valuing a group of properties as of a given date, using standard methods, employing common data, and allowing for statistical testing

[SOURCE: IAAO Standard on Ratio Studies]

3.10
sales comparison approach
<LADM> valuation of property based on estimates of the worth of similar properties

Note 1 to entry: The sales comparison approach uses sales prices as evidence of the value of similar properties. The price at which a particular property sells is the price determined by the interaction of supply and demand at the time of sale. If supply or demand factors shift, prices generally rise or fall.

Note 2 to entry: Market approach and comparable sale approach can be used interchangeably with this term.

Note 3 to entry: In this approach sales data of similar properties is employed to estimate the value of a property.

3.11
sales statistic
<LADM> statistical analysis produced through transaction prices for properties meeting required reporting criteria

Note 1 to entry: Contracts, declarations and mortgage documents may be used in order to produce sales statistics.

Note 2 to entry: Sale statistics are generally produced for a specific period and at a specific administrative/ geographic level.

3.12
transaction price
<LADM> amount of consideration for transferring right(s) on property, excluding amounts collected on behalf of third parties

Note 1 to entry: Sale price or rental price of a property can be considered as a transaction price. In case of a sale/ purchase, the type of transaction may be exchange, family transfer, forced sale, inheritance, open market sale, voluntary transfer and so on.

3.13
valuation
<LADM> process of estimating value of any administrative unit (BAUnit)

Note 1 to entry: This results in a valuation unit.

Note 2 to entry: Value of a property produced through an administrative valuation process pertains to amount that a local or central government has designated for a specific property and specific purpose(s). The legal, geometric, physical, and environmental characteristics of the immovable property together with the economic indicators are taken into consideration during this process.

3.14
value
<LADM> value of a property or a property unit estimated under certain assumptions at a particular moment of time

EXAMPLE Possible value types may include annual rental value, assessed value, book value, cadastral value, capital value, commercial value, fair value, market value, tax value, use value and so on.

Note 1 to entry: A property or a property unit may have more than one value.

Note 2 to entry: The value of a property or a property unit, in some cases, may equal to assessed value or market value.

3.15
valuation approach
<LADM> approach used to determine the value of a property

Note 1 to entry: Each valuation approach includes different methods that may be used to apply the principles of the approach to specific properties or situations. The basic approaches are cost, input, and sales comparison.

3.16
valuation source
<LADM> sources used or produced in the valuation process

EXAMPLE Possible valuation source types may include transaction declaration documents, valuation reports and so on.

3.17
valuation unit
<LADM> smallest unit that is subject to property valuation process

Note 1 to entry: The object of valuation may be (a) only land parcel, (b) only building, (c) land parcel(s) with/without building(s) together as land property, (d) condominium unit consisting of building part(s) (e.g., condominium main part, condominium accessory part, joint access facility) and (e) a share in land parcel(s). For any BAUnit there may be multiple valuation units. Example: a BAUnit may have different valuation units for sale or lease.

Note 2 to entry: Valuation unit types may vary by jurisdiction. Moreover, the basic registration unit of cadastral systems (e.g., a cadastral parcel) may differ from the basic units of valuation systems.

3.18
valuation unit group
<LADM> group of valuation units that share similar characteristics to support mass or individual appraisal approaches and sales statistics

Note 1 to entry: Valuation units may be grouped according to zones (e.g., administrative divisions, market zones) that have similar environmental and economic characteristics. Valuation units may also be grouped considering the functions (e.g., commercial, residential, and agricultural).

3.2 Abbreviations

BAUnit	Basic administrative unit
FIG	International Federation of Surveyors
IAAO	International Association of Assessing Officers
IVSC	International Valuation Standards Council
LA	Land Administration
LADM	Land Administration Domain Model
OGC	Open Geospatial Consortium
RRR	Right, Restriction, Responsibility
UML	Unified Modelling Language
TEGoVA	The European Group of Valuers' Associations

4 Conformance

4.1 Conformance requirements

Conformance to this part of the ISO 19152 series on Land Administration Domain Model (LADM) (Part 4 – Valuation information) consists of alignment with the requirements established in Clauses 4.2 and 7 in this document. The Abstract Test Suite given in Annex A describes a methodology for testing conformance to these requirements.

4.2 Conformance Class

1) **'Core LADM Conformant'**

   https://standards.isotc211.org/19152/4/1/req/coreclassconformant

Requirement 1: Efficient and effective land administration system for valuation information compatible with this part of ISO 19152 LADM shall be modelled using or extending the core LADM concepts, namely party, RRR, BAUnit, spatial unit, versioned object, which are all based on source documents. This statement also implicitly implies that it is also modelled in accordance with ISO standards including ISO 19107 — Spatial schema, ISO 4217 — Currency codes and so on.

2) **'Valuation Information Management'**

   https://standards.isotc211.org/19152/4/1/req/valuationinformationmanagement

Requirement 2: Appropriate valuation information management systems (e.g., a registry or a database) using this part of ISO 19152 LADM can developed by public authorities (e.g., municipality, local governments, State) for the fair and timely valuation of tenure rights in order to promote broader social, economic, environmental, and sustainable development objectives. Input (e.g., legal, locational, physical, environmental characteristics of valuation units, and transaction prices) and output (e.g., value and valuation procedures) data in property valuation processes shall be identified, compiled, recorded, managed and maintained in such systems for effective valuations.

3) **'Linked Public Registries'**

https://standards.isotc211.org/19152/4/1/req/linkedpublicregistries

Requirement 3: Uniform and accurate valuation of property units requires correct, complete, and up-to-date property data. The fundamental element underpinning property valuation are public registries, which accommodate regular data maintenance and updating of property characteristics, ownership details and transaction information. An efficient land administration infrastructure shall link valuation registries to the other distributed public registries such as cadastre, land registry, property price registry, address, spatial planning, topographic, and building and dwelling registries.

5 Notation

The conceptual schema specified in this part of ISO 19152 is described using the Unified Modelling Language (UML), following the guidance of ISO 19103.

Several model elements used in this schema are defined in other ISO geographic information standards. By convention within some ISO/TC 211 standards, names of UML classes, with the exception of basic data type classes, include a two-letter prefix that identifies the standard and the UML package in which the class is defined. This provides a global unique name for the class. UML classes defined in this part of ISO 19152 have the two-letter prefix of VM. Table 1 lists the prefixes as used for some of the other parts of ISO 19152.

Table 1 — Sources of internally defined UML classes

Prefix	Standard	Part
LA	19152-1	Generic conceptual model
LA	19152-2	Land registration
VM	19152-4	Valuation information
SP	19152-5	Spatial plan information

6 Overview of LADM Part 4 – Valuation information

6.1 General

The LADM Part 4 – Valuation information generic model, as a product, is a conceptual schema. This is a high-level model that is created through extending LADM Part 1 – Generic conceptual model and Part 2 – Land registration.

6.2 LADM Valuation Information

The relationship between the core LADM (ISO 19152-1 and ISO 19152-2) and Valuation information (ISO 19152-4) is organized into a set of packages; see Figure 1.