S121 – Maritime Limits and Boundaries (MLB)

Leveraging ISO 19152 Land Administration Domain Model (LADM)
Presentation Outline

1. IHO S121 – MLB
   - S121 Project
   - S121 Data Model

2. ISO 19152 – LADM
   - ISO19152 Project
   - ISO19152 Data Model

3. Leveraging ISO 19152
   - Administration
     - BAUnits, RRR, Party
   - Other aspects
     - Source, Version

4. Challenges
   - Broaden definition of Spatial Unit
   - Unique Right Association
S121 – Maritime Limits and Boundaries (MLB)

A standard to support the management, description and exchange of a State’s Maritime Sovereignty, Sovereign right extents and associated juridical zones

(as described under the United Nations Convention on the Law of the Sea (UNCLOS))
S121 Project Team

50 Members representing:

– 13 Member States
  • 9 active
– 6 International Body Members, Liaison and Bodies of Interest
  • UN (DOALOS, GGIM), IHO (ABLOS, IHB, S100)
  • ISO (TC211, 19152 LADM), INSPIRE, OGC
– 6 Observing Industry Members
S121 Project Status

• Consolidated and agreed on the core features of the model (Dec. 2016).
• Discussed core feature attributes and the integration of ISO19152 (Sept. 2017).
• Functional Conceptual and Implementation model available online (HTML and EA files) (Dec. 2017)
• Implementation Guidelines for ArcGIS and QGIS (2018)
• Fine tune the model with all stakeholders (2018)
• Reach an agreement on the OGC pilot strategy (2018)
Maritime Limits and Boundaries

As defined in the United Nations Convention on the Law Of the Sea (UNCLOS), Maritime Limits and Boundaries are used to define a set of zones used to establish jurisdiction and management of the sea.
MARITIME LIMITS
Legal Continental Shelf by Article 76.5
(where the geological continental margin is GREATER than 200 nautical miles)

Art. 76.5: The "Legal Continental Shelf" is the "Legal Continental Margin" (determined by Art. 76.4), subject to the greater of these limits.

Art. 76.6: On submarine (oceanic) ridges, the outer limit of the "Legal Continental Shelf" shall not exceed 350 m.

Art. 76.4: Outer limit of "Legal Continental Margin" is the further of these limits.

Art. 76.7: Outer limits of continental margin beyond 200 m. to be delineated by straight lines not exceeding 69°M. between fixed points.

S-121 Strategy

Build on existing standards:

• Facilitate development
• Maximize interoperability
• Maximize extensibility

ISO 19152 – LADM
Land Administration
Domain Model
ISO19152 – Land Administration Domain Model (LADM)

• Objectives
  1. Conceptual model for building Land Administration systems
     Not a data product specification
  2. Basis for communication (a Land Administration terminology)
     Shared vocabulary for describing land administration systems

• Basic components
  1. Persons and organizations (‘Parties’)
  2. Rights, restrictions and responsibilities (‘RRR’)
  3. Parcels, buildings and construction works (‘Spatial Units’)
  4. Surveying
  5. Geometry and Mapping

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ISO19152 – Project Team

TC211 – Geographic Information

– 32 Country members
  • 9 active

– 3 Liaison members
  • FIG, UN (Habitat, GGIM), JRC
  • Many more are joining (OGC, World Bank, IHO, etc.)
ISO19152 – Project Status

• 2008-2011
  – FIG submits LADM as a proposal to ISO/TC 211 (Technical Committee on Geographic Information)
  – Reviews, working drafts (WD), committee drafts (CD), Draft International Standard (DIS), and Final Draft (FDIS).

• 2012
  – International Standard is published
    ISO 19152:2012(E)

• 2017
  – Systematic Review
Components

- Persons (green)
- Rights (yellow)
- Parcels (blue)
- Surveying (pink)
- Mapping (violet)
LADM Basic Model

LA_Party
  0..1
  0..*

LA_RRR
  1..*
  1

LA_BAUUnit
  0..*
  0..*

LA_SpatialUnit
  0..*
  0..*

LA_BoundaryFaceString
  0..*
  0,2..*

LA_Point
  0..*
  0,2..*

Mrs. Scarlett
  Owns
  Property ABC
  Lot 1
  Boundary a
  Point 1

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Rights, Restrictions, Responsibilities

LA_RRR
Formal or informal entitlement to own or to do something, or not to do something.

LAintptrty
0..1

LA_Right
0..*

LA_Restriction
1..*

LA_Responsibility

Basic Administrative Unit.
Legal administrative entity consisting of zero or more spatial units against which (one or more) unique and homogeneous rights are associated.
Leveraging the Basic Concept

• S121 - Maritime Limits and Boundaries is boundary centric.
• ISO19152 – Land Administration Domain Model is parcel centric
• A boundary is a limit of a zone or between two zones.
Basic Geometric Components

• Territorial Sea
• Limits
  – Straight Baseline
  – Normal Baseline
  – Territorial Sea Limit
• Points
S121 Basic Model

- **S121_Party**: 0..1
- **S121_RRR**: 1..* 0..*
- **S121_BAUnit**: 1..* 0..*
- **S121_FeatureUnit: Zone**: 0..* 0..*
- **S121_FeatureUnit: Limit**: 0..* 0..*
- **S121_FeatureUnit: Location**: 0..* 0..*

- **Canada**
- **Sovereignty Right**
- **Territorial Sea**
- **Zone 1**
- **Outer Limit**
- **Base Point 1**

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Leveraging Other LADM Concepts

• Source
  – Administrative Source
  – Spatial Source

• Versioned Object
ISO19152 Source

- Source Type
- Document Type
- Source Reference
- Quality
- Dates:
  - Submission, Recorded, Authoritative
- Etc.
ISO19152 Versioned Object

- Start Lifespan
  - Mandatory
- End Lifespan
  - Optional
Challenges

• Broaden definition of Spatial Unit
• Unique right association too restrictive
• Admin and spatial source links too specific
• Code lists need to be defined
• Explicit instructions for the application/implementation
• Better alignment/integration with other ISO standards
• Governance to generate documents
Broaden Definition of Spatial Unit

Spatial Unit:
Single or multiple **areas** of land / water or a single / multiple **volumes** of space (one or more)
Unique Right Association Too Restrictive

Basic Administrative Unit:
Legal administrative entity consisting of zero or more spatial units against which (one or more) unique and homogeneous rights are associated.
Next Steps

• S121 Development Continues
  – Next meeting (March, August, Dec. 2018)
  – S121 OGC Pilot Projects (2018)

• Revision of ISO 19152 Initiated
  – Next meeting (April 2018)
  – FIG to prepare ISO19152 revision proposal (2018)
Improved interoperability

facilitate consistent administration of the marine spaces, littoral zones and land jurisdictions.
Improve Extensibility

• Resources
• Protected Areas
• Navigation
• Cables and Pipelines
• Etc.
More Information

• [www.S-121.com](http://www.S-121.com)
  – News
  – Meetings
  – Implementation
  – Exchange formats
  – Documentation

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