AS/NZS ISO 19152:2012
ISO 19152:2012

AS/NZS ISO 19152:2012

Australian/New Zealand Standard™

Geographic information—Land Administration Domain Model (LADM)

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee IT-004, Geographical Information/Geomatics. It was approved on behalf of the Council of Standards Australia on 13 December 2012 and on behalf of the Council of Standards New Zealand on 16 November 2012.
This Standard was published on 24 December 2012.

The following are represented on Committee IT-004:

ANZLIC—The Spatial Information Council
Australasian Fire and Emergency Service Authorities Council
Australian Antarctic Division
Australian Hydrographic Office
Australian Map Circle
CSIRO Exploration and Mining
Department of Lands, NSW
Department of Primary Industries and Water, Tas.
Geoscience Australia
Land Information New Zealand
Mercury Project Solutions
Office of Spatial Data Management
University of Melbourne

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.saiglobal.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR AS/NZS ISO 19152.

Australian/New Zealand Standard™

Geographic information—Land Administration Domain Model (LADM)

First published as AS/NZS ISO 19152:2012.

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, Private Bag 2439, Wellington 6140.

ISBN 978 1 74342 332 5

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee IT-004, Geographical Information/Geomatics.

The objective of this Standard is to define a reference Land Administration Domain Model (LADM) covering basic information-related components of land administration (including those over water and land, and elements above and below the surface of the earth).

This Standard is identical with, and has been reproduced from ISO 19152, *Geographic information—Land Administration Domain Model (LADM)*.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number appears on the cover and title page while the International Standard number appears only on the cover.

(b) In the source text 'this International Standard' should read 'this Australian/New Zealand Standard'.

(c) A full point substitutes for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to Australian or Australian/New Zealand Standards, as follows:

Reference to International Standard		*Australian or Australian/New Zealand Standard*	
ISO		AS ISO	
8601	Data elements and interchange formats—Information interchange—Representation of dates and times	8601	Data elements and interchange formats—Information interchange—Representation of dates and times
		AS/NZS ISO	
19105	Geographic information—Conformance and testing	19105	Geographic information—Conformance and testing
19107	Geographic information—Spatial schema	19107	Geographic information—Spatial schema
19108	Geographic information—Temporal schema	19108	Geographic information—Temporal schema
19111	Geographic information—Spatial referencing by coordinates	19111	Geographic information—Spatial referencing by coordinates
19115	Geographic information—Metadata	19115	Geographic information—Metadata
19125	Geographic information—Simple feature access	19125	Geographic information—Simple feature access
19125-2	Part 2: SQL option	19125.2	Part 2: SQL option
ISO/TS			
19103	Geographic information—Conceptual schema language	19103	Geographic information—Conceptual schema language

The terms 'normative' and 'informative' have been used in this Standard to define the application of the Appendix to which they apply. A 'normative' Appendix is an integral part of a Standard, whereas an 'informative' Appendix is only for information and guidance.

CONTENTS

Page

INTRODUCTION

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

The purpose of the LADM is not to replace existing systems, but rather to provide a formal language for describing them, so that their similarities and differences can be better understood. This is a descriptive standard, not a prescriptive standard.

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. The 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 that:

— it will cover the common aspects of land administration all over the world;

— it will be based on the conceptual framework of ‘Cadastre 2014’ of the International Federation of Surveyors (FIG) [14];

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

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

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 will 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 can 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 (the Internet, geospatial databases, 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, generally referred to as spatial units) and persons (e.g. citizens, legally referred to as subjects and generally referred to as 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.

The scope of this International Standard is provided in Clause 1. Conformance in relation to this International Standard is given in Clause 2, and a conformance test is specified in Annex A. Normative references are presented in Clause 3 and the used terms, definitions and abbreviations in Clause 4. Clause 5 gives a global overview of packages. Clause 6 introduces the classes, attributes and associations in detail. Annex B explains the 2D and 3D representations of spatial units. A comprehensive set of informative examples (using instance level classes) is available in Annex C.

It must be noted that this is a generic domain model. It is expandable and it is likely that additional attributes, operators, associations, and perhaps even additional classes, will be needed for a specific region or country; see the country profiles in Annex D. Specific parts of the LADM are further detailed: the spatial profiles in Annex E and the legal profiles in Annex F. Some examples of using the LADM in a specific context are: the INSPIRE cadastral parcels in Annex G, the integration of the LADM with the agricultural Land Parcel Identification Systems (LPIS) of the European Union in Annex H, and the Social Tenure Domain Model (STDM) in Annex I. It is possible to use only a subset, or profile, of the LADM for a specific implementation.

Annex J gives an overview of code tables as a basis to describe a flexible enumeration.

The construction of external databases with party data, address data, taxation data, land use data, land cover data, valuation data, physical utility network data, and archive data, is outside the scope of the LADM. However, the LADM provides stereotype classes for these data sets (if available), see Annex K. Interface classes are in Annex L. Annex M makes some remarks in relation to process models. History and dynamic aspects are included in Annex N. Annex O explains the link to other ISO international standards.

AUSTRALIAN/NEW ZEALAND STANDARD

Geographic information—Land Administration Domain Model (LADM)

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 and land, and elements above and below the surface of the earth);

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

1) parties (people and organizations);

2) basic administrative units, rights, responsibilities, and restrictions (ownership rights);

3) spatial units (parcels, and the legal space of buildings and utility networks);

4) spatial sources (surveying), and spatial representations (geometry and topology);

— provides 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, the LADM provides stereotype classes for these data sets to indicate which data set elements the LADM expects from these external sources, if available; and

— modelling of land administration processes.

2 Conformance

The LADM consists of three packages and one subpackage, and for each of them a conformance test is specified in Annex A. Three conformance levels are specified per (sub)package: level 1 (low level), level 2 (medium level), and level 3 (high level). Level 1 tests the basic classes per package and level 2 also includes the more common classes. Level 3 includes all classes. Any LADM claiming conformance to this International Standard shall satisfy the requirements of Annex A.