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Entwurf**Geoinformation –****Land Administration Domain Model (LADM) (ISO/DIS 19152:2010);
Englische Fassung prEN ISO 19152:2010**

Geographic information –

Land Administration Domain Model (LADM) (ISO/DIS 19152:2010);

English version prEN ISO 19152:2010

Information géographique –

Modèle du domaine de l'administration des terres (LADM) (ISO/DIS 19152:2010);

Version anglaise prEN ISO 19152:2010

Anwendungswarnvermerk

Dieser Norm-Entwurf mit Erscheinungsdatum 2011-01-31 wird der Öffentlichkeit zur Prüfung und Stellungnahme vorgelegt.

Weil die beabsichtigte Norm von der vorliegenden Fassung abweichen kann, ist die Anwendung dieses Entwurfes besonders zu vereinbaren.

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Nationales Vorwort

Dieses Dokument (prEN ISO 19152:2010) wurde vom Technischen Komitee ISO/TC 211 „Geographic information/Geomatics“ in Zusammenarbeit mit dem OGC (Open Geospatial Consortium) und dem Technischen Komitee CEN/TC 287 „Geoinformation“, dessen Sekretariat von BSI (Vereinigtes Königreich) gehalten wird, erarbeitet.

Der für die deutsche Mitarbeit zuständige Arbeitsausschuss im DIN Deutsches Institut für Normung e. V. ist der als Spiegelausschuss zu CEN/TC 287 und ISO/TC 211 eingesetzte Arbeitsausschuss NA 005-03-03 AA „Kartographie und Geoinformation“ des Normenausschusses Bauwesen (NABau).

Das Ausgabedatum des Europäischen Norm-Entwurfs stand zum Zeitpunkt der Veröffentlichung dieses DIN-EN-ISO-Entwurfs noch nicht fest; der prEN-ISO wird jedoch vom CCMC unter der angegebenen prEN-Nummer demnächst zur CEN-Umfrage verteilt. Um der deutschen Öffentlichkeit eine möglichst lange Einspruchsfrist einzuräumen, wurde dieser Norm-Entwurf bereits vorab veröffentlicht.

Das Präsidium des DIN hat mit seinem Beschluss 1/2004 festgelegt, dass von dem in den Regeln der europäischen Normungsarbeit von CEN/CENELEC verankerten Grundsatz, wonach Europäische Normen in den drei offiziellen Sprachen Deutsch, Englisch und Französisch veröffentlicht werden, in begründeten Ausnahmefällen abgewichen und auf die deutsche Sprachfassung verzichtet werden kann.

Die Genehmigung dafür hat die DIN-Geschäftsleitung entsprechend den festgelegten Kriterien für die vorliegende Norm auf Antrag des NABau Fachbereich 03 „Vermessungswesen; Geoinformation“ erteilt.

Nationaler Anhang NA (informativ)

Begriffe

4.1 Begriffe

Für die Anwendung dieses Dokuments gelten die folgenden Begriffe.

4.1.1

Verwaltungsquelle

(en: **administrative source**)

Quelle mit der verwaltungsbezogenen Beschreibung (sofern zutreffend) der beteiligten **Parteien**, der erzeugten **Rechte**, **Einschränkungen** und **Verantwortlichkeiten** sowie der betroffenen **Grundverwaltungseinheiten**

BEISPIEL 1 Der Nachweis des Rechts einer **Partei** an einer Grundverwaltungseinheit.

BEISPIEL 2 Ein Dokument, das eine Transaktion beschreibt (Urkunden, durch die Rechte oder Vermögen übertragen oder Verpflichtungen begründet werden), oder ein Urteil des Registerinhabers.

4.1.2

Grundverwaltungseinheit

(en: **basic administrative unit, Baunit**)

Verwaltungsentität, die aus null oder mehr **raumbezogenen Einheiten** besteht, in Bezug auf die, entsprechend der Erfassung in einem **Bodenverwaltungssystem**, (ein oder mehrere) eindeutige, homogene **Rechte** (z. B. Eigentumsrecht oder **Bodennutzungsrecht**), **Verantwortlichkeiten** oder **Einschränkungen** mit der gesamten Entität assoziiert sind

ANMERKUNG 1 Eindeutig bedeutet, dass eine **Partei** oder mehrere Parteien (z. B. Eigentümer oder Nutzer) ein Recht oder eine Einschränkung oder eine Verantwortlichkeit in Bezug auf die gesamte Grundverwaltungseinheit innehat bzw. innehaben. Homogen bedeutet, dass ein Recht oder eine Einschränkung oder eine Verantwortlichkeit (z. B. Eigentum, Nutzung, sozialer Grundbesitz, Pacht oder Grunddienstbarkeit) die gesamte Grundverwaltungseinheit betreffen. Bei einer Einschränkung sind null Parteien möglich.

ANMERKUNG 2 Eine Grundverwaltungseinheit darf die Rolle einer Partei haben.

ANMERKUNG 3 Eine Grundverwaltungseinheit sollte bei ihrer Registrierung oder Aufzeichnung einen eindeutigen Bezeichner erhalten.

BEISPIEL Eine Wohnungseigentumseinheit mit zwei raumbezogenen Einheiten (z. B. eine Wohnung und eine Garage) oder ein landwirtschaftliche Parzelle, die sich aus einer raumbezogenen Einheit zusammensetzt (z. B. Flurstück), eine Dienstbarkeit, die sich aus einer raumbezogenen Einheit zusammensetzt (z. B. die Straße, die das Wegerecht darstellt) oder eine Flurbereinigungsfläche.

4.1.3

Grenze

(en: **boundary**)

Menge, die die Begrenzung einer Entität darstellt

[ISO 19107:2003, Definition 4.4]

4.1.4

Grenzfläche

(en: boundary face)

Fläche, die bei der dreidimensionalen Darstellung einer **Grenze** einer **raumbezogenen Einheit** verwendet wird

BEISPIEL Grenzflächen werden verwendet, wenn die implizierten vertikalen und unbegrenzten Flächen eines Grenzflächen-Strings nicht ausreichen, um dreidimensionale raumbezogene Einheiten zu beschreiben. Grenzflächen schließen Volumen in der Höhe (z. B. jeder Wohnungsboden) oder in der Tiefe (z. B. unterirdisches Parkhaus) oder in allen sonstigen Richtungen ab, um ein umgrenztes Volumen zu bilden. Die Volumen stellen den rechtlichen Raum dar (im Gegensatz zum physischen Raum).

4.1.5

Grenzflächen-String

(en: boundary face string)

Grenze, die Teil der äußeren Umgebung einer **raumbezogenen Einheit** ist

ANMERKUNG Grenzflächen-Strings werden verwendet, um die Grenzen von raumbezogenen Einheiten zweidimensional durch Linestrings darzustellen. Diese zweidimensionale Darstellung bedeutet in einem zweidimensionalen **Bodenverwaltungssystem** eine zweidimensionale Grenze, in einem dreidimensionalen Bodenverwaltungssystem eine Reihe vertikaler **Grenzflächen**. In diesem Fall wird ein nicht umgrenztes Volumen vorausgesetzt, das von Grenzflächen umgeben ist, die die Erdoberfläche schneiden (wie zum Beispiel traditionell in den Katasterkarten dargestellt).

4.1.6

Gebäudeeinheit

(en: building unit)

Bestandteil eines Gebäudes (der rechtliche, protokollierte oder informelle Raum der physischen Entität)

ANMERKUNG Eine Gebäudeeinheit dient unterschiedlichen Zwecken (z. B. dem Wohnen oder Arbeiten), kann aber auch Bauarbeiten umfassen.

BEISPIEL Eine Wohnung, eine Treppe, eine Schwelle, eine Garage, ein Parkplatz oder ein Waschraum.

4.1.7

Fläche

(en: face)

zweidimensionales topologisches Primitiv

[ISO 19107:2003, Definition 4.38]

4.1.8

Gruppenpartei

(en: group party)

beliebige Anzahl von **Parteien**, die zusammen eine Entität bilden, wobei jede Partei registriert ist

ANMERKUNG Eine Gruppenpartei darf **Partei-Mitglied** in einer anderen Gruppenpartei sein.

BEISPIEL Eine Partnerschaft (wobei jeder Partner als Partei registriert ist) oder zwei Stämme (wobei jeder Stamm als eine Partei registriert ist).

4.1.9

Boden

(en: land)

Land

die Oberfläche der Erde, die Materialien unter der Erde, die Luft über der Erde und alles, was mit dem Boden verbunden ist

[UN/ECE, 2004]

ANMERKUNG Im LADM umfasst Boden auch Wasser.

4.1.10

Bodenverwaltung

(en: land administration)

Prozess der Ermittlung, Protokollierung und Verbreitung von Informationen zur Beziehung zwischen Menschen und **Boden**

ANMERKUNG In vielen Ländern werden Bodenverwaltungsinformationen unter dem Dach von Kataster- und Grundbuchamt ermittelt, protokolliert und verbreitet. Beide Einrichtungen können in einer einzelnen (staatlichen) Organisation vereint sein.

4.1.11

Ebene

(en: level)

Menge von **raumbezogenen Einheiten** mit geometrischer und/oder topologischer und oder thematischer Kohärenz

BEISPIEL 1 Eine Ebene für ein städtisches Kataster und eine Ebene für ein ländliches Kataster.

BEISPIEL 2 Eine Ebene mit **Rechten** und eine weitere Ebene mit **Einschränkungen**.

BEISPIEL 3 Eine Ebene mit formellen Rechten, eine zweite Ebene mit informellen Rechten und eine dritte Ebene mit Gewohnheitsrechten.

BEISPIEL 4 Eine Ebene mit auf **Punkten** basierenden raumbezogenen Einheiten, eine zweite Ebene mit auf Linien basierenden raumbezogenen Einheiten und eine dritte Ebene mit auf Polygonen basierenden raumbezogenen Einheiten.

4.1.12

raumbezogene Schwelleneinheit

(en: liminal spatial unit)

raumbezogene Einheit an der Schwelle zwischen zwei- und dreidimensionaler Darstellung

4.1.13

Partei

(en: party)

eine Person oder Organisation, die eine Rolle bei einer **Rechtetransaktion** innehat

[ISO 19153:—¹⁾]

ANMERKUNG 1 Um als eine Partei registriert zu werden, brauchen nicht alle Mitglieder einzeln identifiziert und registriert zu werden.

ANMERKUNG 2 Eine **Grundverwaltungseinheit** darf eine Partei sein, da sie ein Recht, z. B. ein Grunddienstbarkeitsrecht, innehaben kann.

BEISPIEL Eine juristische Person kann sein: ein Unternehmen, eine Stadtgemeinde, der Staat, ein Stamm, eine Kooperation von Landwirten, eine Kirchengemeinde (wobei jede juristische Person durch einen Delegierten vertreten wird: einen Direktor, einen Häuptling, einen CEO usw.).

4.1.14

Partei-Mitglied

(en: party member)

Partei, die als Bestandteil einer **Gruppenpartei** registriert und identifiziert ist

1) Noch zu veröffentlichen.

4.1.15**Punkt****(en: point)**

nulldimensionales geometrisches Primitiv, das eine Position darstellt

[ISO 19107:2003, Definition 4.61]

ANMERKUNG 1 Ein Punkt kann verwendet werden, um eine oder mehrere **Grenzflächen** oder **Grenzflächen-Strings** zu definieren.

ANMERKUNG 2 Punkte können z. B. durch terrestrische Aufnahmen, aber auch durch Photointerpretation, Bildinterpretation oder Identifikation auf einer vorhandenen Karte ermittelt werden.

4.1.16**Profil****(en: profile)**

Menge einer oder mehrerer Basisnormen oder Teilmengen von Basisnormen und, sofern zutreffend, die Identifikation ausgewählter Klauseln, Klassen, Optionen und Parameter dieser Basisnormen, die zur Erfüllung einer bestimmten Funktion notwendig sind

[ISO 19106:2004, Definition 4.5]

4.1.17**erforderliche Beziehung****(en: required relationship)**

explizite Assoziation zwischen entweder **raumbezogenen Einheiten** oder **Grundverwaltungseinheiten**

ANMERKUNG 1 Aufgrund ungenauer oder fehlender Geometrien können georäumliche Verschneidungstechniken zur Generierung ungültiger oder gar keiner Beziehungen zwischen raumbezogenen Einheiten führen, die jedoch durch erforderliche Beziehungen eingeführt werden können.

ANMERKUNG 2 Beziehungen raumbezogener Einheiten können mit den Typen nach ISO 19125-2 definiert werden.

4.1.18**Verantwortlichkeit****(en: responsibility)**

formelle oder informelle Verpflichtung, etwas zu tun

BEISPIEL Die Verantwortlichkeit, einen Graben zu reinigen, im Winter den Gehweg schneefrei zu halten oder Eiszapfen vom Dach zu entfernen, ein Denkmal zu pflegen.

4.1.19**Einschränkung****(en: restriction)**

formeller oder informeller Anspruch darauf, etwas zu unterlassen

BEISPIEL Unzulässigkeit, im Umkreis von 200 m von einer Tankstelle zu bauen, eine Dienstbarkeit oder Hypothek als Einschränkung eines Eigentums**rechts**.

4.1.20**Recht****(en: right)**

Aktion, Aktivität oder Klasse von Aktionen, die ein Systemteilnehmer an einer oder bei Verwendung einer assoziierten Ressource ausführen darf

[ISO 19132:2007, Definition 4.38]

ANMERKUNG 1 Ein Recht kann eine formelle oder informelle Berechtigung bereitstellen, etwas zu besitzen oder zu tun.

ANMERKUNG 2 Diese Internationale Norm behandelt dingliche Rechte und personenbezogene Rechte. Dingliche Rechte sind Rechte an oder in Bezug auf raumbezogene Einheiten (z. B. Eigentum oder Nießbrauch). Personenbezogene Rechte sind Rechte, die Parteien haben (z. B. Fischereirechte, Weiderechte oder Nutzungsrechte).

ANMERKUNG 3 Rechte können sich überschneiden oder einander widersprechen.

BEISPIEL Eigentumsrecht, Wohnungsrecht, Mietrecht, Besitz, Gewohnheitsrecht, islamisches Recht, indigenes Recht oder informelles Recht.

4.1.21

Quelle

(en: source)

Dokument, das Tatsachen liefert

ANMERKUNG Jede Art von Dokument darf als eine Quelle nach ISO 19115:2003, B.3.2, hinzugefügt werden.

4.1.22

raumbezogene Quelle

(en: spatial source)

Quelle mit der raumbezogenen Darstellung einer (eines Teils einer) oder mehrerer **raumbezogener Einheiten**

BEISPIEL Eine Feldskizze, ein Orthophoto oder ein Satellitenbild mit Nachweisen zur Lage von Grenzen (im Feld erfasst).

4.1.23

raumbezogene Einheit

(en: spatial unit)

einzelne (oder mehrere) **Land-** und/oder Wasserfläche(n) oder ein einzelnes (oder mehrere) Raumvolumen

ANMERKUNG 1 Eine einzelne Fläche ist die Regel, mehrere Flächen sind die Ausnahme.

ANMERKUNG 2 Raumbezogene Einheiten sind so strukturiert, dass sie die Erzeugung und Verwaltung von **Grundverwaltungsseinheiten** unterstützen.

ANMERKUNG 3 Diese Norm unterstützt die zweidimensionale (2D), dreidimensionale (3D) oder gemischte Darstellung (2D und 3D) raumbezogener Einheiten, die als Text beschrieben sein können („von diesem Baum bis zu jenem Fluss“) oder basierend auf einem einzelnen Punkt oder als eine Menge unstrukturierter Linien oder eine Oberfläche oder als ein dreidimensionales Volumen.

ANMERKUNG 4 Unabhängig von mit einem einzelnen Punkt, einem Text oder einer Menge unstrukturierter Linien dargestellten raumbezogenen Einheiten kann eine raumbezogene Einheit aus verwaltungstechnischen Gründen eine Fläche von null haben.

4.1.24

Gruppe raumbezogener Einheiten

(en: spatial unit group)

beliebige Anzahl **raumbezogener Einheiten**, die als eine Entität betrachtet werden

ANMERKUNG Die raumbezogenen Einheiten in einer Gruppe raumbezogener Einheiten sind nicht notwendigerweise zusammenhängend.

BEISPIEL Raumbezogene Einheiten, die zusammen eine Verwaltungszone bilden, zum Beispiel eine Sektion, ein Kanton, eine Stadtgemeinde, ein Département, eine Provinz oder ein Land. Raumbezogene Einheiten innerhalb eines Planungsgebiets.

4.1.25

Versorgungsnetz

(en: utility network)

Netz, das die Topologie einer Versorgungseinrichtung beschreibt

ANMERKUNG 1 Ein Versorgungsnetz darf als Attribute Informationen zu seinem rechtlichen, protokollierten oder informellen Raum erhalten.

ANMERKUNG 2 Ein Versorgungsnetz kann auch als eine Grundverwaltungseinheit modelliert werden.

BEISPIEL Der rechtliche Raum, der erforderlich ist, um Zugang zu einem Kabel- oder Rohrleitungsversorgungsnetz zu haben und dieses instand zu halten.

Geographic information — Land Administration Domain Model (LADM) (ISO 19152:2010)

Geoinformation — Land Administration Domain Model (LADM) (ISO 19152:2010)

Information géographique — Modèle du domaine de l'administration des terres (LADM) (ISO 19152:2010)

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Foreword

This document (prEN ISO 19152:2010) has been prepared by Technical Committee ISO/TC 211 „Geographic information/Geomatics“ in collaboration with Technical Committee CEN/TC 287 „Geographic Information“ the secretariat of which is held by BSI.

This document is currently submitted to the parallel Enquiry.

Endorsement notice

The text of ISO/DIS 19152:2010 has been approved by CEN as a prEN ISO 19152:2010 without any modification.

Introduction

This International Standard defines the Land Administration Domain Model (LADM). LADM is a conceptual schema, and not a data product specification (in the sense of ISO 19131 Data Product Specification).

Land administration is a large field; the focus of this International Standard is on that part of land administration that is interested in rights, responsibilities and restrictions affecting land (or water), and the geometrical (geospatial) components thereof. LADM provides a reference model which will serve two goals:

- to provide an extensible basis for the development and refinement of efficient and effective land administration systems, based on a Model Driven Architecture (MDA), and
- 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.

The second goal is relevant for creating standardized information services in a national or international context, where land administration domain semantics have to be shared between regions, or countries, in order to enable necessary translations. Four considerations during the design of the model were:

- it should cover the common aspects of land administration all over the world;
- it should be based on the conceptual framework of 'Cadastre 2014' of the International Federation of Surveyors (FIG) (KAUFMANN and STEUDLER, 1998; see Bibliography, and www.fig.net/cadastre2014/);
- it should be as simple as possible in order to be useful in practice;
- the geospatial aspects follow the ISO/TC 211 conceptual model.

It should be noted that although this is a land administration domain model, it is not intended to be complete for any particular country. It should be expandable and it is likely that additional attributes, operators, associations, and perhaps new classes, will be needed for a specific region or country; see for example the Social Tenure Domain Model (STDM) in Annex I, the country profiles in Annex D, or the integration of LADM with Land Parcel Identification Systems (LPIS) of the European Union in Annex H. Conversely, it is possible to use only a subset, or profile, of LADM for a specific implementation. Furthermore, the model supports the increasing use of 3D representations of objects (spatial units).

Until now, most countries (or states, or provinces) have developed their own land administration system. One country operates a deeds registration system, another a title registration system. Some systems are centralized, and others decentralized. Some systems are based on a general boundaries approach, others on fixed boundaries. Some systems have a fiscal background, others a legal one. The different implementations (foundations) of the various land administration systems do not make meaningful communication across borders easy. However, looking from a distance, one may observe that the different systems are in principle largely the same: they are all based on the relationships between people and land, linked by (ownership or use) rights, and are in most countries influenced by developments in Information and Communication Technology (ICT). Furthermore, the two main functions of every land administration (including cadastre and/or land registry) are:

- keeping the contents of these relationships up-to-date (based on regulations and related transactions); and
- providing information from the (national) registers.

Land administration is described as the process of determining, recording and disseminating information about the relationship between people and land. If ownership is understood as the mechanism through which rights to land are held, we may also speak about land tenure. A main characteristic of land tenure is that it reflects a social relationship regarding rights to land, which means that in a certain jurisdiction the relationship between people and land is recognised as a legally valid one. These recognised rights are in principle eligible for registration, with the purpose being to assign a certain legal meaning to the registered right (e.g. a title). Therefore, land administration systems are not just 'handling geographic information', as they represent a lawfully meaningful relationship amongst people, and between people and land.

As land administration activity on the one hand deals with huge amounts of data, which moreover are of a dynamic nature, and on the other hand requires a continuous maintenance process, then the role of ICT is of strategic importance. Without the availability of information systems it will be difficult to guarantee good performance with respect to meeting changing customer demands. Organizations are now increasingly confronted with rapid developments in technology, a technology push (internet, geospatial data bases, modelling standards, open systems, and GIS), as well with a growing demand for new services, a market pull (e-governance, sustainable development, electronic conveyance, and the integration of public data and systems). Modelling is a basic tool, facilitating appropriate system development and reengineering and, in addition, it forms the basis for meaningful communication between different systems.

Standardization has become a well-known process in the work of land administrations and land registries. In both paper-based systems and computerized systems, standards are required to identify objects, transactions, relationships between objects (e.g. parcels, more generally spatial units) and persons (e.g. citizens, or subjects legally speaking, and more generally speaking parties), classification of land use, land value, map representations of objects, and so on. Computerized systems require further standardization, when topology and the identification of single boundaries are introduced. In existing land administrations and land registries, standardization is generally limited to the region, or jurisdiction, where the land administration (including cadastre and/or land registry) is in operation. Open markets, globalization, and effective and efficient development and maintenance of flexible (generic) systems, require further standardization.

1 Scope

This International Standard:

- defines a reference Land Administration Domain Model (LADM) covering basic information-related components of Land Administration (including those over water as well as land, and elements above and below the surface of the earth);
- provides an abstract, conceptual schema with four basic packages related to
 - 1) parties (people and organizations);
 - 2) basic administrative units, rights, responsibilities, and restrictions (ownership rights);
 - 3) spatial units (parcels, buildings and utility networks);
 - 4) spatial sources (surveying), and spatial representations (geometry and topology);
- provides a terminology for land administration, 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 basis for national and regional profiles; and
- enables the combining of land administration information from different sources in a coherent manner.

The following is outside the scope of this International Standard:

- interference with (national) land administration laws that may have any legal implications;
- construction of external databases with party data, address data, valuation data, land use data, land cover data, physical utility network data, archive data, and taxation data. However, LADM provides stereotype classes for these data sets, which indicate what data set elements LADM expects from these external sources, if available; and
- modelling of land administration processes.

2 Conformance

Any land administration domain model claiming conformance to this International Standard shall satisfy the requirements of Annex A.

3 Normative references

The following normative documents contain provisions, which, through reference in this text, constitute provisions of the International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the normative document referred to applies.

ISO 4217:2008, *Currency names and code elements*

ISO 8601:2004, *Information interchange — Representation of dates and times*

ISO 13240:2001, *Interchange Standard for Multimedia Interactive Documents (ISMID)*

ISO 14825:2004, *Intelligent transport systems — Geographic Data Files (GDF) — Overall data specification*

ISO/TS 19103:2005, *Geographic Information — Conceptual schema language*

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

ISO 19107:2003, *Geographic Information — Spatial schema*

ISO 19108:2002, *Geographic Information — Temporal schema*

ISO 19111:2007, *Geographic Information — Spatial referencing by coordinates*

ISO 19115:2003, *Geographic information — Metadata*

ISO 19125-2:2004, *Geographic information — Simple feature access — Part 2: SQL option*

ISO 19153:—¹⁾, *Geospatial Digital Rights Management Reference Model (GeoDRM RM)*

ISO 19156:—¹⁾, *Geographic information — Observations and measurements*

4 Terms, definitions, and abbreviations

4.1 Terms and definitions

For the purposes of this International Standard, the following terms and definitions apply.

4.1.1

administrative source

source with the administrative description (where applicable) of the **parties** involved, the **rights**, **restrictions** and **responsibilities** created and the **basic administrative units** affected

EXAMPLE 1 It is the evidence of a **party's** right to a basic administrative unit.

EXAMPLE 2 A document describing a transaction (a deed), or a judgement of the register holder.

4.1.2

basic administrative unit (baunit)

administrative entity consisting of zero or more **spatial units** against which (one or more) unique and homogeneous **rights** (e.g. ownership right or **land** use right), **responsibilities** or **restrictions** are associated to the whole entity, as included in a **Land Administration** system

NOTE 1 By unique is meant that a right, or restriction, or responsibility is held by one, or several **parties** (e.g. owners or users) for the whole basic administrative unit. By homogeneous is meant that a right, or restriction, or responsibility (e.g. ownership, use, social tenure, lease, or easement) affects the whole basic administrative unit. For a restriction zero parties are possible.

NOTE 2 An basic administrative unit may play the role of party.

NOTE 3 A baunit should get an unique identifier when registered, or recorded.

1) To be published.

EXAMPLE A condominium unit with two spatial units (e.g. an apartment and a garage), or a farm lot made of one spatial unit (e.g. parcel of land), a servitude made of one spatial unit (e.g. the road representing the right-of-way), or a land consolidation area.

4.1.3

boundary

set that represents the limit of an entity

[ISO 19107:2003, definition 4.4]

4.1.4

boundary face

face that is used in the 3-dimensional representation of a **boundary** of a **spatial unit**

EXAMPLE Boundary faces are used when the implied vertical and unbounded faces of a boundary face string are not sufficient to describe 3D spatial units. Boundary faces close volumes in height (e.g. every apartment floor), or in depth (e.g. an underground parking garage), or in all other directions to form a bounded volume. The volumes represent legal space (in contrast with physical space).

4.1.5

boundary face string

boundary forming part of the outside of a **spatial unit**

NOTE Boundary face strings are used to represent the boundaries of spatial units via linestrings in 2D. This 2D representation implies in a 2D **land administration** system a 2D boundary, or in a 3D land administration system a series of vertical **boundary faces**. In that case an unbounded volume is assumed, surrounded by boundary faces, which intersect the earth's surface (such as traditionally depicted in the cadastral map).

4.1.6

building unit

component of building (the legal, recorded or informal space of the physical entity)

NOTE A building unit is for different purposes (e.g. living or commercial), or it can be a construction work.

EXAMPLE An apartment, a stairs, a threshold, a garage, a parking place, or a laundry space.

4.1.7

face

2-dimensional topological primitive

[ISO 19107:2003, definition 4.38]

4.1.8

group party

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

NOTE A group party may be a **party member** of another group party.

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

4.1.9

land

the surface of the Earth, the materials beneath, the air above and all things fixed to the soil

[UN/ECE, 2004]

NOTE In LADM, land also includes water.

4.1.10

land administration

process of determining, recording and disseminating information about the relationship between people and land

NOTE In many countries land administration information is determined, recorded and disseminated under the umbrella of cadastre and land registry. Both institutions can be unified in a single (state) organization.

4.1.11

level

set of **spatial units**, with a geometric, and/or topologic, and/or thematic coherence

EXAMPLE 1 One level for an urban cadastre and another level for a rural cadastre.

EXAMPLE 2 One level with **rights** and another level with **restrictions**.

EXAMPLE 3 One level with formal rights, a second level with informal rights and a third level with customary rights.

EXAMPLE 4 One level with **point** based spatial units, a second level with line based spatial units, and a third level with polygon based spatial units.

4.1.12

liminal spatial unit

spatial unit on the threshold between 2D and 3D representations

4.1.13

party

a person or organisation that plays a role in a **rights** transaction

[ISO 19153:—²)]

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

NOTE 2 A **basic administrative unit** may be a party because it may hold a right of e.g. easement.

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

4.1.14

party member

party registered and identified as a constituent of a **group party**

4.1.15

point

0-dimensional geometric primitive, representing a position

[ISO 19107:2003, definition 4.61]

NOTE 1 A point may be used to define one or more **boundary faces** or **boundary face strings**.

NOTE 2 Points can be observed by e.g. terrestrial surveying, but also by photo interpretation, image interpretation, or identification on an existing map.

2) To be published.

4.1.16

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

[ISO 19106:2004, definition 4.5]

4.1.17

required relationship

explicit association between either **spatial units**, or between **basic administrative units**

NOTE 1 Due to 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 Relationships for spatial units may be defined with ISO 19125-2 types.

4.1.18

responsibility

formal or informal obligation to 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.

4.1.19

restriction

formal or informal entitlement to refrain from doing something

EXAMPLE 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**.

4.1.20

right

action, activity or class of actions that a system participant may perform on or using an associated resource

[ISO 19132:2007, definition 4.38]

NOTE 1 A right may provide a formal or informal entitlement to own or do something.

NOTE 2 This International Standard deals with real rights and personal rights. Real rights are rights over or in respect of **spatial units** (e.g. ownership, or usufruct). Personal rights are rights that parties have (e.g. fishing rights, grazing rights, or using rights).

NOTE 3 Rights may be overlapping, or may be in disagreement.

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

4.1.21

source

document providing facts

NOTE Any kind of document may be added as a source according to ISO 19115:2003, B.3.2.

4.1.22

spatial source

source with the spatial representation of one (part of) or more **spatial units**

EXAMPLE A field survey sketch, an orthophoto, or a satellite image with evidence on the location of boundaries (collected from the field).

4.1.23

spatial unit

single area (or multiple areas) of **land** and/or water, or a single volume (or multiple volumes) of space

NOTE 1 A single area is the general case and multiple areas are the exception.

NOTE 2 Spatial units are structured in a way to support the creation and management of **basic administrative units**.

NOTE 3 This standard supports either 2-dimensional (2D), 3-dimensional (3D), or mixed (2D and 3D) representations of spatial units, which may be described in text („from this tree to that river”), or based on a single **point**, or represented as a set of unstructured lines, or as a surface, or as a 3D volume.

NOTE 4 Independent from spatial units represented with a single point, text, or a set of unstructured lines, a spatial unit may have an area equal to zero for administrative reasons.

4.1.24

spatial unit group

any number of **spatial units**, considered as an entity

NOTE The spatial units in a spatial unit group are not necessarily continuous.

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

4.1.25

utility network

network describing the topology of a utility

NOTE 1 A utility network may be attributed with information about its legal, recorded or informal space.

NOTE 2 A utility network can also be modelled as a **basic administrative unit**.

EXAMPLE The legal space needed to access and to keep in repair a cable or pipeline utility network.

4.2 Abbreviations

baunit	Basic administrative unit
FIG	International Federation of Surveyors
GIS	Geographical Information System
GNSS	Global Navigation Satellite System
INSPIRE	Infrastructure for Spatial Information in Europe
LA	Land Administration
LADM	Land Administration Domain Model
RRR	Right, Restriction, Responsibility
STDM	Social Tenure Domain Model
UML	Unified Modelling Language

5 Overview of LADM

5.1 Packages and subpackages of LADM

LADM, as a product, is a conceptual schema. LADM is organized into three packages, and one subpackage. A (sub)package is a group of classes, with a certain degree of cohesion. Each (sub)package has its own namespace. (Sub)packages facilitate the maintenance of different data sets by different organizations. The complete model may therefore be implemented through a distributed set of (geo-) information systems, each supporting data maintenance activities and the provision of elements of the model. The model may also be implemented by one or more maintenance organizations, operating at national, regional or local level. This underlines the relevance of the model: different organizations have their own responsibilities in data maintenance and supply, but may communicate on the basis of standardized administrative and technical update processes.

An overview of the (sub)packages (with their respective classes) is presented in Figure 1. The three packages are: (1) Party Package (see 5.3), (2) Administrative Package (see 5.4), and (3) Spatial Unit Package (see 5.5). The Surveying and Spatial Representation Subpackage (see 5.6) is a subpackage of the Spatial Unit package.

All figures are UML 2.1 diagrams. To differentiate LADM classes from other classes of ISO 19100 standards, their names are given LA_ as a prefix.

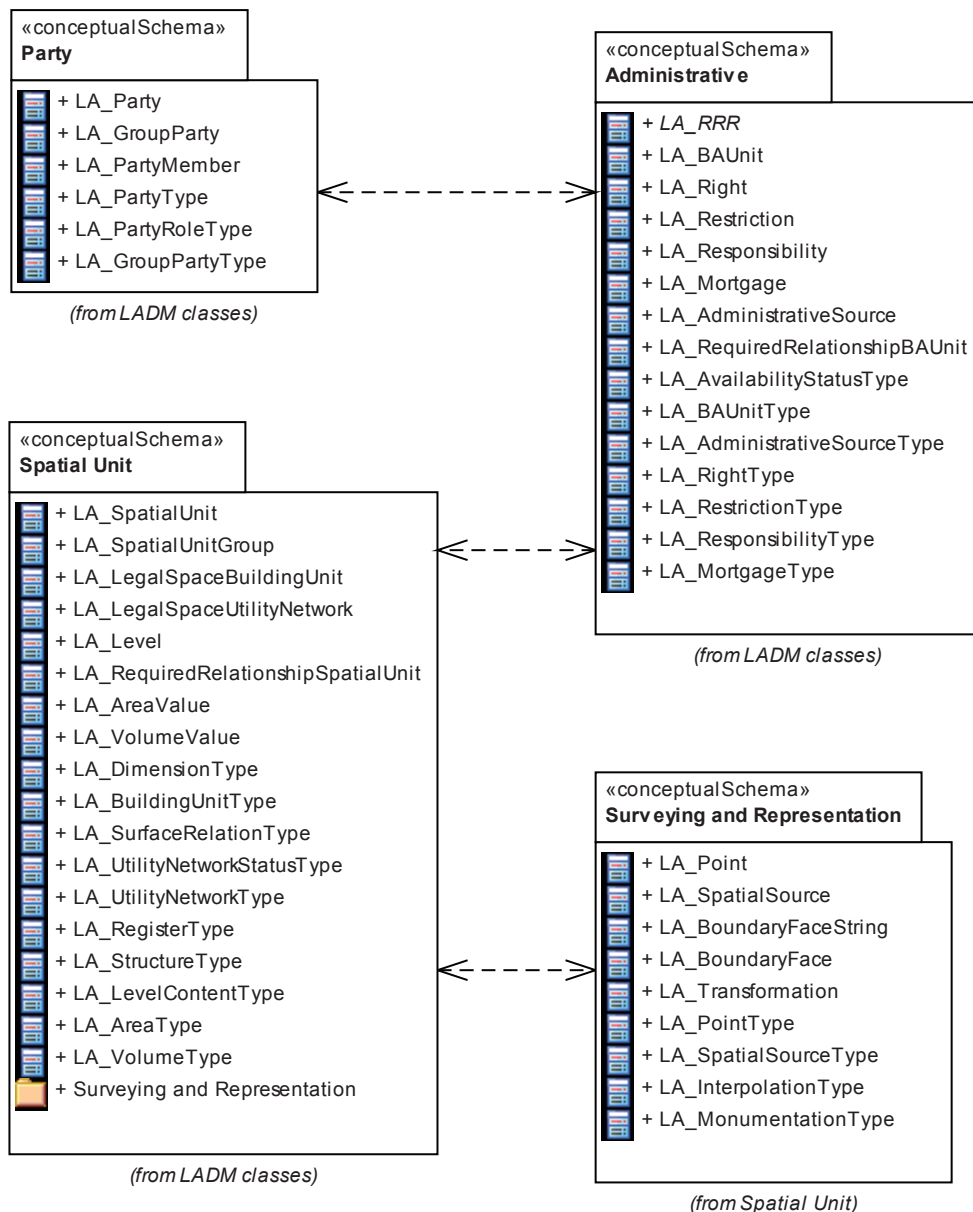


Figure 1 — LADM overview of (sub)packages (with their respective classes)

5.2 Basic classes of LADM

The core LADM is based on four basic classes:

- 1) Class LA_Party. Instances of this class are *parties* (see 4.1.13).
- 2) Class LA_RRR. Instances of subclasses of LA_RRR are *rights* (see 4.1.20, *restrictions* (see 4.1.19) or *responsibilities* (see 4.1.18).
- 3) Class LA_BAUnit. Instances of this class are *basic administrative units* (see 4.1.2).
- 4) Class LA_SpatialUnit. Instances of this class are *spatial units* (see 4.1.23).

Figure 2 shows the basic classes of LADM. The details of these four basic classes, and all other LADM classes, are presented in Clause 6.

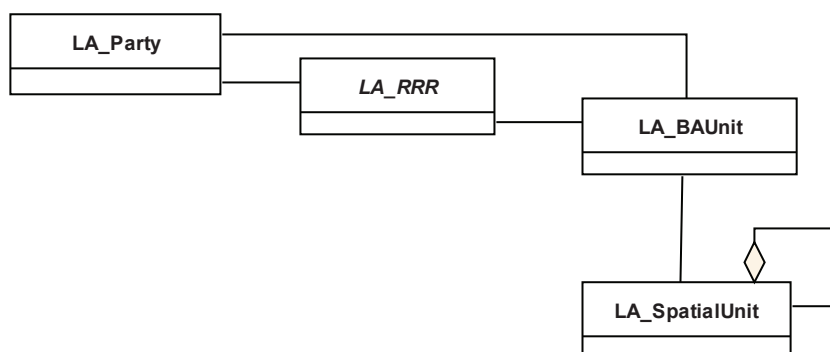


Figure 2 — Basic classes of LADM

5.3 Party Package

The main class of the Party Package is the basic class LA_Party (with party as an instance; see 4.1.13). LA_Party has a specialization: LA_GroupParty (with group party as an instance; see 4.1.8). Between LA_Party and LA_GroupParty there is an optional association class: LA_PartyMember (with party member as an instance; see 4.1.14). See Figure 3.

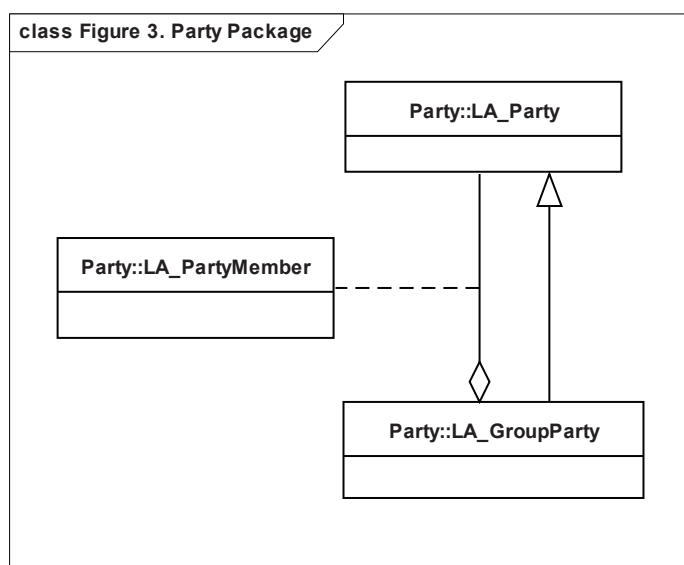


Figure 3 — Classes of Party Package

A group party, being a specialization of party, is also a party. This means that the aggregation relationship between LA_Party and LA_GroupParty in Figure 3 creates group parties with (registered) parties as constituents. Every party, being a constituent of a group party, may then be registered as a party member of class LA_PartyMember.

5.4 Administrative Package

The main classes of the Administrative Package are basic classes LA_RRR and LA_BAUnit. See Figure 4.

LA_RRR has three classes as specializations:

- 1) LA_Right, with rights as instances (see 4.1.20). Rights are primarily in the domain of private or customary law. Ownership rights are generally based on (national) legislation, and code lists in LADM are in support of this, see Annex J.
- 2) LA_Restriction, with restrictions as instances (see 4.1.19). Restrictions usually „run with the land“, meaning that they remain valid, even when the right to the land is transferred after the right was created (and registered). A *mortgage*, an instance of class LA_Mortgage, is a special restriction of the ownership right. It concerns the conveyance of a property by a debtor to a creditor, as a security for a financial loan, with the condition that the property is returned, when the loan is paid off.
- 3) LA_Responsibility, with responsibilities as instances (see 4.1.18).

Instances of class LA_BAUnit are basic *administrative units* (abbreviated as *baunits*), see 4.1.2. Baunits are needed, among other things, to register 'basic property units', which consist of several spatial units, belonging to a party, under the same right (a right must be 'homogeneous' over the whole baunit). There must be a unique right for each baunit in order to establish a unique combination between an instance of LA_Party, an instance of a subclass of LA_RRR, and an instance of LA_BAUnit.

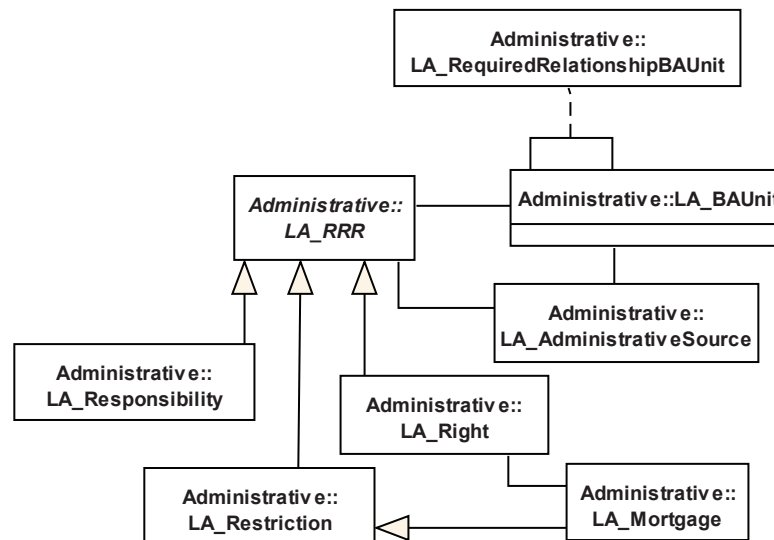


Figure 4 — Classes of Administrative Package

In principle, all rights, restrictions and responsibilities are based on an administrative source (see 4.1.1), as instances from class LA_AdministrativeSource.

Class LA_RequiredRelationshipBAUnit allows creating instances of relationships between baunits. It allows maintaining explicit spatial relationships in the absence of spatial units to describe the baunits, or in the presence of inaccurate geometry of spatial units to generate reliable implicit spatial relationships.

5.5 Spatial Unit Package

The main class of the Spatial Unit Package is basic class LA_SpatialUnit, with spatial units (see 4.1.23) as instances. *LA_Parcel* is an alias for *LA_SpatialUnit*, see Figure 5.

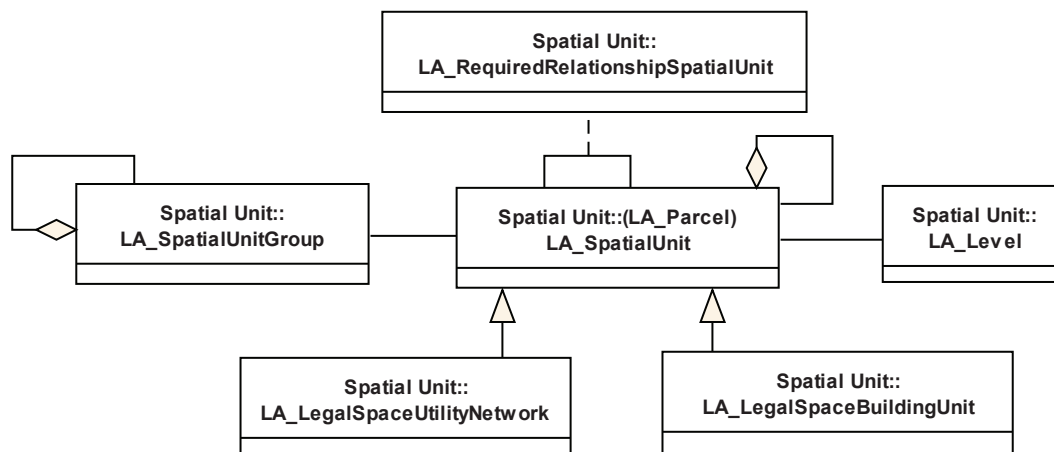


Figure 5 — Classes of Spatial Unit Package

Spatial units may be grouped into two forms:

- 1) as *spatial unit groups* (see 4.1.24), as instances of class **LA_SpatialUnitGroup**, and realized by an aggregation relationship of **LA_SpatialUnitGroup** onto itself, see Figure 5. An example of a spatial unit group is a municipality. A spatial unit group may be a grouping of other spatial unit groups. In implementations of LADM, this is to enable the inclusion of spatial unit identifiers in hierarchical zones.
- 2) as sub spatial units, or *subparcels*, that is a grouping of a spatial unit into its parts. This is realized by an aggregation relationship of **LA_SpatialUnit** onto itself, see Figure 5. Parts, in their turn, may be grouped into subparts (*subsubparcels*), and so on.

Spatial units are refined into two specializations:

- 1) *building units* (see 4.1.6), as instances of class **LA_LegalSpaceBuildingUnit**. A building unit concerns *legal space*, which does not necessarily coincide with the physical space of a building.
- 2) *utility networks* (see 4.1.25), as instances of class **LA_LegalSpaceUtilityNetwork**. A utility network concerns *legal space*, which does not necessarily coincide with the physical space of a utility network.

An instance of **LA_Level** is a level (see 4.1.11).

Required relationships (see 4.1.17) are explicit links between spatial units, and instances of class **LA_RequiredRelationshipSpatialUnit**. Sometimes there is a need for these links, when the geometry of the spatial units is not accurate enough to give reliable results, when applying geospatial overlaying techniques (e.g. a building, in reality inside a parcel, is reported to fall outside the parcel; the same applies to the geometry of a right, e.g. an easement). Required relationships override implicit relationships, established through geospatial overlaying techniques.

5.6 Surveying and Representation Subpackage

The four classes of the Surveying and Representation Subpackage are (1) **LA_Point**, (2) **LA_SpatialSource**, (3) **LA_BoundaryFaceString**, and (4) **LA_BoundaryFace**, see Figure 6.

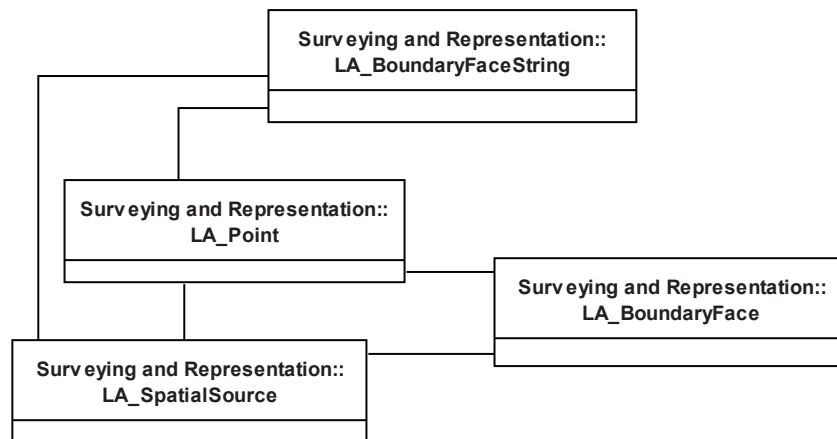


Figure 6 — Classes of Surveying and Representation Subpackage

Points (see 4.1.15), as instances of *LA_Point*, can be acquired in the field (with classical surveys, or with satellite navigation systems), in an office, or compiled from various sources, for example using forms, field sketches, ortho-images, or orthophotos. The acquisition of points (a survey) may concern the identification of spatial units on a photograph, on an image, or on a topographic map; cycloramas or pictometry methods (multiple images from different angles) may also be used for that purpose.

A survey is documented with *spatial sources* (see 4.1.22), instances from class *LA_SpatialSource*. This may be the final (sometimes formal) documents, or all documents related to a survey. Sometimes, several documents are the result of a single survey. A spatial source may be official, or not (i.e. a registered survey plan, or an aerial photograph). Paper based documents (which may be scanned) can be considered as an integral part of the land administration system.

A set of measurements with observations (distances, bearings, etc.) of points, is an attribute of *LA_SpatialSource*. The individual points are instances of class *LA_Point*, which is associated to *LA_SpatialSource*. While it is not required that the complete spatial unit is represented, a spatial source may be associated to several points. Geodetic control points, including multiple sets of coordinates for points, and with multiple reference systems, are all supported in LADM.

2D and 3D representations of spatial units use *boundary face strings* (see 4.1.5) as instances of class *LA_BoundaryFaceString*, and *boundary faces* (see 4.1.4) as instances of class *LA_BoundaryFace*.

Coordinates themselves either come from *points*, or are captured as linear geometry. Spatial units may share the same representation structure: existing 2D data, whether topologically structured or not, or polygons, or unstructured boundaries, or simply point or textual descriptions, can be included, for more details see Annex E.

LADM supports the increasing use of 3D representations of spatial units, without putting an additional burden on the existing 2D representations. Another feature of the spatial representation within LADM is that there is no mismatch between spatial units that are represented in 2D and spatial units that are represented in 3D, for more details see Annex B. Furthermore, LADM is based on accepted and available spatial schemata, such as published in ISO 19107:2003.

6 Content of classes of LADM and their associations

6.1 Introduction

All LADM classes adhere to ISO/TS 19103 stereotype class *featureType*. Many LADM classes are subclasses of class *VersionedObject* (see 6.2.1).

LADM presupposes stereotype classes, with a minimal number of attributes, to address the situation where an LADM class refers to external sources for parties, addresses, taxations, land uses, land covers, valuations, utility networks, or archives. See Annex K.

LADM allows user-defined elements to be added. It is likely that additional attributes, operators, associations, or perhaps new classes, will be needed for a specific region or country. It is possible that parts of LADM are not used. Therefore, *country profiles* can be used for customizing LADM, to meet specific needs. See Annex D.

6.2 Special classes

6.2.1 VersionedObject

Class VersionedObject is introduced in LADM to manage and maintain historical data in the database. History requires, that inserted and superseded data, are given a time-stamp. In this way, the contents of the database can be reconstructed, as they were at any historical moment. For more on history and dynamic aspects of LA systems, see Annex N.

Classes LA_Party, LA_GroupParty, LA_PartyMember, LA_Mortgage, LA_RRR, LA_BAUnit, LA_SpatialUnit, LA_SpatialUnitGroup, LA_RequiredRelationshipSpatialUnit, LA_RequiredRelationshipBAUnit, LA_Level, LA_BoundaryFaceString, LA_BoundaryFace, and LA_Point are all subclasses of class VersionedObject, see Figure 7.

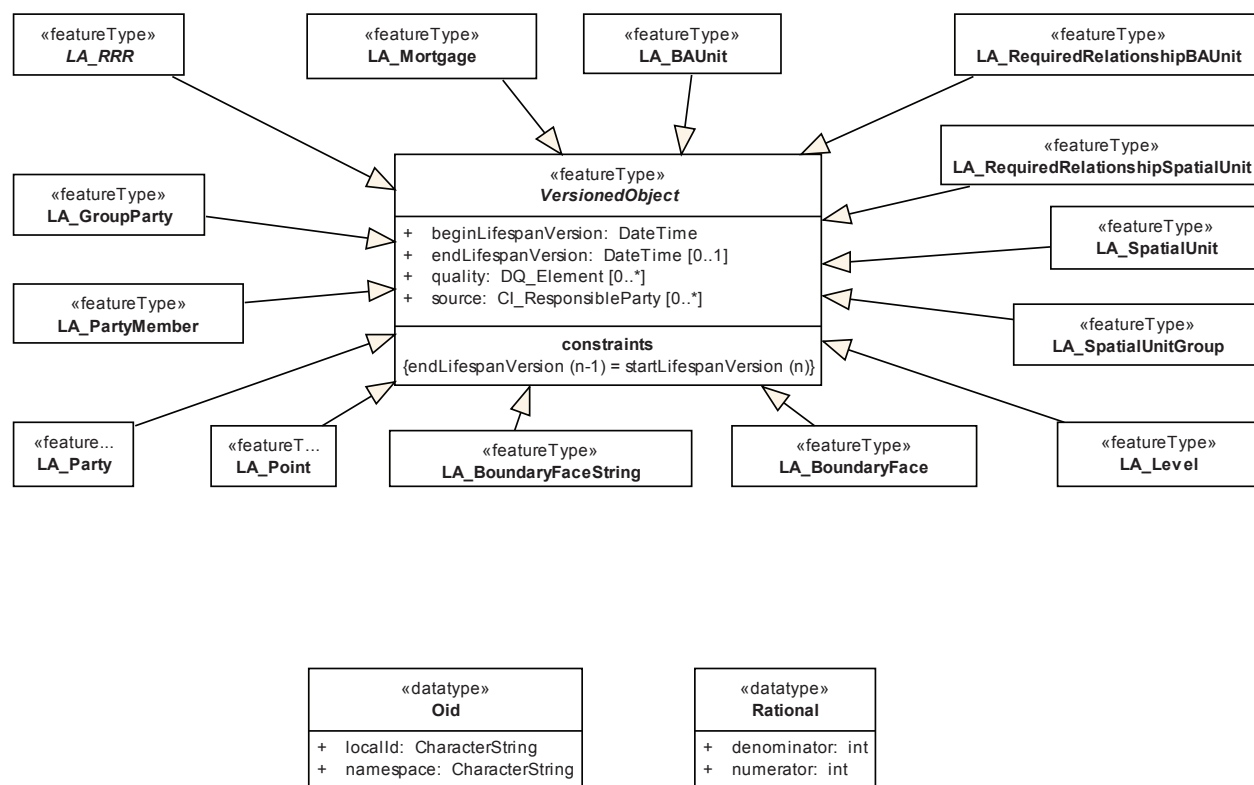


Figure 7 — Classes VersionedObject (with subclasses), Rational, and Oid

The attributes of VersionedObject are:

- beginLifespanVersion: Start time of a specific instance version;
Value type: DateTime (type from ISO/TS 19103)
Multiplicity: 1
- endLifespanVersion: End time of a specific instance version;
Value type: DateTime (type from ISO/TS 19103)
Multiplicity: 0..1
- quality: Quality of a specific instance version;
Value type: DQ_Element (type from ISO 19113)
Multiplicity: 0..*
- source: Responsible organization of a specific instance version;
Value type: CI_ResponsibleParty (type from ISO 19115)
Multiplicity: 0..*.

6.2.2 LA_Source

In LADM, administrative sources and spatial sources are modelled, starting with an abstract class LA_Source. LA_Source has two subclasses: (1) LA_AdministrativeSource (see 6.4.7), and (2) LA_SpatialSource (see 6.6.2), see Figure 8.

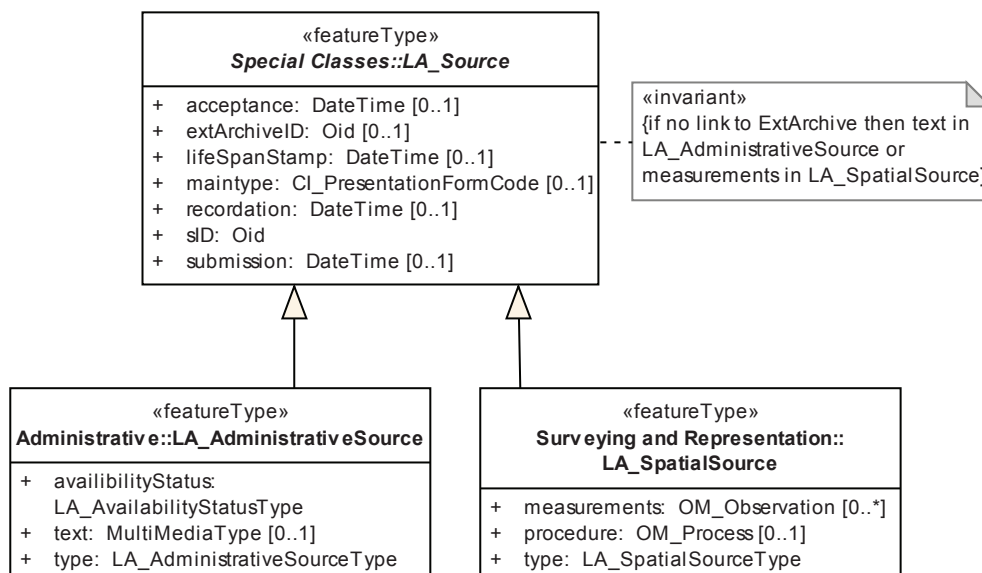


Figure 8 — Class LA_Source (with subclasses)

The attributes of LA_Source are:

- acceptance: The date of force of law of the source by an authority;
Value type: DateTime
Multiplicity: 0..1
- extArchiveID: The identifier of a source in an external registration;
Value type: ExtArchive
Multiplicity: 0..1
- lifeSpanStamp: The moment that the event, represented by the instance of LA_Source, is further processed in the LA system (this is the moment of endLifespanVersion of old instances, and the moment of beginLifespanVersion of new instances);
Value type: DateTime
Multiplicity: 0..1
- maintype: The type of document;
Value type: CI_PresentationFormCode
Multiplicity: 0..1
- recordation: The date of registration (recordation) of the source by the registering authority;
Value type: DateTime, based on ISO 19108
Multiplicity: 0..1
- sID: The identifier of the source;
Value type: Oid
Multiplicity: 1
- submission: The date of submission of the source by a party;
Value type: DateTime
Multiplicity: 0..1.

NOTE 1 The fact that all different (public or private law) rights find their base in some kind of transacting document is represented by the association between LA_RRR and LA_AdministrativeSource. The party responsible for drafting the document is connected to the latter as 'conveyer', 'notary', or 'writer' (see Figure 10).

NOTE 2 In some Land Administration systems, sources are needed to perform the transactions, but not archived afterwards. Then the registration itself provides evidence.

6.2.3 Rational

Generic data type Rational is introduced in LADM to provide support for rational numbers (fractions); e.g. $\frac{1}{2}$ or $\frac{3}{4}$. A fraction is written as a pair of numbers, the top number called the numerator and the bottom number called the denominator. A line usually separates the numerator and denominator, see Figure 8.

The attributes of Rational are:

- denominator: The bottom number in the notation of a fraction;
Value type: int
Multiplicity: 1
- numerator: The top number in the notation of a fraction;
Value type: int
Multiplicity: 1.

6.2.4 Oid

Generic data type Oid is introduced in LADM to provide support for object identifiers, see Figure 8.

The attributes of Oid are:

- localId: Local identifier, assigned by the data provider;
Value type: CharacterString
Multiplicity: 1
- namespace: Identifier for the data source of the spatial object;
Value type: CharacterString
Multiplicity: 1.

NOTE 1 The local identifier should be unique within the namespace, i.e. no other spatial object should carry the same identifier.

NOTE 2 If INSPIRE compliance is needed, then the local identifier should only use the following set of characters: {"A"..."Z", "a"..."z", "0"..."9", "_", ".", ",", "-"}, i.e. only letters from the Latin alphabet, digits, underscores, periods, commas, and dashes are allowed

6.3 Classes of Party Package

6.3.1 LA_Party

An instance of class LA_Party is a party. A party is associated to zero or more [0..*] instances of a subclass of LA_RRR. LA_Party is also associated to LA_BAUnit, to cater for the fact that a basic administrative unit can be a party (e.g. a basic administrative unit holding an easement on another basic administrative unit), see Figure 9.

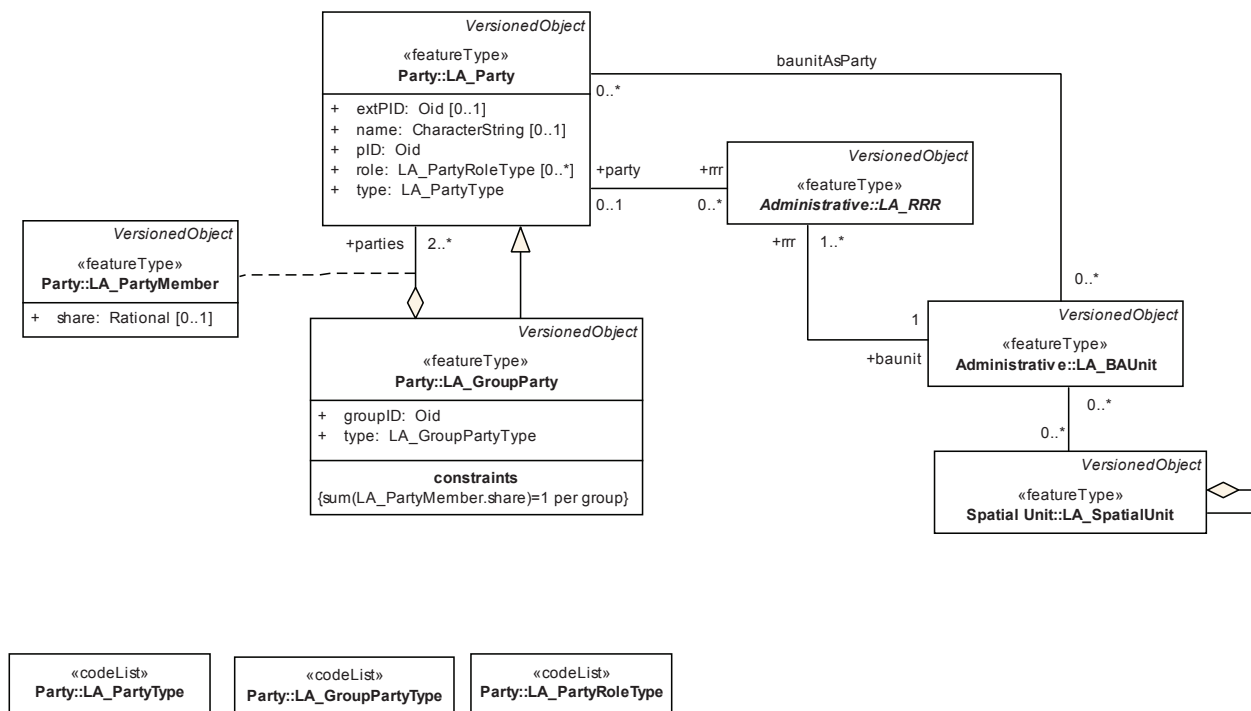


Figure 9 — Content of Party Package and associations to other basic classes

The attributes of LA_Party are:

- extPID: The identifier of the party in an external registration;
Value type: Oid
Multiplicity: 0..1
- name: The name of the party;
Value type: CharacterString
Multiplicity: 0..1
- pID: The identifier of the party;
Value type: Oid
Multiplicity: 1
- role: The role of the party in the data update and maintenance process;
Value type: LA_PartyRoleType
Multiplicity: 0..*
- type: The type of the party;
Value type: LA_PartyType
Multiplicity: 1.

NOTE If 'role' has a specific value (e.g. conveyor) then it is possible that no subclasses of LA_RRR are associated to the party, hence [0..*] multiplicity, 0 indicating that e.g. this conveyor is not involved in any subclass of LA_RRR.

EXAMPLE Parties are demonstrated in instance diagrams, see Annex C, Figures C.3, C.4, C.13 and C.31.

6.3.2 LA_GroupParty

An instance of class LA_GroupParty is a group party. Class LA_GroupParty is a subclass of LA_Party, thus allowing instances of class LA_GroupParty to have an association with instances of class LA_RRR (and thereby also to class LA_BAUnit). A group party may consist of two or more [2..*] parties, but also of other group parties (that is to say, a group party of group parties). Conversely, a party is a member of zero or more [0..*] group parties, see Figure 9.

The attributes of LA_GroupParty are:

- groupID: The identifier of a group party;
Value type: Oid
Multiplicity: 1
- type: The type of a group party;
Value type: LA_GroupPartyType
Multiplicity: 1.

NOTE There is a constraint stating, that the sum of the shares of the group party members, equals to 1. This constraint is only enforced, if there exists a class LA_PartyMember (see 6.3.3).

EXAMPLE Group parties are demonstrated in instance diagrams, see Annex C, Figures C.3, C.4, C.5 and C.26.

6.3.3 LA_PartyMember

An instance of class LA_PartyMember is a party member. Class LA_PartyMember is an optional association class between LA_Party and LA_GroupParty, see Figure 9.

The attribute of LA_PartyMember is:

- share: The fraction of the whole;
Value type: Rational
Multiplicity: 0..1.

6.3.4 Code lists for Party Package

Party Package has three code lists (LA_PartyRoleType, LA_GroupPartyType, and LA_PartyType); see Figure 9. For examples of values, see Annex J.

6.4 Classes of Administrative Package

6.4.1 LA_BAUnit

An instance of class LA_BAUnit is an basic administrative unit, and subject to registration (by law), or recordation (by informal right, or customary right, or another social tenure relationship). LA_BAUnit is associated to class LA_Party (a party may be an basic administrative unit, indicated by the attribute 'partyType'). A basic administrative unit is associated to zero or more [0..*] spatial units, see Figure 10.

The attributes of LA_BAUnit are:

- name: The name of the basic administrative unit;
Value type: CharacterString
Multiplicity: 0..1
- type: The type of the basic administrative unit;
Value type: LA_BAUnitType
Multiplicity: 1
- uID: The identifier of the basic administrative unit;
Value type: Oid
Multiplicity: 1.

NOTE 1 LA_BAUnit allows the association of one right to a combination of spatial units (e.g. an apartment and a parking place).

NOTE 2 A constraint states that, for one basic administrative unit, the sum of all the shares must be equal to 1 for the same subclass of class LA_RRR, unless 'share' is meaningless with regard to the type of right, restriction or responsibility. This is indicated by the 'shareCheck' attribute of class LA_RRR (see 6.4.2).

NOTE 3 It is possible that no spatial unit exists for a basic administrative unit, thus allowing for the support of special administrative situations (e.g. deeds registration without mapping).

NOTE 4 With class LA_BAUnit it is possible to register spatial units from different levels as one unit. If (parts of) spatial units are included, or eliminated from the baunit, the uID stays the same, with a different version. In this approach, a mortgage can only be established on the complete baunit, not on one or more of the registered spatial units.

NOTE 5 A (group of) baunits may be a party.

EXAMPLE Basic administrative units (baunit's) are demonstrated in instance diagrams, see Annex C, Figures C.1, C.17, C.24, C.25, C.26, C.28, C.30, C.31, C.33, C.34 and C.35.