

Overview of the ISO 19152 Land Administration Domain Model Edition II

**Christiaan LEMMEN and Peter VAN OOSTEROM, The Netherlands,
Abdullah KARA, Türkiye, Eftychia KALOGIANNI, Greece and
Eva-Maria UNGER, Austria**

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ABSTRACT

In 2012, the first edition of the Land Administration Domain Model (LADM) is approved as an official ISO standard. LADM covers the ‘information-related’ components of land administration (LA) by providing a shared ontology and defining common terminology for LA. It is noted that the representation of all tenure types is supported through the standard and it provides a solid framework for the development of 3D Cadastre and other LA components.

The standard uses the term ‘land administration’ in a broad sense, including geographical spaces covering water and land and elements above and below the surface of the earth. As an ISO standard, the LADM is subject to periodic revision, typically in a 6 to 10-year period aiming to meet upcoming user requirements, extend the scope of the standard, as well as revise the current edition.

During the 48th Plenary Meeting Week of ISO/TC 211 in 2019, the second edition of the LADM is proposed to be developed as a multi-part standard, with experts being involved from academia, industry, standardization bodies and professional organizations across the world.

Currently, the LADM revision is ongoing, and among others, the missing aspects of land administration in edition I are now added in the revised edition of the standard: valuation information, spatial plan information, and marine space georegulation. Through the broad use of the LADM Edition I and through the various country profiles and their implementations, the need to further elaborate and define the spatial units to which the Rights, Restrictions and Responsibilities (RRR) are attached (via BAUnits) has become noticeable. Further, enhanced support in cadastral surveying is proposed to be provided in the second edition of the standard, through a comprehensive survey model, while options for implementation of the standard are proposed to be included.

This extended abstract focuses on the structure of the second edition of the ISO 19152 LADM and its proposed operational capabilities, through the new six parts that are currently under development. Six parts are currently under development, each part follows the ISO standardization process and is in fact a standard in itself. The parts of the second edition of the LADM are the following:

- Part 1 – Generic Conceptual Model
- Part 2 – Land Registration
- Part 3 – Marine Georegulation
- Part 4 – Valuation Information
- Part 5 – Spatial Plan Information
- Part 6 – Implementation Aspects

During the revision process, close collaboration with various FIG Commissions is being achieved, specifically, FIG Commissions 3 (Spatial Information Management) and 7 (Cadastre and Land Management) for Part 2, Commission 8 (Spatial Planning and Development) for Part 5 and Commission 9 (Valuation and the Management of Real Estate) for part 4.

Figure 1 presents the five out of six parts that are currently under development and under the revision process, whilst the development of Part 6 has not yet started. As noticed from the standards' titles, a new term “georegulation”, with a wider meaning is introduced, which can be defined as an activity to delimit and assert control over 2D, 3D or 4D represented geographical (and temporal) spaces through regulations, which refers to marine space.

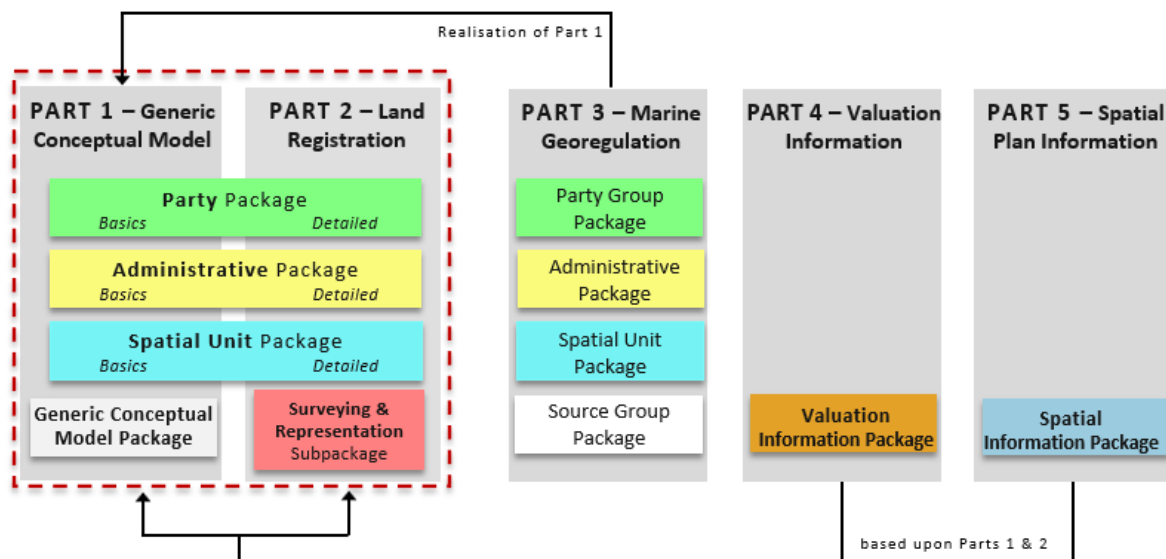


Figure 1. Parts 1, 2, 3, 4 and 5 of LADM Edition II that are currently under development

As mentioned, standards should include a set of requirements that form the basis of the scope, and which are further used to specify an abstract test suite. The packages structure of the new edition is designed in a way that meets the requirements that have been developed during the revision process.

Part 1 is a high-level umbrella standard that supports all the other parts of the new edition of the LADM and provides an overview of all parts. The “Party”, “Administrative” and “SpatialUnit” packages are common packages in Part 1, as well as, in Part 2.

For the common packages, in Part 1 the fundamental notions are introduced, while the detailed description of these packages is included in Part 2 (attributes, multiplicities of relationships and attributes). It is noted that Part 1 will not only be backwards compatible with the previous version of the LADM but also with the IHO S-121 'Maritime Limits and Boundaries' standard¹, that will be used as basis for Part 3.

Part 2 focuses on Land Registration and will be largely based on the first edition of LADM, with refinement and extension at the survey model, the 3D spatial profiles and semantically enriched code lists.

Part 3 on Marine Georegulation harmonizes the description of Rights, Restrictions and Responsibilities in the marine domain, aligned with land concepts in order to provide seamless land/ marine LA.

Moreover, Parts 4 and 5 have each been designed as a single package, both based on the definitions in Part 1 and Part 2. In Part 4 the Valuation Information Package is introduced concerning valuation information used and produced in the context of LA, specifying the characteristics and semantics of valuation registries maintained by public authorities. In Part 5 the Spatial Plan Information Package deals with spatial planning information and includes the planned land use (zoning).

Lastly, Part 6 concerns the implementation of the standard. It is planned to propose a methodology for developing a LADM-based country profile, an abstract framework for representing LA workflows (processes), a metamodel for structuring and managing semantically enriched code list values, as well as support different encodings. In addition, Part 6 is expected to include the OGC API family of standards-compliant recommendations for the development of interoperable LADM schema-based information systems. Furthermore, the relationships between the LADM and the instruction guidelines for property measurement, such as the International Property Measurement Standards (IPMS) and the International Land Measurement Standard (ILMS), is planned to be included in Part 6.

As the development of the various parts is executed in parallel, but the revision and voting procedures take place independently, Figure 2 shows the current status (September 2023) of all parts of the second edition, while the expected publication year is presented below:

- 19152-1: October 2023
- 19152-2: January 2025
- 19152-3: March 2024
- 19152-4: June 2025
- 19152-5: September 2025
- 19152-6: depends on start within OGC (Standards Working Group)

¹ <https://ihr.iho.int/articles/development-of-s-121-for-maritime-limits-and-boundaries/>

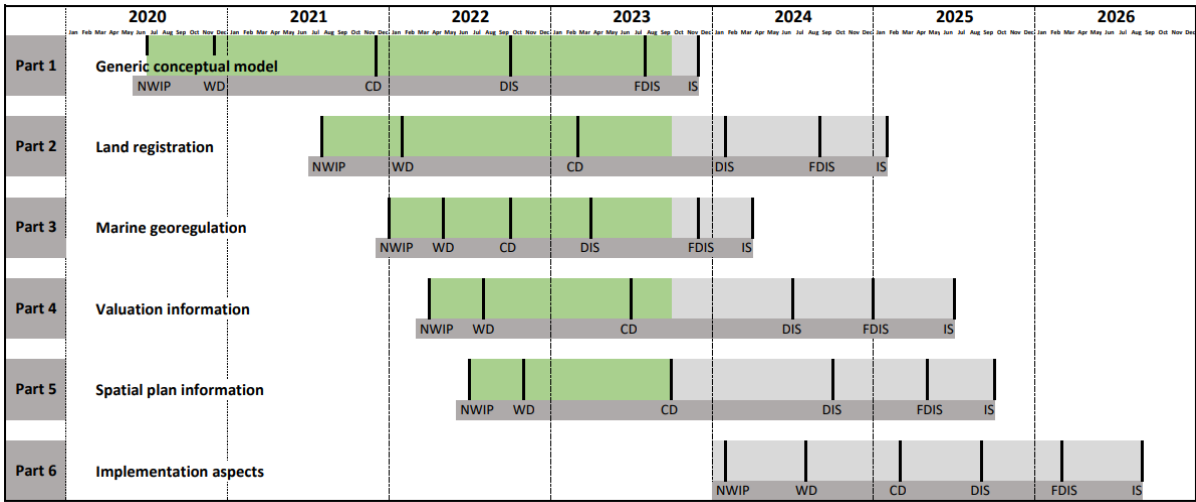


Figure 2. Planning of the development of the different parts of the second edition of LADM (NWIP = New Working Item Proposal, WD = Working Draft, CD = Committee Draft, DIS = Draft International Standard, FDIS = Final Draft International Standard, IS = International Standard). September 2023.