

ATHENS WORKSHOP



Workshop Joint FIG Commissions 3 and 8
Athens – 13th and 14th December 2022



Extending Land Administration Domain Model with Spatial Plan Information (ISO 19152-5)

Abdullah Kara, Peter van Oosterom, Christiaan Lemmen,
Marije Louwsma, Agung Indrajit, Eftychia Kalogianni

Technical Session II, December 13th, 2022



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OF TWENTE.



Overview

- Land Administration Domain Model (LADM) (ISO 19152:2012)
- LADM Part 5 – Spatial Plan Information

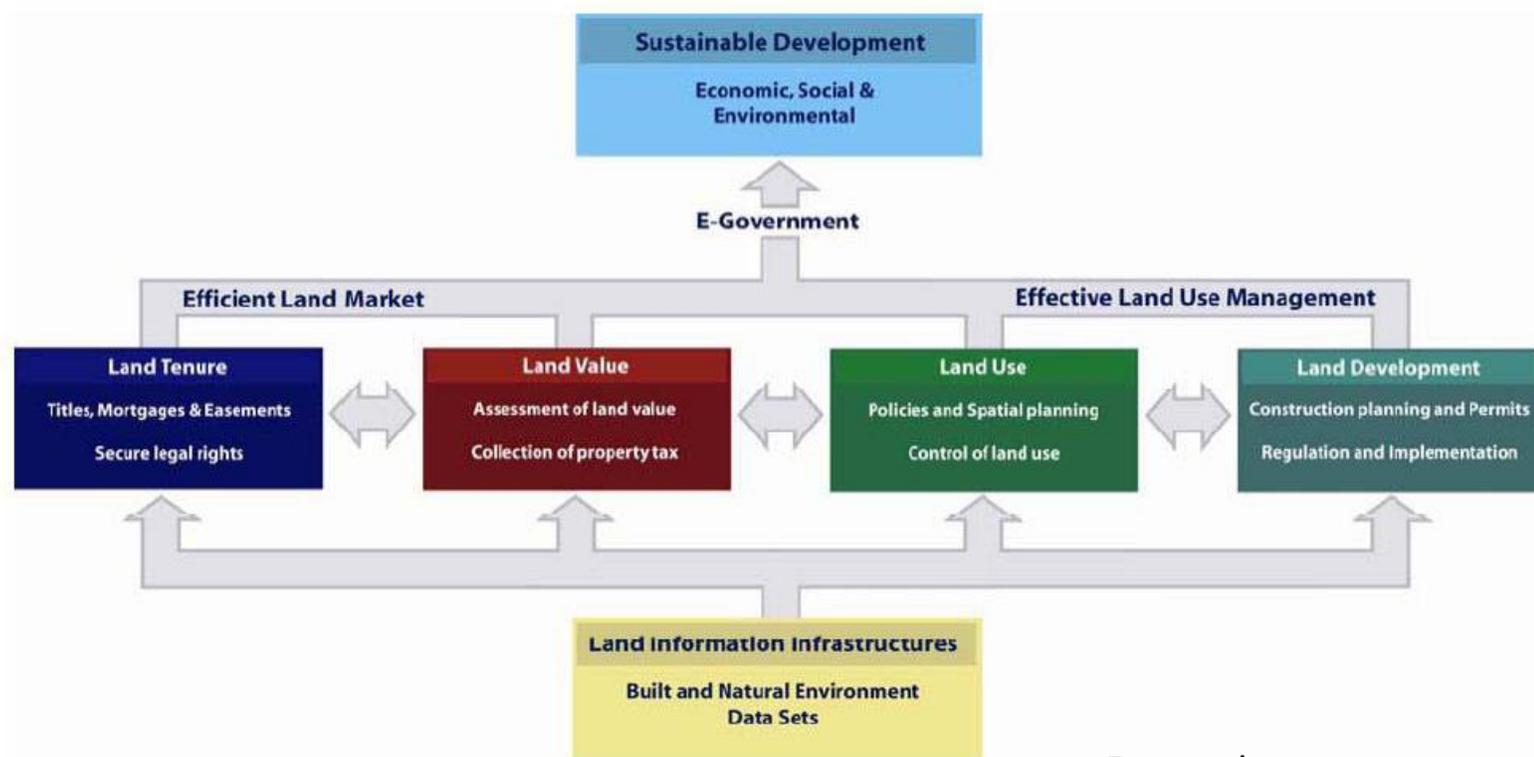


Land Administration

process of recording and disseminating information about:

- ownership
- value
- [planned] use of land and associated resources

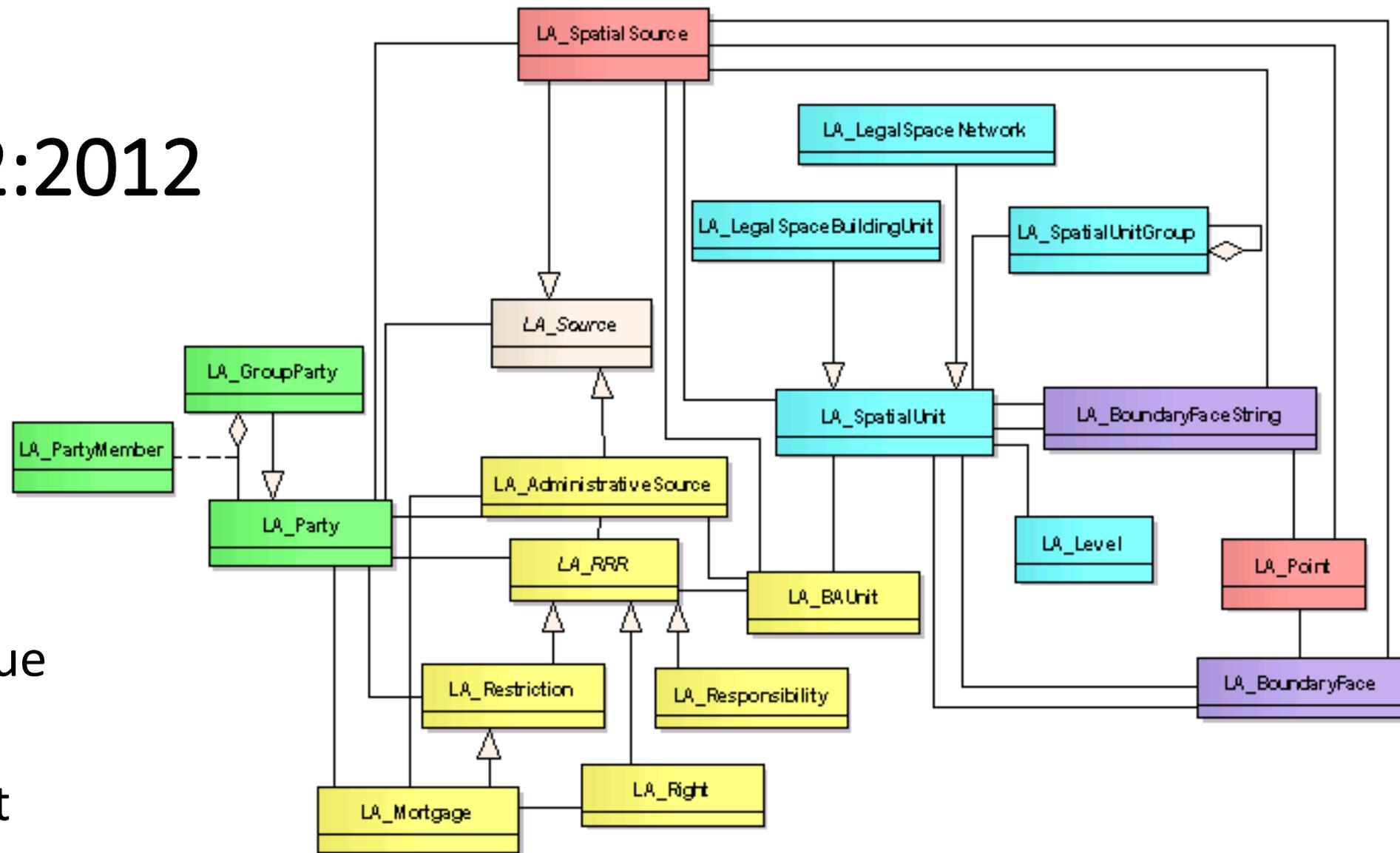
UN-ECE, 1996



Enemark

ISO 19152:2012 LADM

- parties - green
- RRRs - yellow
- spatial units - blue
- surveying - pink
- mapping – violet
- 60 profiles

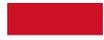


LADM Implementation

Scotland



Indonesia



Colombia



Mozambique



Malaysia



Montenegro



Honduras



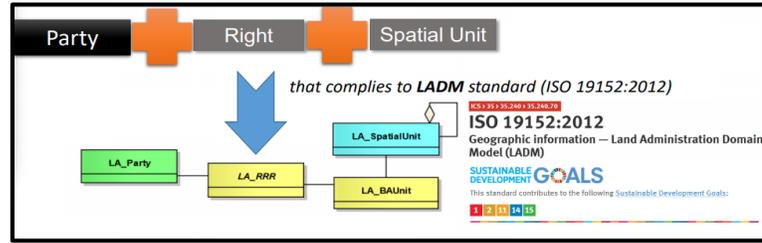
Serbia



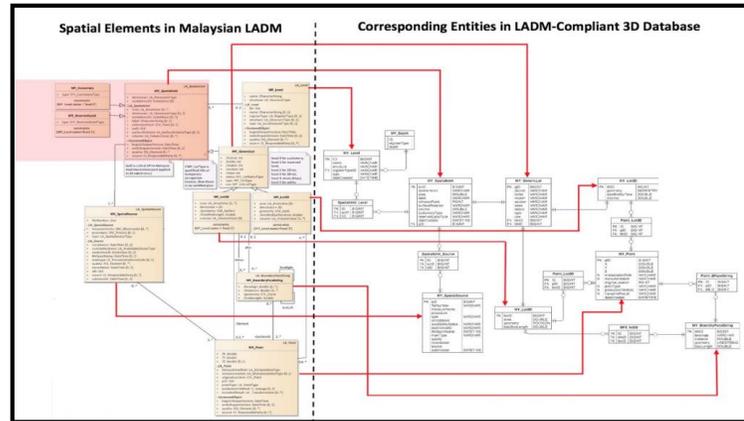
Albania



Uganda



Aditya et al., 2019



Rajabifard et al., 2019



Aditya et al., 2019

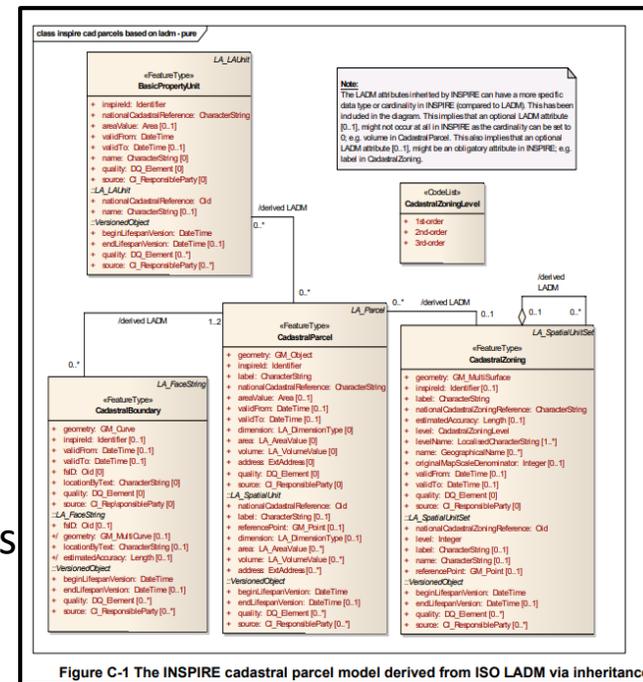


Figure C-1 The INSPIRE cadastral parcel model derived from ISO LADM via inheritance.

INSPIRE Cadastral Parcels

LADM adopted & published as national standard

✓ Czech technical standard by the Czech Office for Standards

LADM translation

- ✓ ISO languages (English and French)
- ✓ Spanish,
- ✓ Czech,
- ✓ Chinese,
- ✓ Korean,
- ✓ Russian

Review of LADM

- in the 48th Plenary Meeting Week of ISO/TC 211 (2019), it was decided to design LADM Edition II as a multi-part standard
- FIG LADM Workshops in Delft 2017, Zagreb 2018, Kuala Lumpur 2019, Online 2021 and Dubrovnik 2022

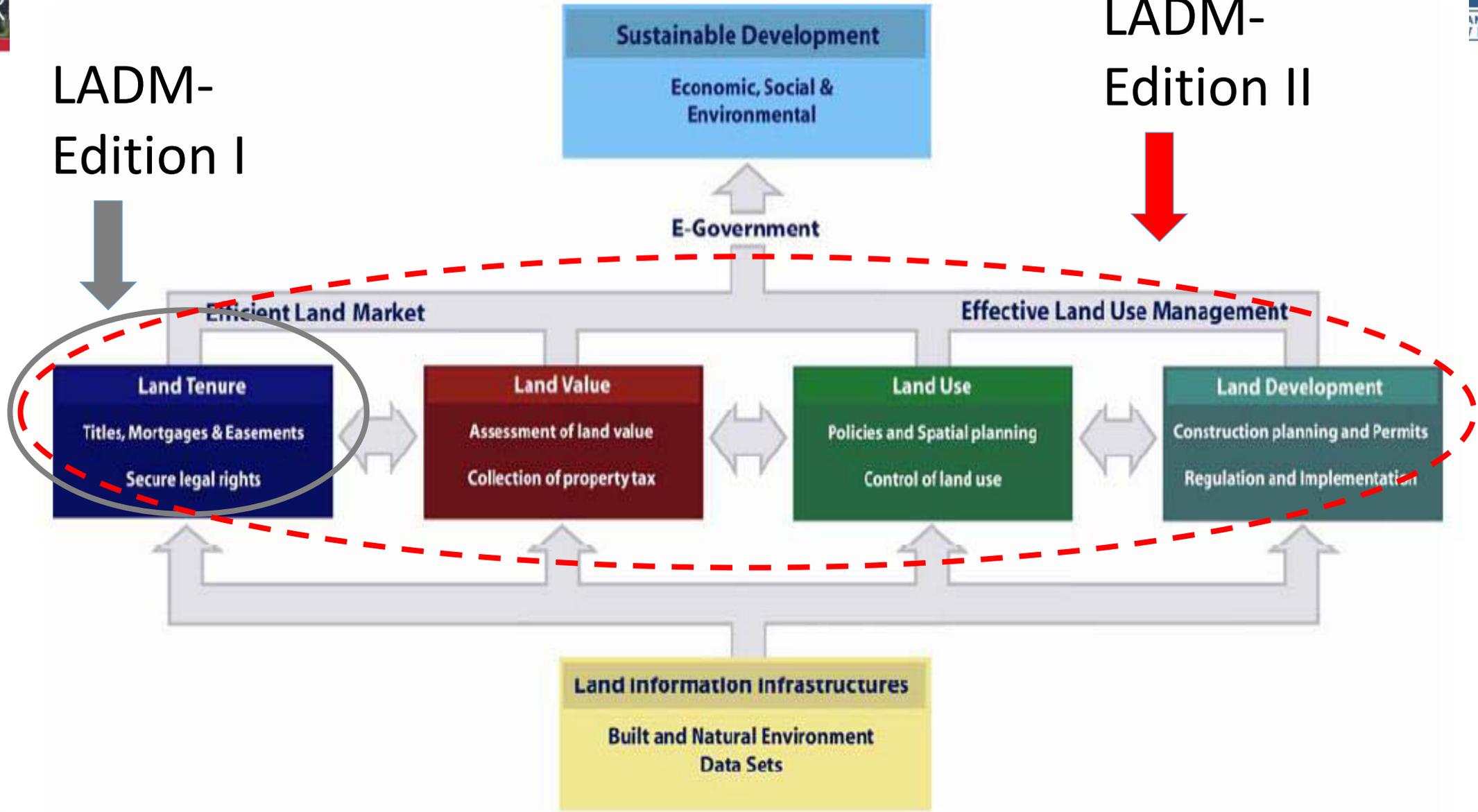
Systematic review of LADM

LADM Edition II will become a multi-part standard!

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

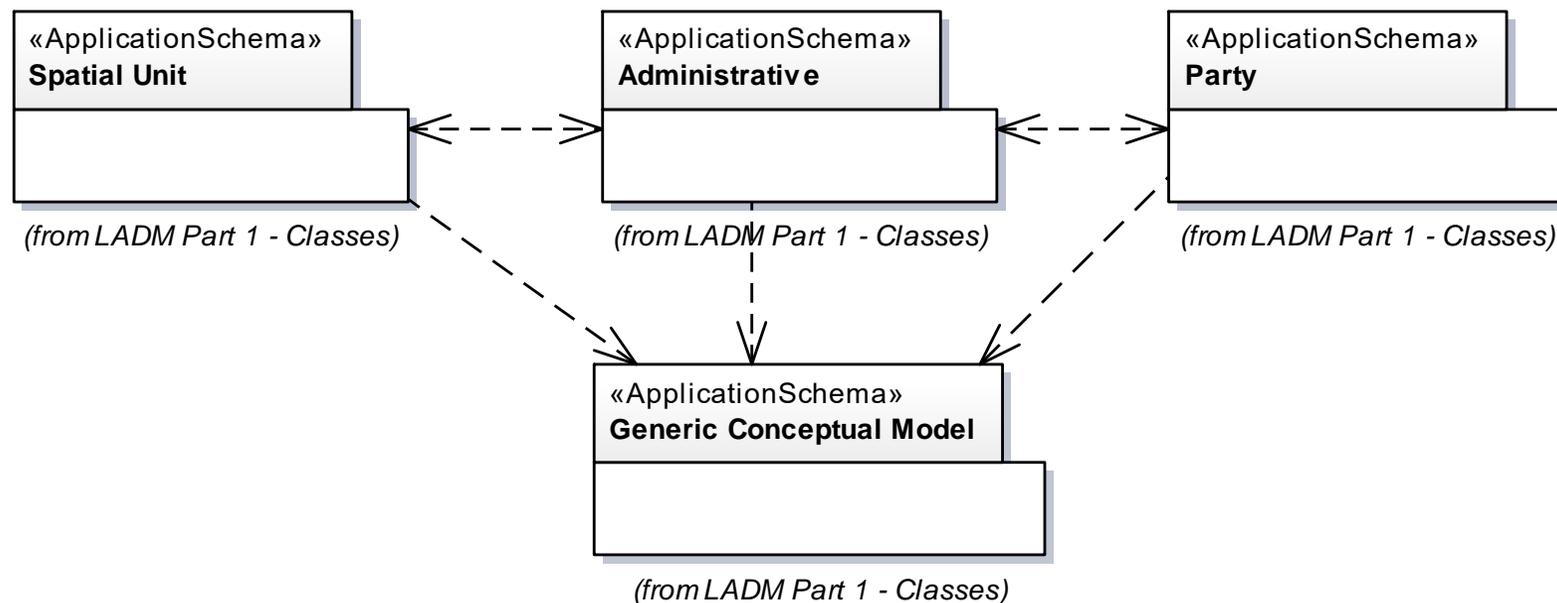
LADM-
Edition I

LADM-
Edition II



ISO 19152 LADM – Part 1: Generic Conceptual Model

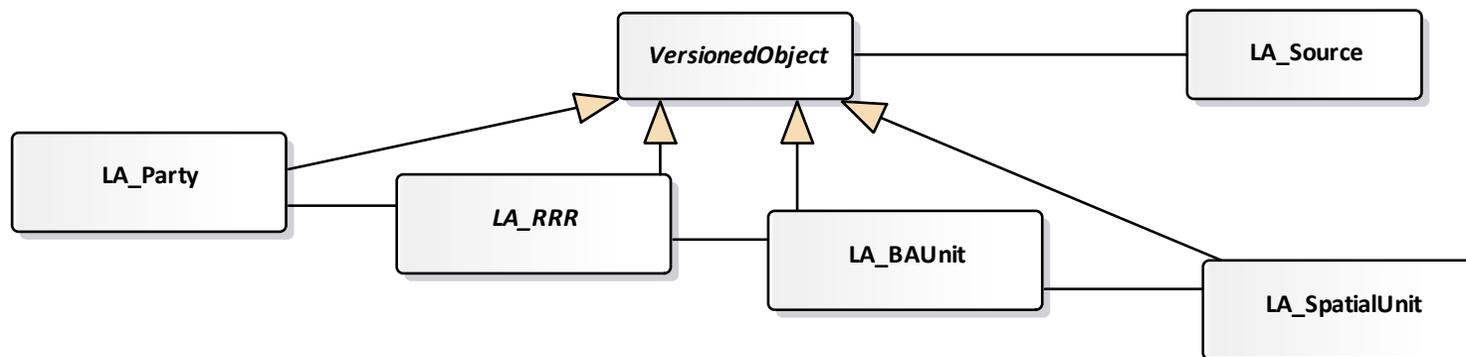
- high-level umbrella standard
- backwards compatible
- overview



Packages of Part 1

ISO 19152 LADM – Part 1: Generic Conceptual Model

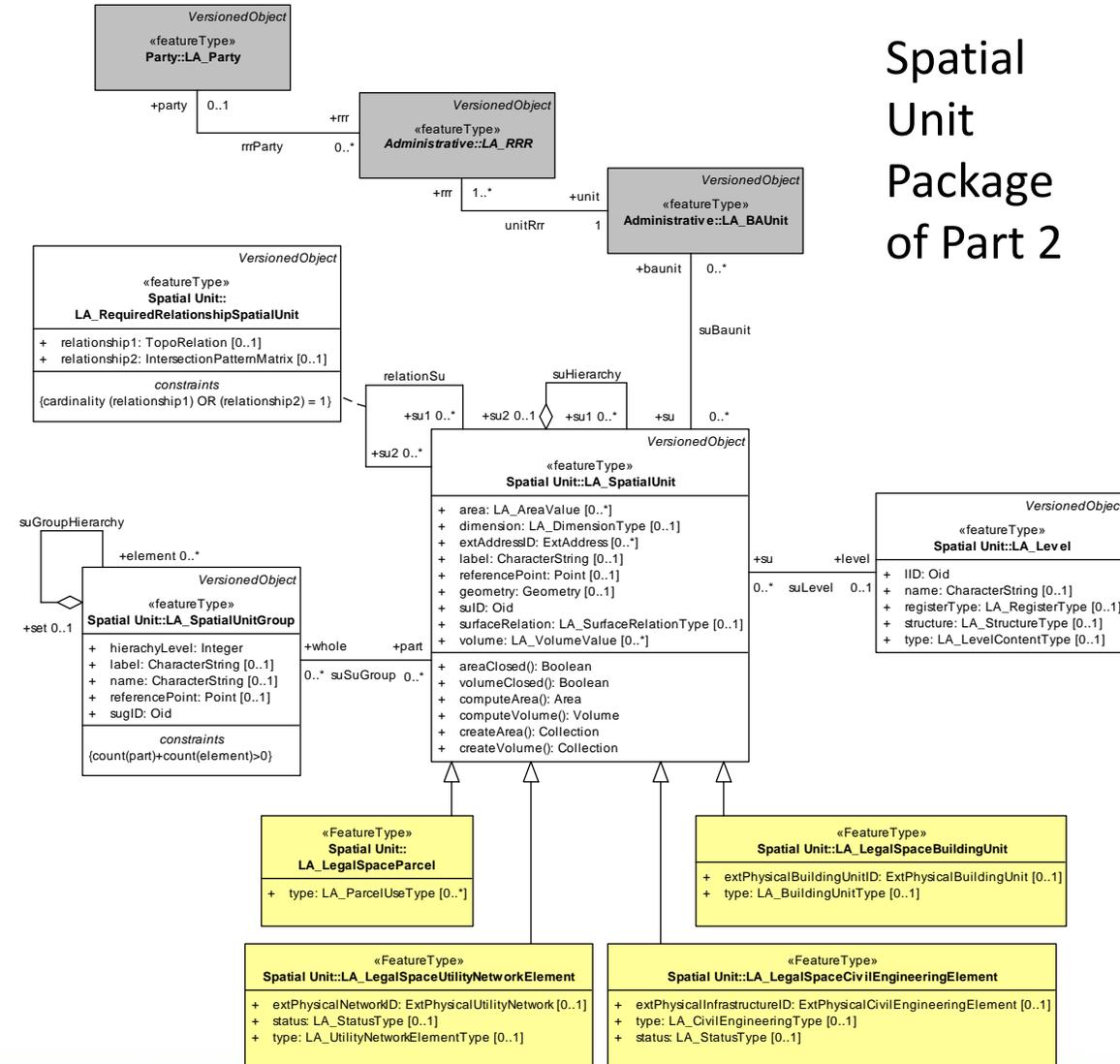
- An abstract, conceptual model with four packages:
 - parties: people and organizations
 - basic administrative units: rights, responsibilities, restrictions: ownership rights
 - spatial units: parcels, spatial unit groups and levels.
 - special classes (generic conceptual model): source and versioned object



ISO 19152 LADM – Part 2: Land Registration

- extends the concepts from Part 1 with refinements from LADM Edition I
- new subclasses for LA_SpatialUnit
- semantically enriched code lists

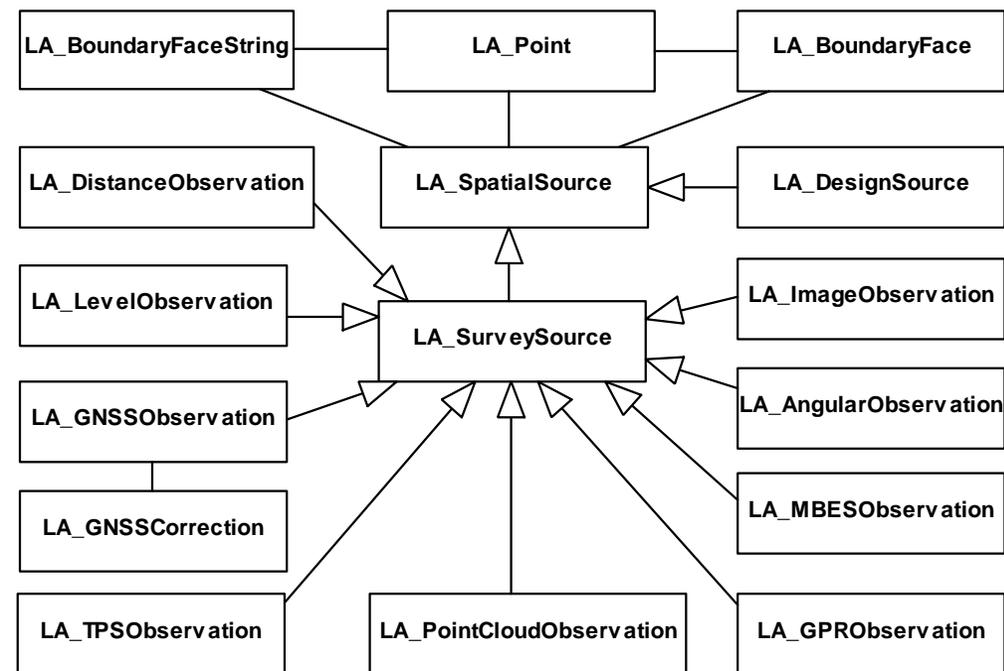
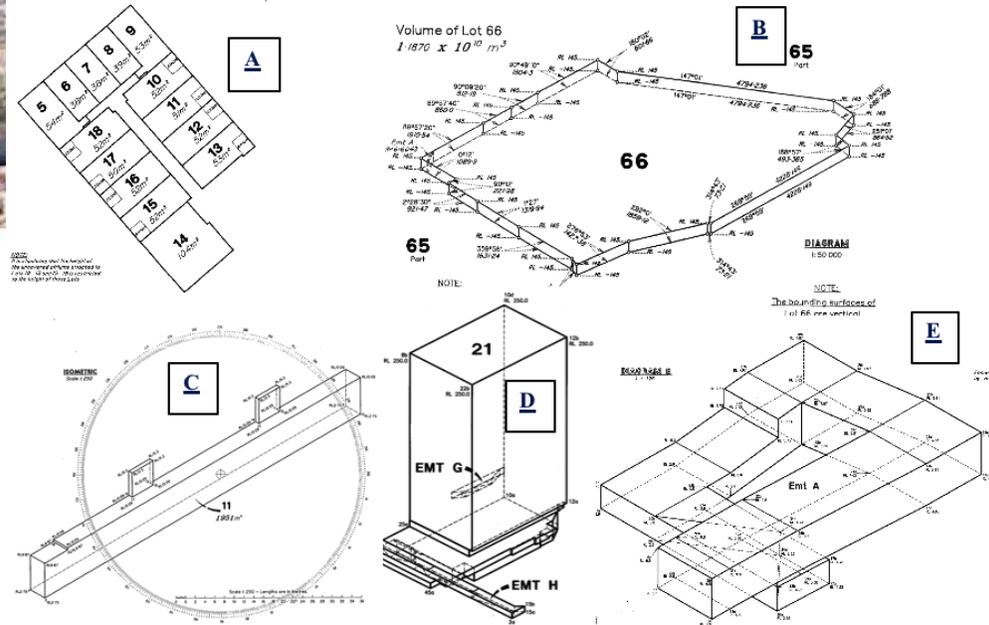
Spatial
Unit
Package
of Part 2





ISO 19152 LADM – Part 2: Land Registration

- refined survey model - OGCs LandInfra/InfraGML standard
- integration of IndoorGML (Alattas et al., 2018)
- possible representations of spatial units in 2D, 3D or mixed dimension (Kalogianni et al., 2021)
- legal spaces in buildings
- refined legal profiles

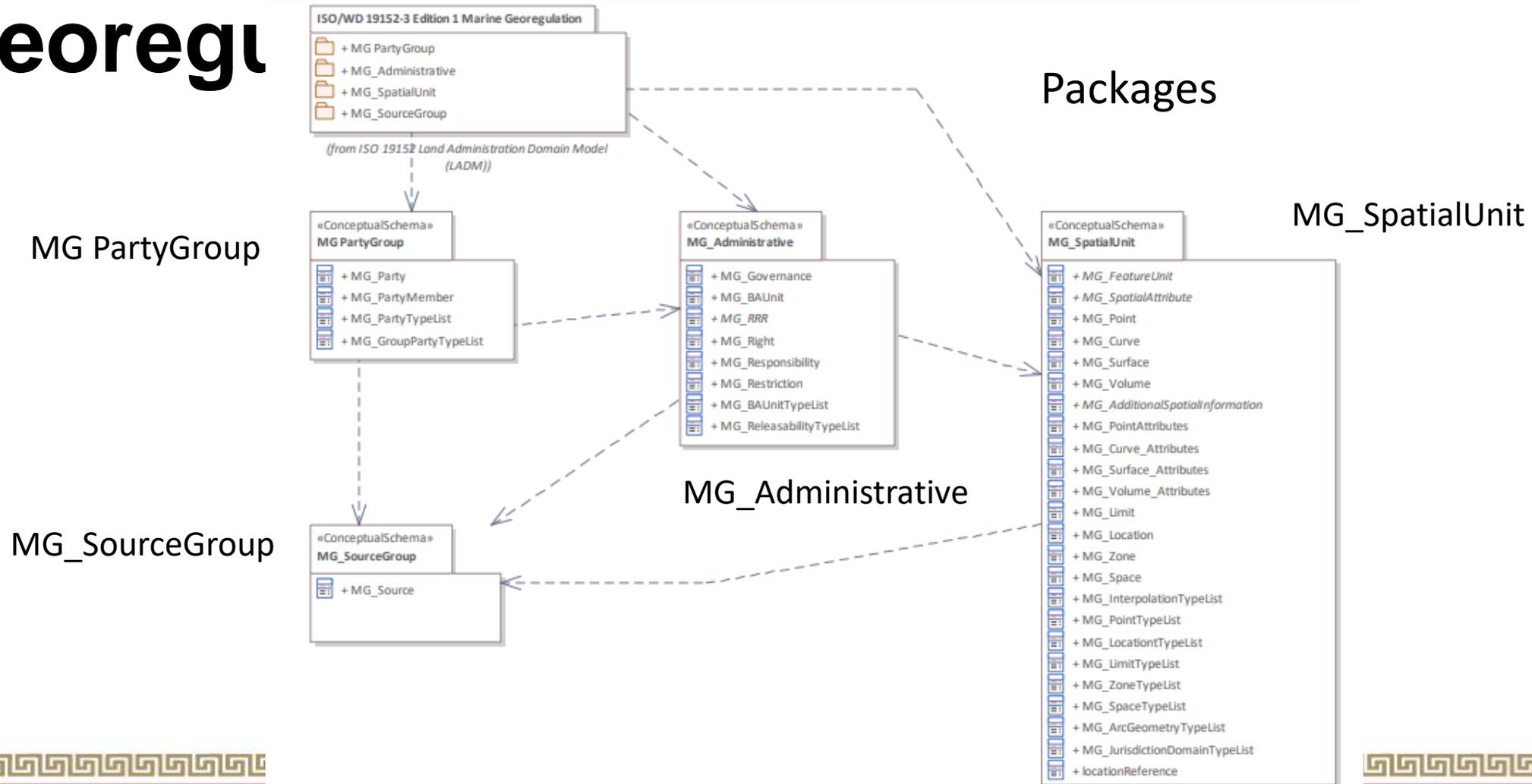


ISO 19152 LADM – Part 3: Marine Georegulation

- Part 3 provides concepts and structure for georegulation in the marine space:
 - international maritime limits and boundaries
 - IHO S-100 Universal Hydrographic Model and S-121 Marine Limits and Boundaries and United Nations Convention on the Law of the Sea
 - provides a model for representing rights, restrictions and responsibilities within the context of the marine space

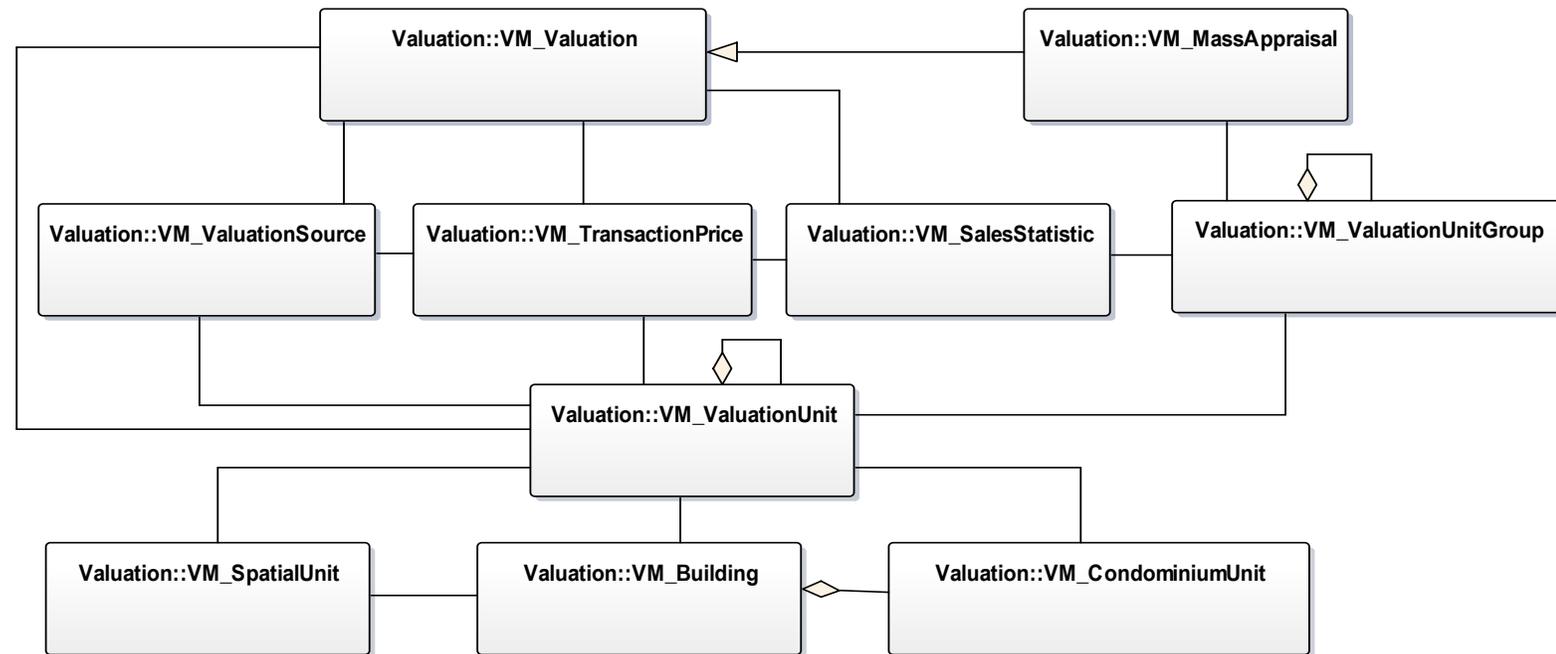
ISO 19152 LADM – Part 3: Marine

Georegulation



ISO 19152 LADM – Part 4: Valuation Information

- all stages of administrative property valuations (input and output data in valuation processes)
- basic components of property valuation systems (e.g., transaction prices, sales statistics, valuation units, mass valuation and so on)



ISO 19152 LADM – Part 6: Implementation Aspects

- No NWIP was submitted yet there have been some preparation.
- ISO/TC 211 will reach out to the Open Geospatial Consortium (OGC) and other interest parties for their assistance to implement LADM Edition II.

Current status of LADM review

Now

Published
ISO 19152:2012

A standard is reviewed every 5 years
Stage: 90.92 (To be revised) ✓

Source: ISO/TC 211



Will be replaced by

Under development
ISO/DIS 19152-1

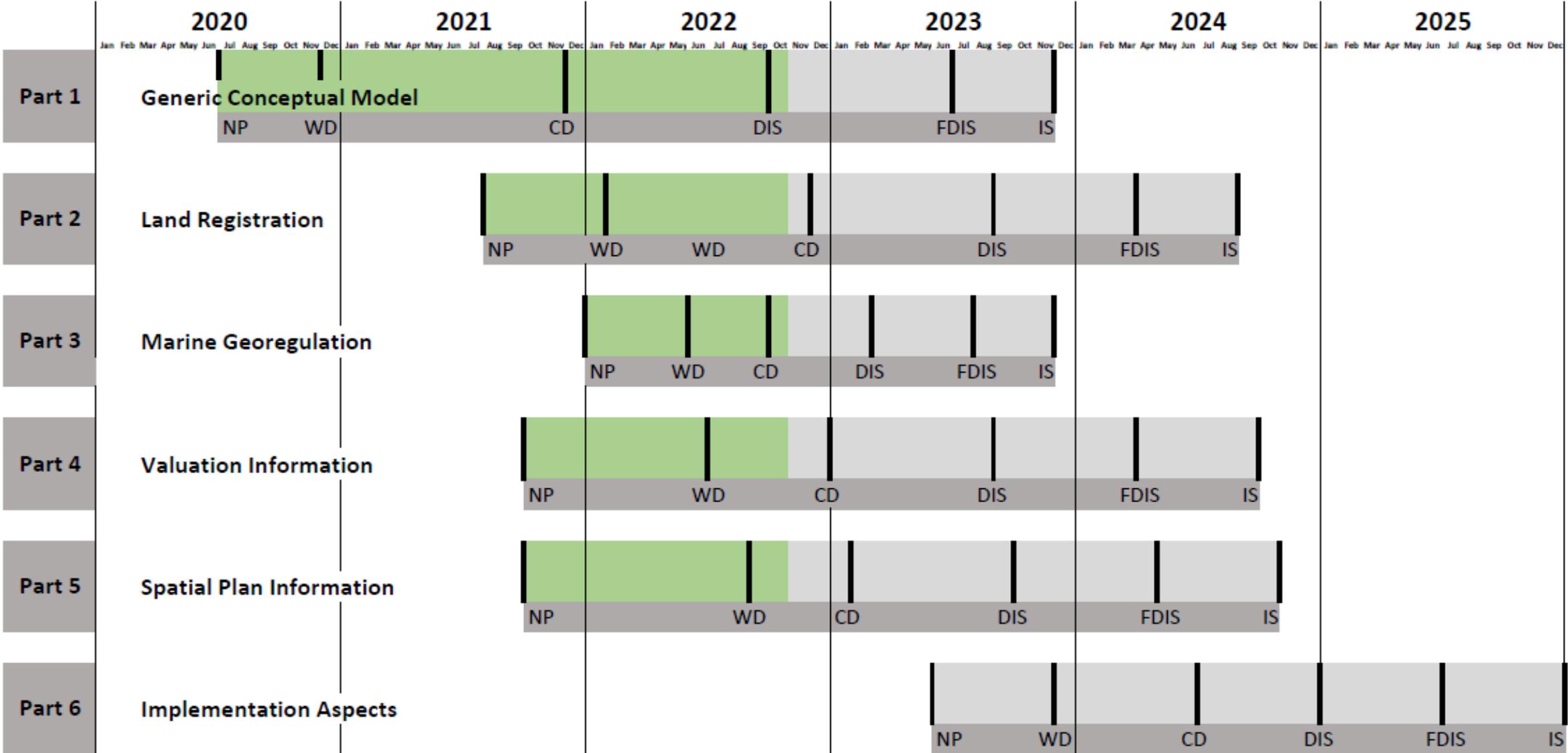
Under development
ISO/AWI 19152-2

Under development
ISO/CD 19152-3

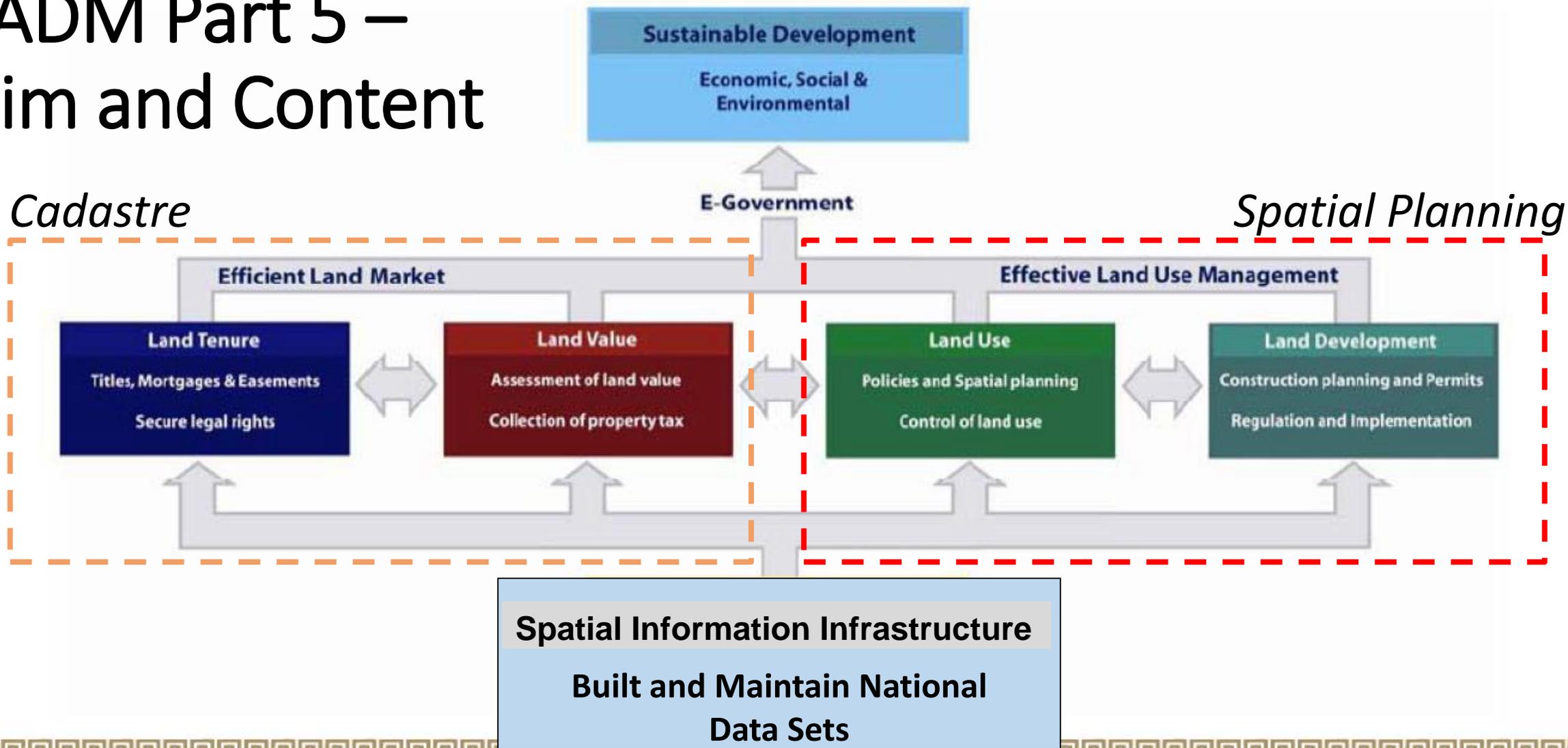
Under development
ISO/AWI 19152-4

Under development
ISO/AWI 19152-5

LADM Edition II – Current Status of All Parts of LADM (November 2022)



LADM Part 5 – Aim and Content

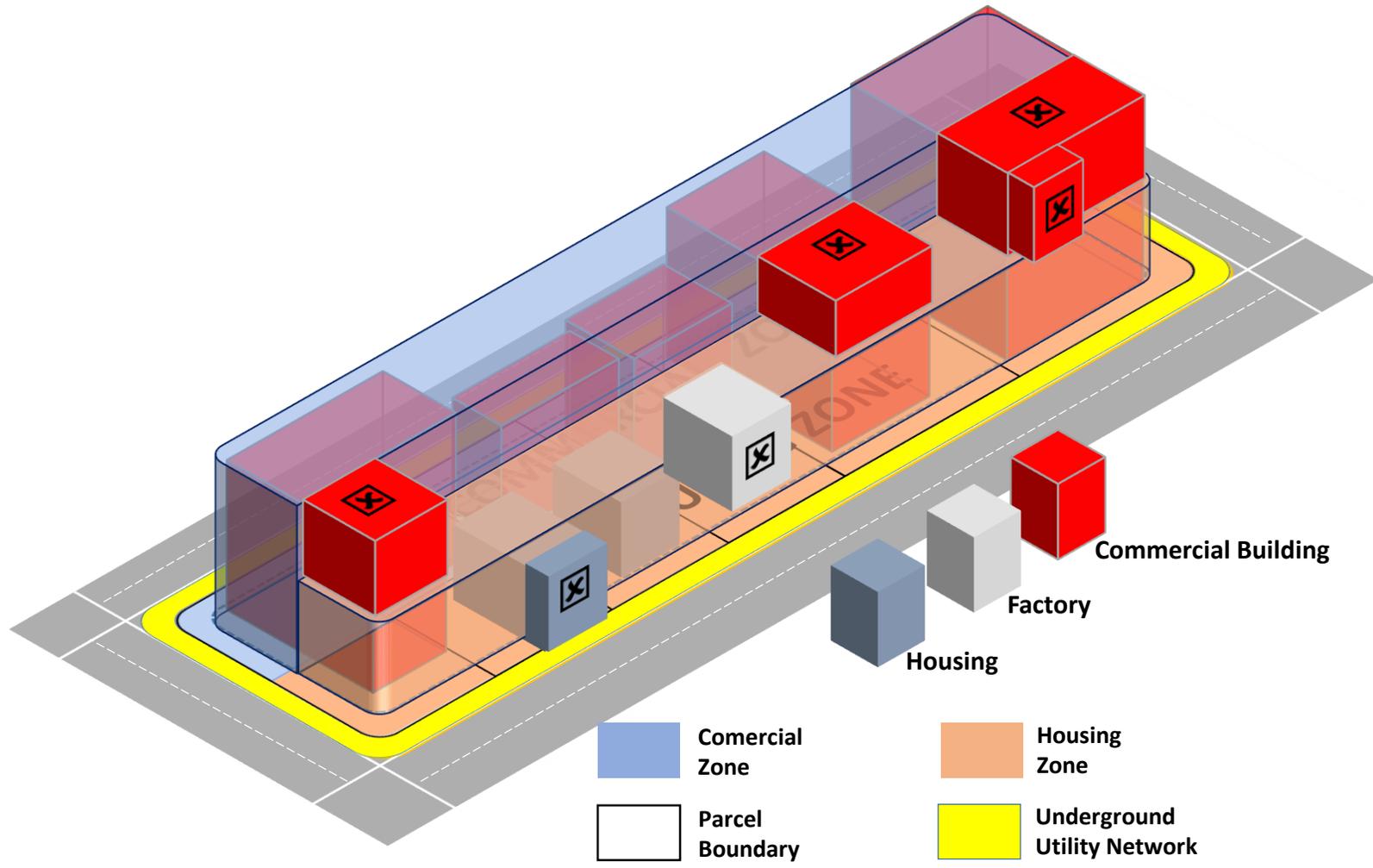


LADM Part 5 – Aim and Content

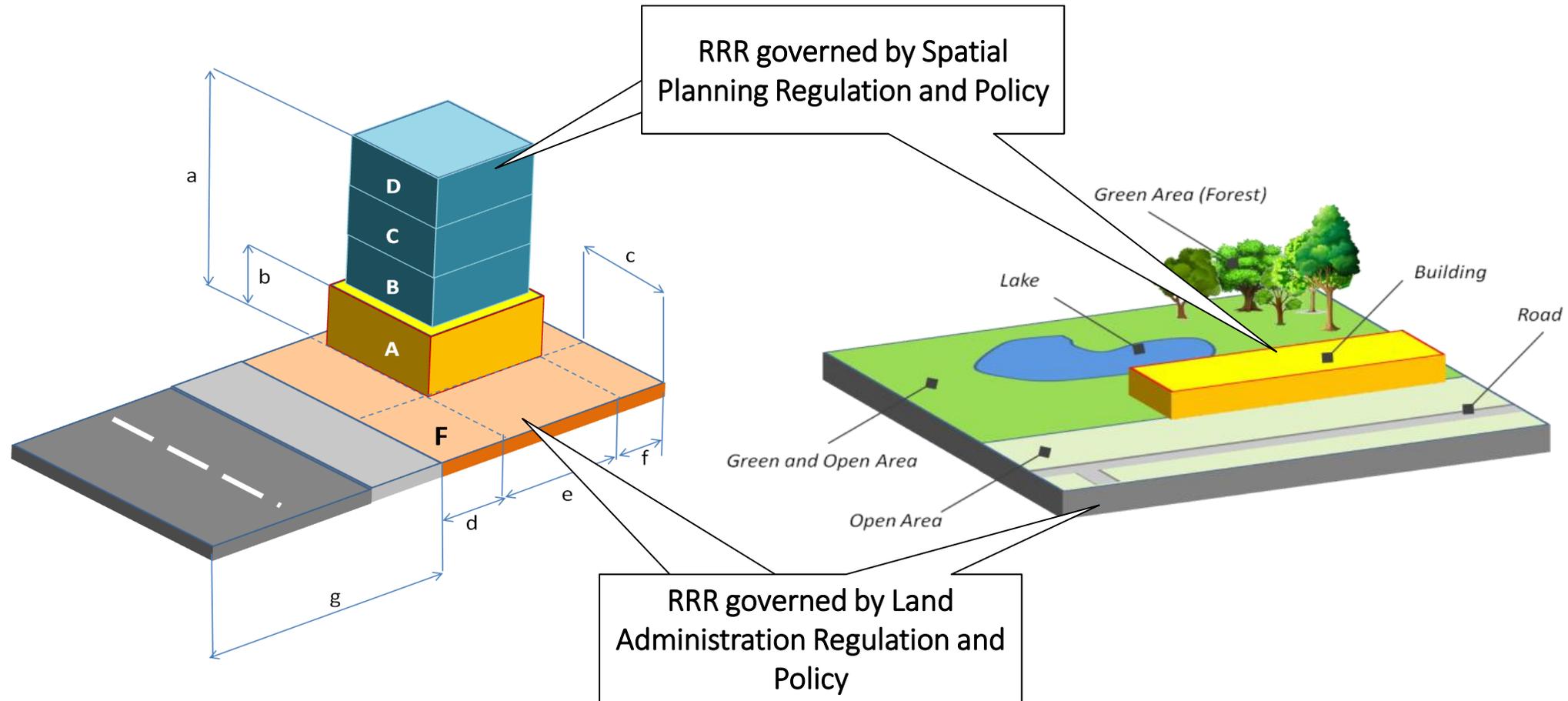
Source: Agung Indrajit

Land registry and planned land use information is today not yet integrated:

1. not based on same conceptual model
2. not possible to be used together



Spatial plan information as part of complete land administration



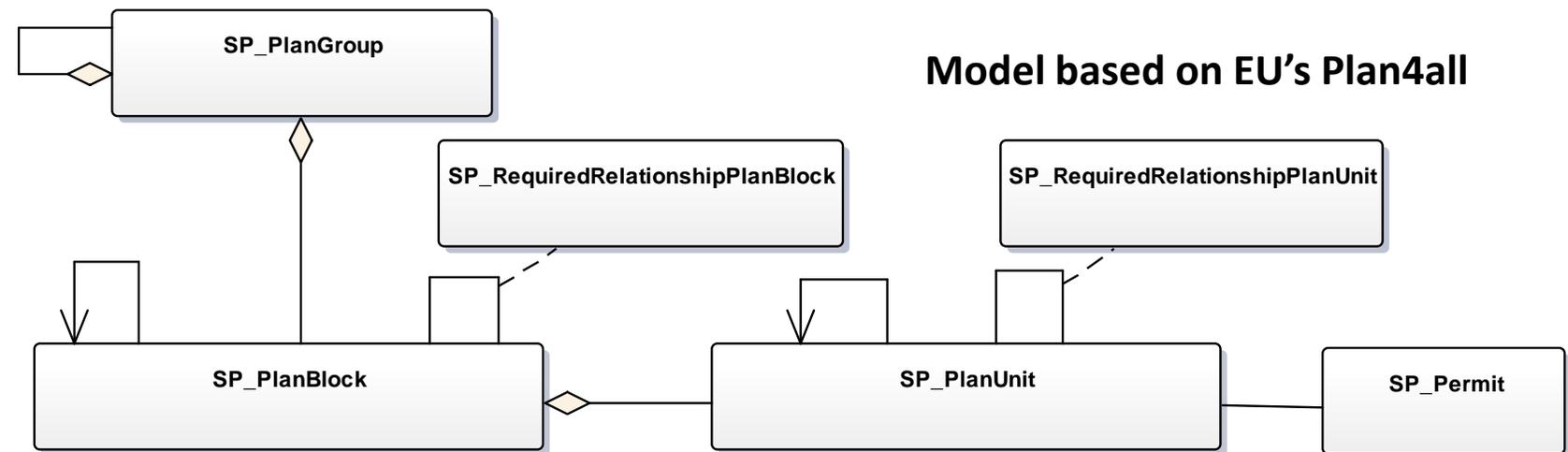
Spatial planning regulates total height of a building on a parcel

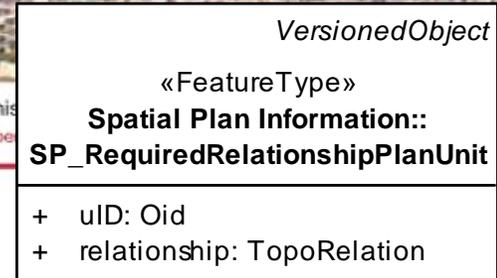
Spatial planning regulates ratio of the land use over an area

ISO 19152 LADM – Part 5: Spatial Plan Information

- RRRs from spatial plans additional package
- extension of core LADM, for all objects of spatial planning those covering land/water and below/on/above surfaces
- Four basic classes:

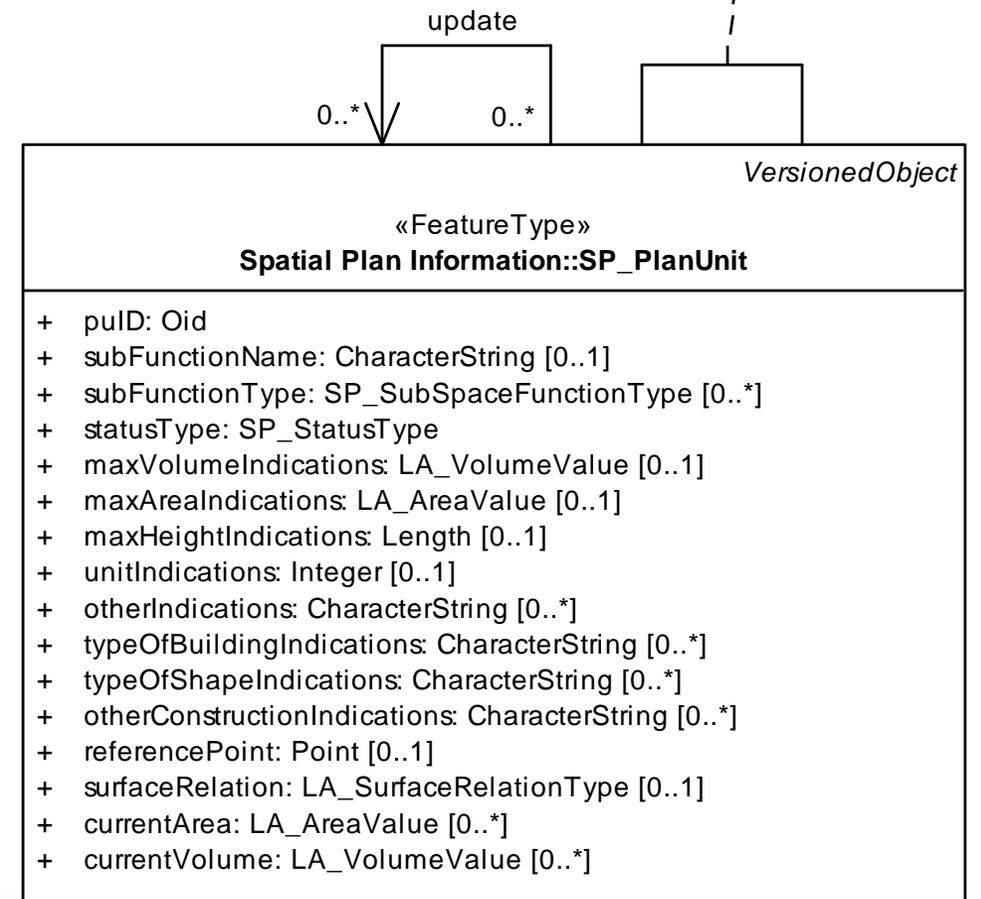
- plan unit
- plan group
- plan block
- permit





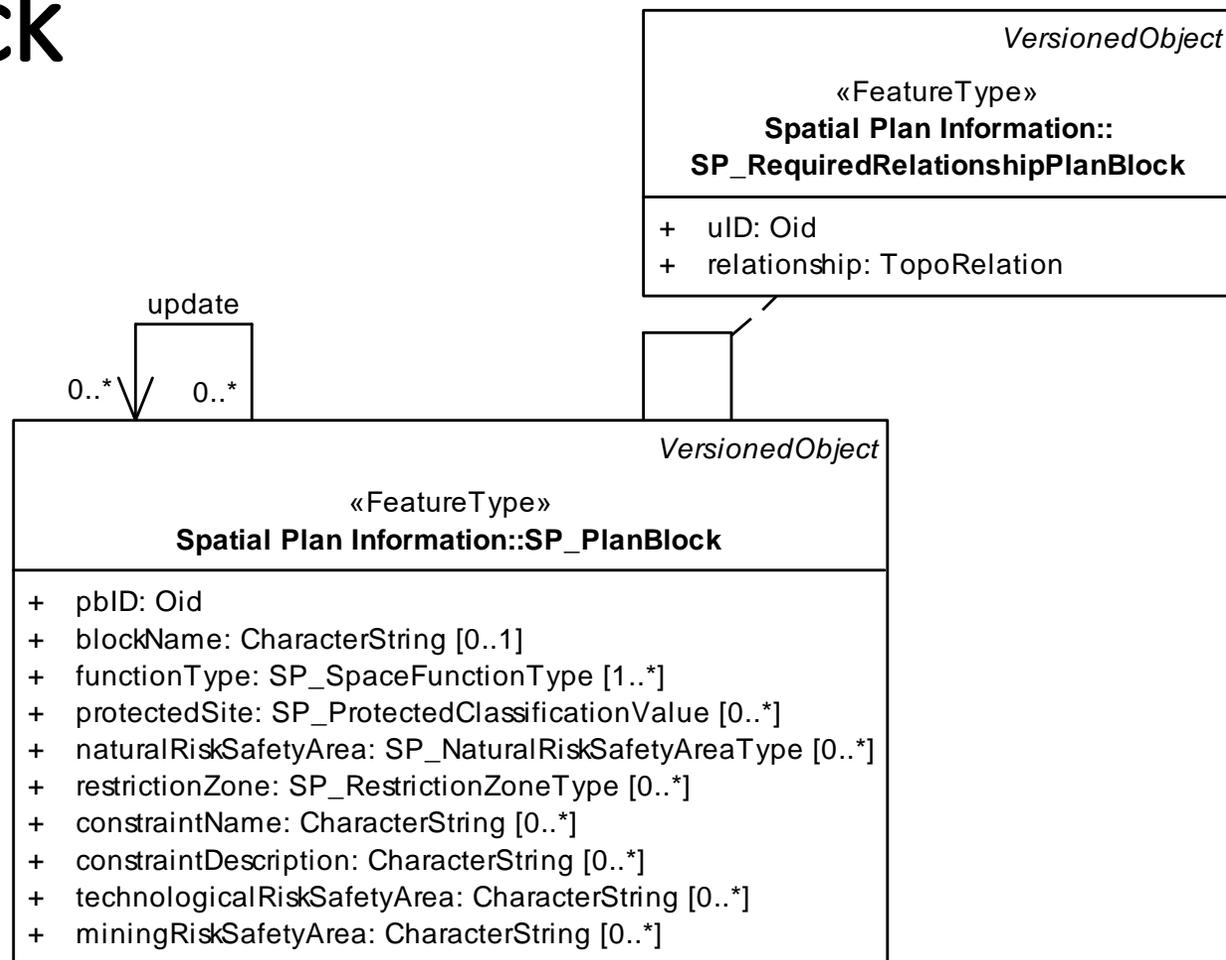
LADM Part 5 – SP_PlanUnit

- homogenous smallest area/space (2D/3D) with assigned function/purpose to represent the potential land use development
- spatial planning authorities at the highest detail, largest scale
- RRRs derived from spatial planning processes are based on an administrative source



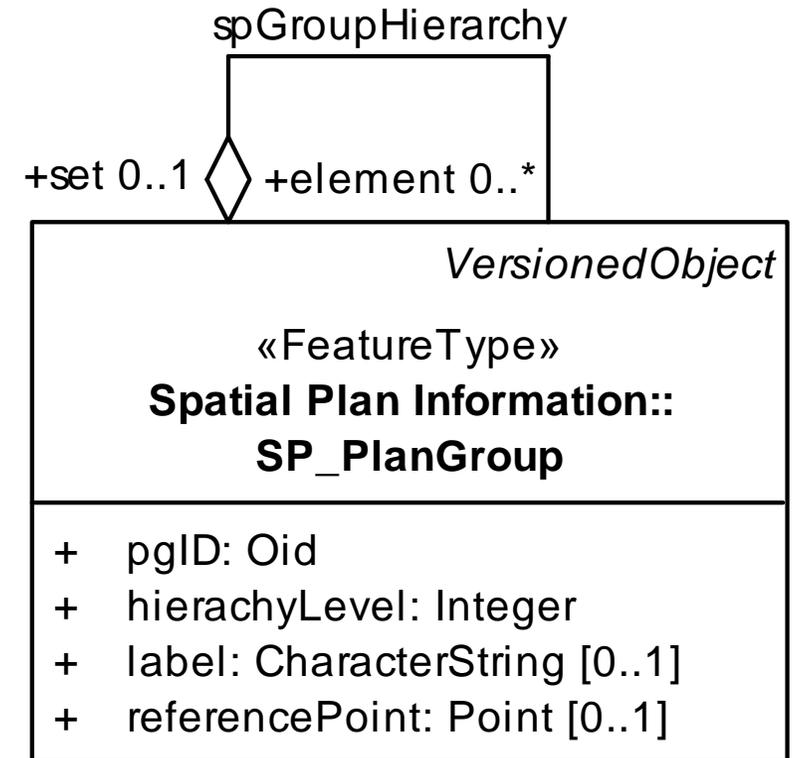
LADM Part 5 – SP_PlanBlock

- a set of neighbouring plan units decided/accepted by the spatial planning authorities, depicting the possible function in the future.
- SP_PlanBlock contains a recommendation, or an expected land use imposed on a spatial unit (or sub-spatial unit) accommodated in SP_PlanUnit



LADM Part 5 – SP_PlanGroup

- administrative hierarchy of spatial plan
- lower level plans (detailed and at large scales) are integrated with the intentions of higher level plans (less detail and at smaller scales)
- national level (national plans), regional level (regional plans), city level (urban/rural plans) and finally sub-city level (zoning plans)



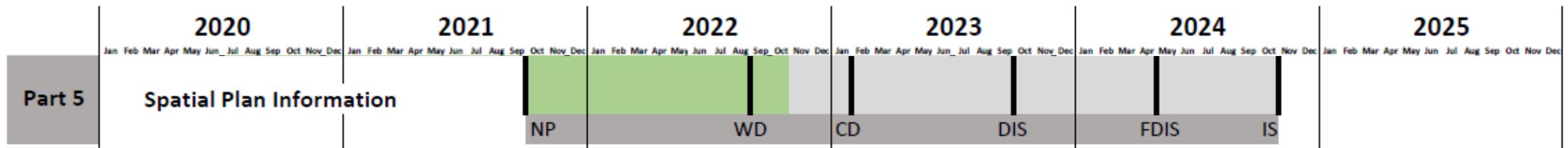
LADM Part 5 – SP_Permit

- explicit proof of a right (to do something) issued by authorities and granted to parties fitting within the relevant plan unit, that is, the object having the correct function for the requested location
- permit can be seen as an authorization issued by the authorities granted to parties in accordance with the plan unit

<i>VersionedObject</i>
«FeatureType»
Spatial Plan Information::SP_Permit
+ pID: Oid
+ typeOfPermit: SP_PermitType [0..*]
+ name: CharacterString [0..1]
+ description: CharacterString [0..1]
+ decisionDate: DateTime [0..1]
+ duration: CharacterString [0..*]
+ period: CharacterString [0..*]

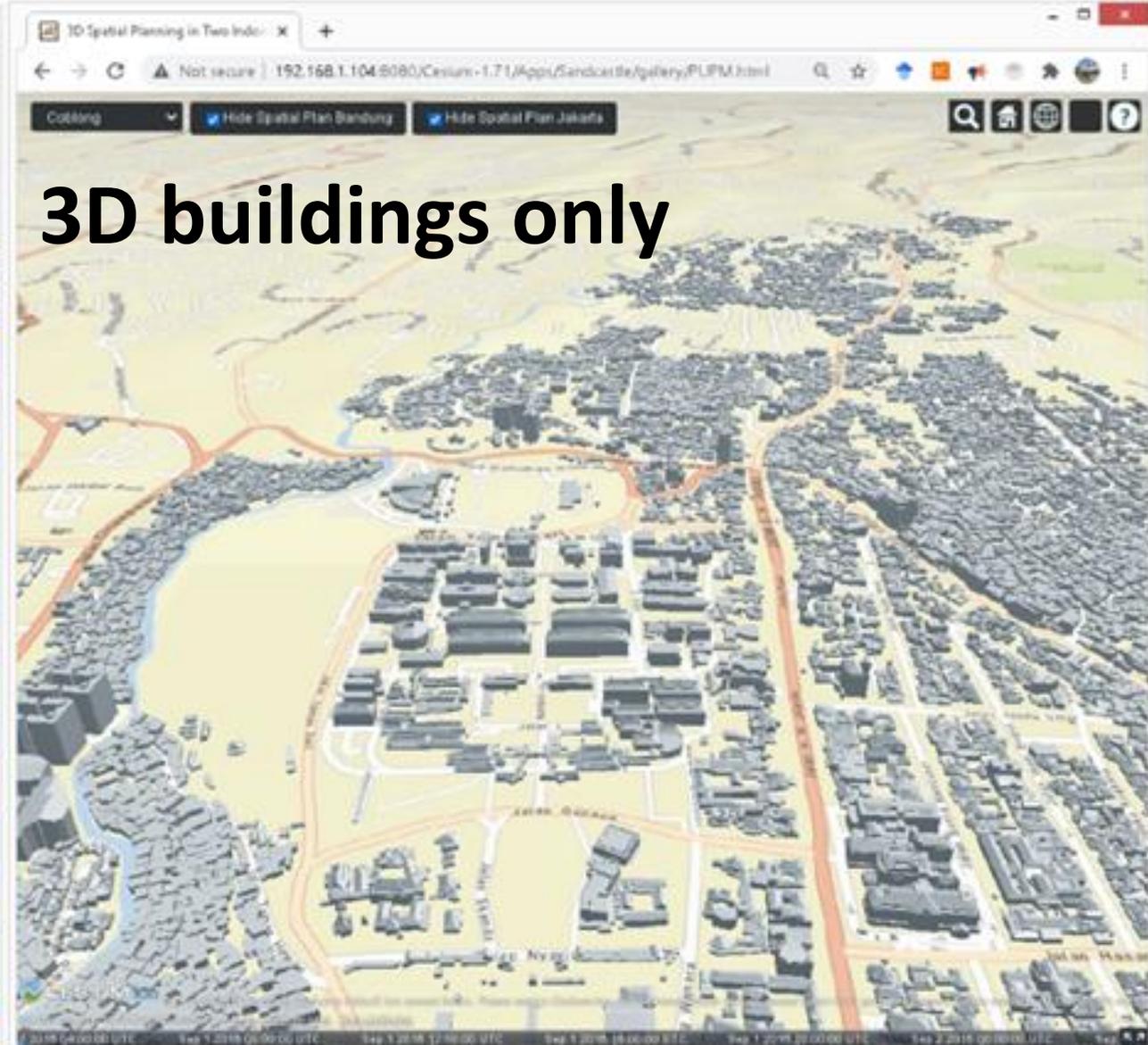
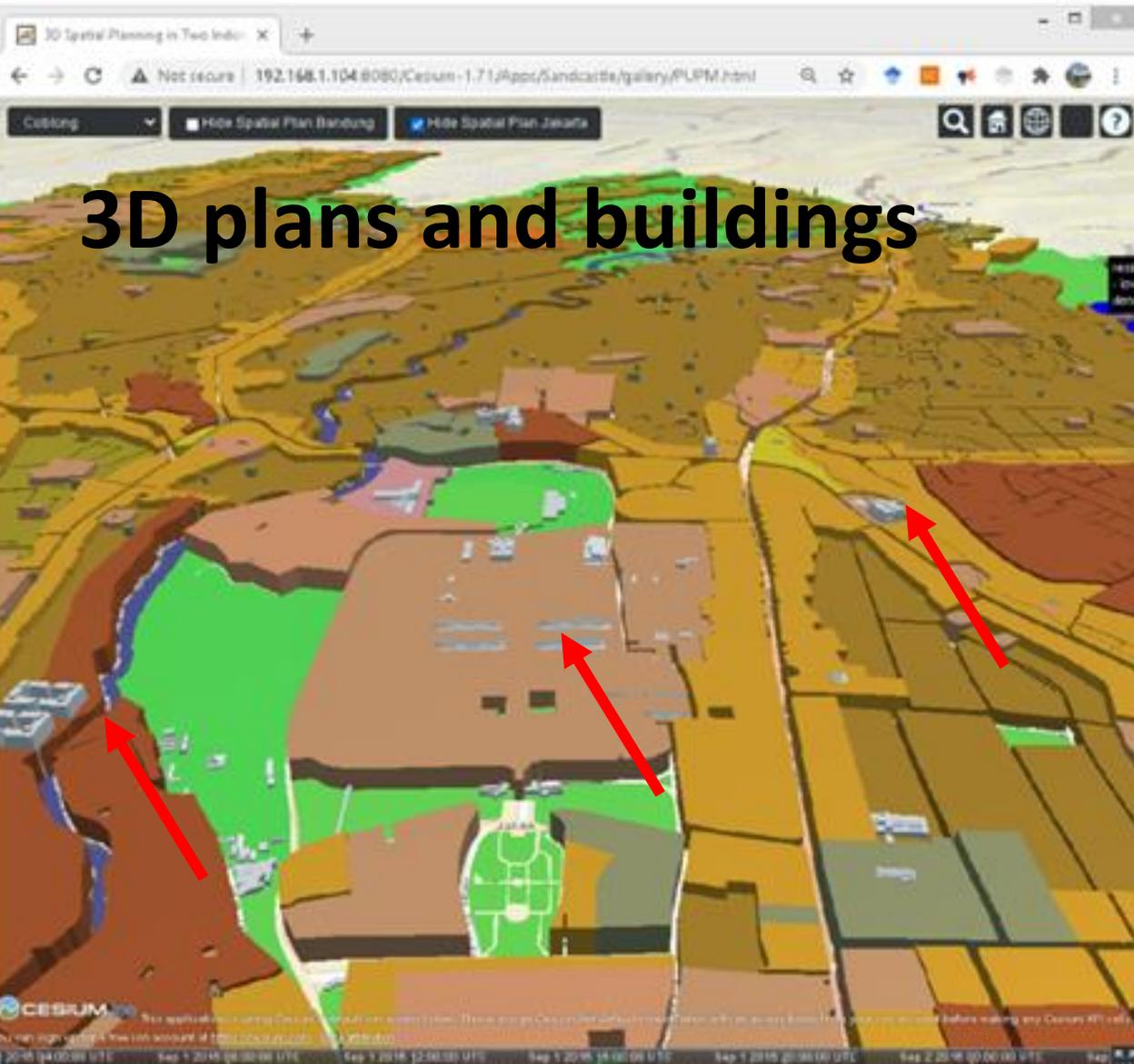
ISO 19152 LADM – Part 5: Spatial Plan Information

- The Project manager Christiaan Lemmen
- Countries contributing: Australia, Canada, China, Finland, France, Germany, New Zealand, Poland, South Africa, and US
- NWIP was reviewed during Sep-Oct 2022. Committee Draft (CD) have been prepared during last two months. The Part 5 CD is planned to be submitted for ballot voting soon.



Part 5 Implementation - 3D spatial plans (Agung Indrajit)

<http://pakhuis.tudelft.nl:8080/edu/cesium74/pupm/>

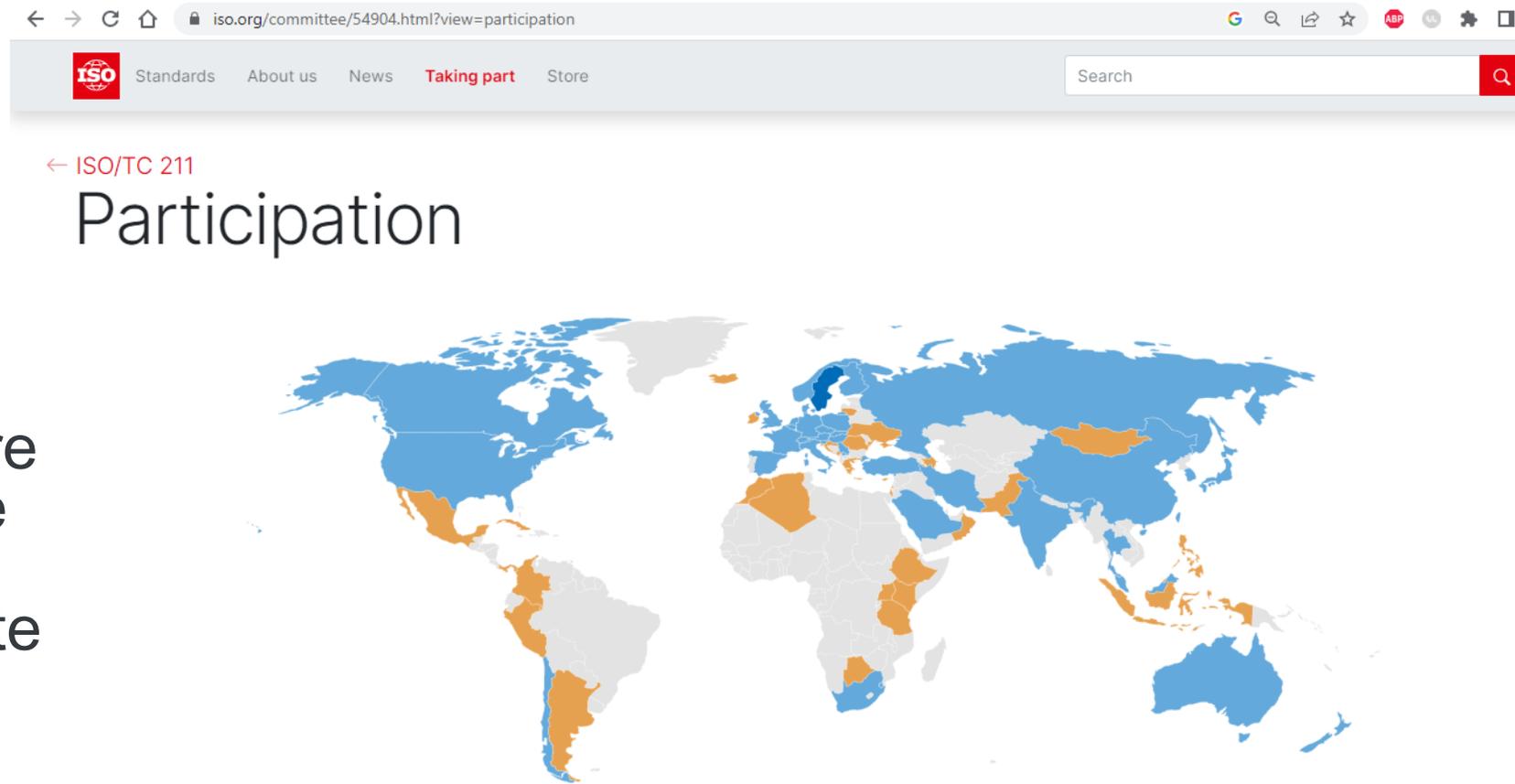


Requirement Statements for Part 5

- based on LADM core
- supports the planning hierarchy
- organizes plan units (zones) in plan block as accepted plans/time
- allows documenting explicitly the required relationships between the plan units
- provides extensible code list for the spatial (sub)functions of plan
- supports permit registration related to the relevant plan unit
- allows open dissemination and clear visualization (3D) plan information
- supports participatory plan monitoring

How to contribute

- Observing-members follow the work of a particular committee without committing themselves to active participation
- Participating members are required to play an active role in the work of a committee, as well as vote on all official committee ballots
- Or just contact us.



Source: ISO/TC 211, <https://committee.iso.org/sites/tc211/home/about/p--and-o-members.html>

Thank you!

Any question?



Code lists of Part 5

«CodeList» Spatial Plan Information:: SP_SpaceFunctionType	«CodeList» Spatial Plan Information:: SP_RestrictionZoneType	«CodeList» Spatial Plan Information:: SP_ProtectedClassificationValue	«CodeList» Spatial Plan Information:: SP_SubSpaceFunctionType
<ul style="list-style-type: none"> + protectedLocal + protectedWaterCatchment + protectedForest + protectedOpenGreenSpace + protectedNaturalReserveAndCulturalHeritage + protectedNaturalDisaster + protectedOther + cultivationHousing + cultivationMixed + cultivationTradeAndCommerce + cultivationOfficeSpace + cultivationPublicFacility + cultivationIndustry + cultivationResidential + cultivationSpecific + cultivationOther 	<ul style="list-style-type: none"> + dumpingSite + noiseRestrictionZone + prospectingAndMiningPermitArea + riverBasinDistrict + coastalZonesManagementArea + areasForTheDumpingOfWasteArea + regulatedFairwaysAtSeaOrLargeInlandWater + nitrateVulnerableZone + drinkingWaterSource 	<ul style="list-style-type: none"> + natureConservation + archaeological + cultural + ecological + landscape + environment + geological 	<ul style="list-style-type: none"> + apartment + serviceApartment + condominium + lowCostHousing + flat + shop + supermarket + retail + traditionalMarket + workshop + office + education + culture + factory + healthService + parking
	«CodeList» Spatial Plan Information:: SP_StatusType <ul style="list-style-type: none"> + inUse + outOfUse + planned 	«CodeList» Spatial Plan Information:: SP_PermitType <ul style="list-style-type: none"> + conditional + allowed + restricted 	«CodeList» Spatial Plan Information:: SP_NaturalRiskSafetyAreaType <ul style="list-style-type: none"> + floodInundationRiskZone + stormRiskZone + droughtRiskZone + avalancheRiskZone + volcanicActivityRiskZone + earthMovementRiskZone + otherHazardRiskZone