

A new formal ISO standard responds to the international need for a widely accepted standardised domain model, using collective global knowledge. **Christiaan Lemmen**, **Paul van der Molen** and **Peter van Oosterom** explain

# Levelling the playing field



1 Image-based boundary data acquisition in Ethiopia

and utility networks). The spatial units package has a sub-package, modelling **spatial sources** (surveying) and **spatial representations** (geometry and topology).

LADM defines land-administration concepts and terminology that are inspired by the existing commonalities and good practices in national and international systems and are as simple as possible in order to be practically useful. This allows a 'shared' description of formal or informal practices and procedures in various jurisdictions. The standard also 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 aspects fall outside the LADM scope:

- interference with (national) land-administration laws
- modelling of land-administration processes
- managing party, address, valuation, land use, land cover, physical utility network, archive and taxation data.

However, LADM provides stereotype classes for above-mentioned datasets to indicate which elements it expects from these external sources, if available.

The absence of proper land administration systems and land information standards leads to disputes and a lack of property rights in many parts of the world. At the end of last year, a new International Standardisation Organisation (ISO) Standard was approved to address this. The ISO 19152

Land Administration Domain Model (LADM) is the result of close cooperation between the International Federation of Surveyors (FIG) and the ISO, and was unanimously accepted by the participating ISO Technical Committee (TC) 211 members. What is it, why is it needed and what can be done with it?

## What is LADM?

The standard introduces 'new' terminology, e.g. 'spatial unit' rather than the more conventional 'parcel', and 'party' instead of 'right holder' (owner). This unconventional approach is needed to provide an umbrella for administration of formal, customary and informal tenures (and the more conventional terms do not indicate the right meaning in all cases).

ISO 19152 starts with a description of its scope. It is a common standard for the land administration domain, covering basic information-related components of land administration, including those over water and land, and elements above and below the surface of the earth. It provides an abstract, conceptual model with three packages, related to **parties** (people and organisations); **basic administrative units**, rights, responsibilities and restrictions (ownership rights) and **spatial units** (parcels, and the legal space of buildings



## Why LADM?

For some time, there has been an international need for a widely accepted standardised domain model, using the collective global knowledge already in existence. This need was supported by the United Nations Human Settlements Programme (UN-HABITAT), the Food and Agricultural Organization of the United Nations (FAO) and FIG.

Such a data model had to have the ability to act as the core of any land administration system, and the standard had to be flexible, widely applicable and be able to function as a gathering point of a state-of-the-art international knowledge base. Its publication followed an extensive design and development process that was started in 2002 within FIG, and from 2008 within ISO TC211, involving many stakeholders globally.

The model integrates essential data, such as party names and rights, with source documents, e.g. titles, deeds, survey field data, court verdicts and participatory mapping decisions. All essential data can be related to authentic sources (documents, imagery with evidence from the field and GPS tracks). Available ISO standards are reused to support (digital) multi-media

archives, measurements and observations, as well as spatial representations.

It is highly relevant that documented field surveys can be included, in combination with reconstructable adjustments to the spatial database. History is maintained and all attributes may have a comprehensive set of quality elements.

## Software support

The Social Tenure Domain Model (STDM) is a multi-partner software development initiative to support pro-poor land administration. It is a so-called 'specialisation' of LADM, developed by the Faculty of Geo-Information Science and Earth Observation, University of Twente, the Netherlands, FIG and UN-HABITAT.

STDM broadens the scope of land administration, providing a land information management framework for developing countries that integrates formal, informal and customary land systems. It also integrates administrative and spatial components. Doing so, the model describes relationships between people and land in an unconventional manner: it has the power to tackle land-administration needs in communities, such as people living in informal settlements and customary

areas. The emphasis is on social tenure relationships as embedded in the continuum of the land rights concept promoted by the Global Land Tool Network and UN-HABITAT.

## Using LADM

In land administration, standards are necessary for initial data acquisition, as well as for data maintenance. From experience, we know it is not easy to design and set up a system, and many countries lack the expertise to do this. Such systems contain high volumes of data. LADM backs the development of software applications to accelerate the development and implementation of effective land administration in support of sustainable development. It is already recognised and supported by the FAO, UN-HABITAT and several countries (including Portugal, Cyprus and Honduras).

FIG is developing options for the use of the LADM/STDM in relation to the implementation of FAO's voluntary guidelines on responsible governance of tenure of land. FAO is also using LADM as basis for an open-source environment, which we believe can be well complemented by standard software provided by suppliers of geographic information and database management systems.

LADM is internationally agreed and available for use as a basis for development of land-administration systems – also within an information-infrastructure framework. The latter allows for integration of land administration systems representing formal, informal and customary tenures in one environment. This global

data standard can be the foundation for building worldwide coverage of well-documented and accessible information on people-to-land relationships.

The fifth international FIG workshop on the LADM takes place in Kuala Lumpur, Malaysia, on 24-25 September. Visit [www.isoladm.org](http://www.isoladm.org) for more information. ●

## Resources

The ISO 19152 document contains example country profiles from Portugal, Australia (Queensland), Indonesia, Japan, Hungary, the Netherlands, the Russian Federation and the Republic of Korea. [www.iso.org](http://www.iso.org)

The Solutions for Open Land Administration (SOLA) Project. Download LADM-based software and a LADM-based dictionary <http://flossola.org>

LADM Wiki, Delft University of Technology. Download related publications, as well as the UML models, the draft versions of the standard, and references to implementation material <http://wiki.tudelft.nl/bin/view/Research/ISO19152/WebHome>

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▲ 2 Informal settlement in Honduras

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