

Bringing Land and Sea Together

“How standardization helps implement the IGF in Coastal States”

Integrating Land Administration and Marine Boundaries: Project to harmonise IHO Marine Administration with ISO Land Administration Domain Model

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12th Meeting of the Committee of Experts, New York



Open
Geospatial
Consortium



IHO

International
Hydrographic
Organization



International
Organization for
Standardization

TC 211



UN-GGIM

United Nations Committee of Experts on
Global Geospatial Information Management

Positioning geospatial information to address global challenges

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Agenda

- Positioning Standards
- ISO Geodetic Registry
- Land Administration Domain Model (LADM)



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Positioning

- Positioning Standards
 - ISO 6707:2009 – Standard representation of geographic point location by coordinates (being updated)
 - ISO 19111:2019 – Referencing by coordinates & amendment
 - <https://www.youtube.com/watch?v=IKM-bR6SwVs>
 - ISO 19112:2019 – Spatial referencing by geographic identifies
 - ISO 19116:2019 – Positioning services & amendment
 - ISO 19127:2019 – Geodetic register (being updated)
 - ISO 19162:2019 – Well-known text representation of coordinate reference systems
 - ISO 19168-2 – Geospatial API for features – Part 2: Coordinate reference systems by reference (being developed)
 - ISO 19170-1:2021 – Discrete Global Grid Systems Specifications – Part 1: Core reference system and operations, and equal area earth reference system



ISO Geodetic Registry (ISOGR)

- Is a structured database of coordinate reference systems (CRS) and transformations that is accessible through this online registry system.
- Register includes only systems and transformations of international application – it does not include all possible coordinate reference systems and transformations
- Conforms to the following ISO standards
 - ISO 19111:2007 (Spatial referencing by coordinates)
 - ISO 19127:2019 (Geodetic register)
 - ISO 19135-1:2015 (Procedures for item registration – Part 1: Fundamentals)
- Work is underway to upgrade the Registry to conform to the revised ISO 19111:2019 standard, which includes support for dynamic datums and geo-based datums



ISO Geodetic Registry (ISOGR)

- ISO/TC 211 Geographic Information/Geomatics Committee, Open Geospatial Consortium (OGC) and International Association of Oil & Gas Producers (IOGP) have jointly published the *“Guide to Coordinate Reference System (CRS) Resources”*.
- The guide describes basic information and the intended purposes of the three authoritative CRS registers: EPSG, ISO Geodetic and OGC CRS Registries.
<https://geodetic.isotc211.org>
- Supporting the Global Geodetic Reference Frame (GGRF) and United Nations Global Geodetic Centre of Excellence



Land Administration Domain Model (LADM) ISO 19152

- The standard is a multi-part
 - Part 1: Generic Conceptual Model
 - Part 2: Land Registration
 - Part 3: Marine Georegulation
 - Part 4: Valuation Information
 - Part 5: Spatial Planning Information
 - Part 6: Implementation



Land Administration Domain Model (LADM)

ISO 19152 Part 1: Generic Conceptual Model

- Defines a reference Land Administration Domain Model 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
 - Parties, people and organisations
 - Basic administration units, rights, responsibilities and restrictions; ownership rights
 - Spatial units: parcels and the legal space of buildings and utility networks, and:
 - Surveying and representations: geometry and topology



Land Administration Domain Model (LADM)

ISO 19152 Part 1: Generic Conceptual Model

- Provides terminology for land administration
 - Based on various national and international systems
 - As simple as possible in order to be useful in practice
 - Allows a shared description of different formal or informal practices and procedures in various jurisdictions
- Provides a basic for national and regional profiles; and
- Enables the combining of land administration information from different sources in a coherent manner
- Technical content has been completed and anticipate to be published in 2023



Land Administration Domain Model (LADM)

ISO 19152 Part 2: Land Registration

- Extends the concepts from Part 1 with some refinements from LADM Edition I
- New subclasses for LA_SpatialUnit
- Refinements:
 - survey model (derived from OGC's LandInfra/InfraGML standard)
 - Refined the code lists
 - Integration with OGC's IndoorGML
 - Spatial units in 2D 3D or mixed dimensions
 - Legal spaces in buildings and legal profiles
 - Interface classes for SDG Land Indicators
- Editors and nominated Experts will start soon develop a Working Draft



Land Administration Domain Model (LADM)

ISO 19152 Part 3: Marine Georegulation

- Provides the concepts and structure for standardisation for georegulation in the marine space.
 - Address the information structure related to management of legal spaces such as international maritime limits and boundaries, marine living and non-living resources management
 - References and use the work by IHO S-100 Universal Hydrographic Model and S-121 Marine Limits and Boundaries and United Nations Convention on the Law of the Sea
 - Provide a model for representation rights, restrictions and responsibilities within the context of the marine space
- Part 3 makes use of the core packages defined in Part 1 and adds 4 subpackages
 - MG_PartyGroup
 - MG_Administration
 - MG_SpatialUnit
 - MG_SourceGroup



Land Administration Domain Model (LADM)

ISO 19152 Part 3: Marine Georegulation

- The Marine Georegulation Application Schema uses the same Feature and Attribute model as defined in ISO 19110 – Methodology for Feature Cataloguing and ISO 19126 – Feature concept dictionaries and Registers as in IHO S-100
- Issued the ballot for Part 3 early in 2022 and was approved and received 50 comments from the initial draft
 - Project is managed by Chris Body and editors Doug O'Brien & Jean-Francois Beaupre
 - Countries contributing to the develop: Australia, Canada, China, France, Germany, Republic of Korea and United States
- Editors and Nominated Experts will start soon develop a Working Draft



Land Administration Domain Model (LADM)

ISO 19152 Part 4: Valuation Information

- Designed to represent all stages of administrative property valuations (input and output data in valuation processes).
- Includes basic components of property valuation systems (eg. transaction prices, sales statistics etc).
- Provides terminology for valuation components based on various national and international systems.
- Issued the ballot for Part 4 in March 22 and was approved and received 14 comments from the initial draft
 - Project is managed by Chrit Lemmen and editors Doug O'Brien & Jean-Francois Beaupre
 - Countries contributing to the develop: Australia, Canada, China, Finland, France, Germany, Republic of Turkiye and United States
- Editors and Nominated Experts will start soon develop a Working Draft



Land Administration Domain Model (LADM)

ISO 19152 Part 5: Spatial Plan Information

- Aims to provide the general reference model as an extension of Part 1 & Part 2 for all objects of spatial planning those covering land/water and below/on/above surfaces.
- Supports the concept of 4D (3D + time) representation of the spatial plans including marine spatial plans.
- To include zoning objects classes:
 - Spatial plan unit
 - Spatial plan block
 - Spatial plan group
- Ballot vote is out for ISO/TC 211 members to approve this new work item. Ballot closes 20 September 2022



Land Administration Domain Model (LADM)

ISO 19152 Part 6: Implementation

- Work with OGC at its upcoming meeting in Singapore to explore the requirements for implementation with industry.
- Monitor and where necessary link up with OGC/IHO programs:
 - Federated Marine SDI Pilot, Phase 3
 - Digital Twin of the Ocean
 - Marine Spatial Data Infrastructure
 - API developments
- Strengthen relationship with the Working Group on Marine Geospatial Information



Cooperation



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Summary

- Supporting UNGGIM initiatives programs (eg. FELA)
- Continue our close working relationship with OGC & IHO, Industry and Academia
- The development of future APIs will be of assistance
- Tools like Enterprise Architect software assisting in the development and management of the data models across the various LADM Parts





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Thank you!

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