Code list management supported through a domain vocabulary

The Cadastre and Land Administration Thesaurus (CaLAThe)

HC Gruler, Erik Stubkjær, Volkan Çağdaş, Scott Simmons

LADM 2019 workshop, Kuala Lumpur, Malaysia

02. October 2019

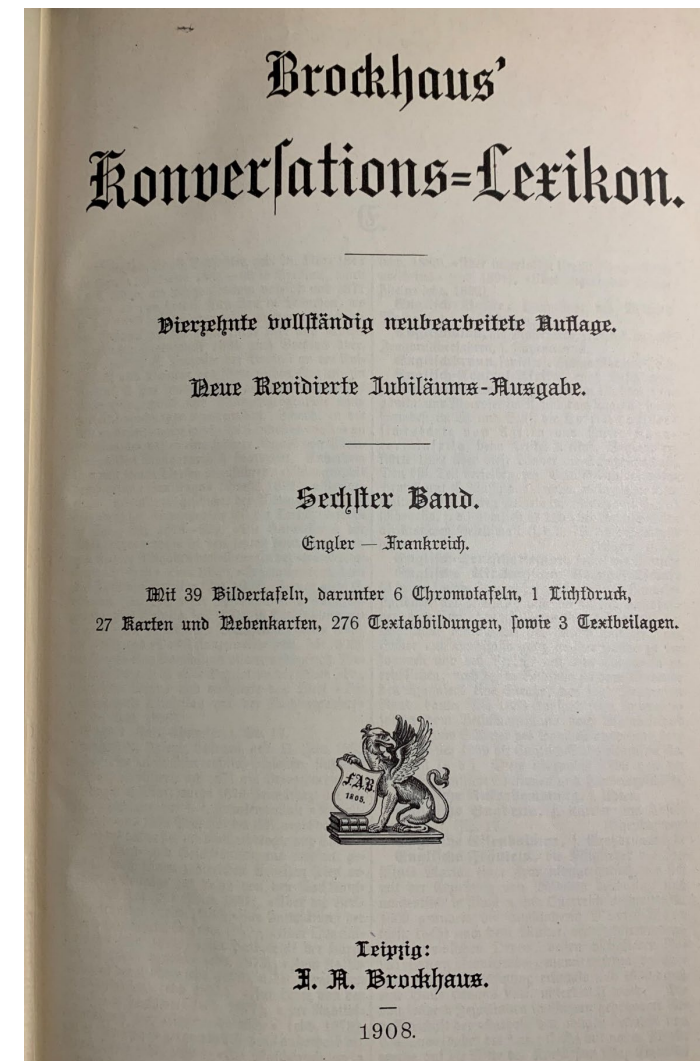**OGC**®
Making location count.

CaLAThe – Overview

- CaLAThe: Introduction and history
- CaLAThe: Structure and development
- CaLAThe: SKOS compliant and available
- Code lists and the alignment of standards
- CaLAThe: Tool for identification of semantic mess
- Code lists can be integrated in CaLAThe. Prof of concept succeeded
- Summary: Alignment of standards, also beyond Land administration

Links:

- CaLAThe: http://www.cadastralvocabulary.org/
- SKOS Play: http://labs.sparna.fr/skos-play/upload
- Code lists in CaLAThe: CodeListTest2008.rdf
- Basel Register of Thesauri, … (BARTOC) https://bartoc-skosmos.unibas.ch/en/
- Background files: http://people.plan.aau.dk/~est/OGC/NAtelecon2019/index.html
- Kumar et al, 2019: https://link.springer.com/article/10.1186/s40965-019-0065-z

Brockhaus'
Konversations-Lexikon.

Vierzehnte vollständig neubearbeitete Auflage.

Neue Revidierte Jubiläums-Ausgabe.

Sechster Band.

Engler — Frankreich.

Mit 39 Bildertafeln, darunter 6 Chromotafeln, 1 Lichtdruck,
27 Karten und Nebenkarten, 276 Textabbildungen, sowie 3 Textbeilagen.

Leipzig:
F. A. Brockhaus.
1908.

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Authors & Publications

Erik Stubkjær:

Professor 1977-2008 Cadastre, Land law (https://vbn.aau.dk/en/persons/110612)
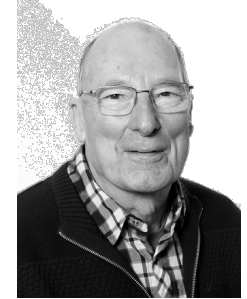
Volkan Çağdaş:

Assoc. Prof. 2014- , Cadastre and Land admin. (https://avesis.yildiz.edu.tr/volkan)

- 2010: Domain Thesaurus for Spatial Data Infrastructures? Cf. EU's INSPIRE
- 2011: Cadastre and Land Administration Thesaurus (CaLAThe) issued
- 2015: Core immovable property vocabulary for European linked land administration, SurveyReview
- 2015: A SKOS vocabulary for Linked Land Administration: Cadastre and Land Administration Thesaurus, LUP
- et al 2018: International Code List Management – The Case of Land Administration, FIG LADM Workshop

SKOS Simple Knowledge Organization System

SKOS is an area of work developing specifications and standards to support the use of knowledge organization systems (KOS) such as thesauri, classification schemes, subject heading systems and taxonomies within the framework of the Semantic Web.

SKOS provides a standard way to represent knowledge organization systems using the Resource Description Framework (RDF)

• CaLaThe + Codelists – structured with two SKOS Concept Schemes

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CaLAThe – Structure and development

- **Technology**: CaLAThe is presently based on a dedicated web server, drawing SKOS-structured content from a MySQL database by means of php code. GraphViz visualization software show term relations.

- **Content**: Land, Law, Documentation, Party, Activity

- **Versions**

  - 1. 2010 Based on draft LADM; some definitions; references to large thesauri: AGROVOC , GEMET (Environment), INSPIRE, STW Thesaurus for Economics

  - 2. 2012 Added procedures / activities (and some INSPIRE)

  - 3. 2019 Included most of part of LandInfra Part 7. ~ 200 terms

  - 4. 2019 Q4- with code lists and more definitions from LandInfra Part 6 Surveying

Code lists & alignment of standards

Domain of cadastre and land administration:

- ISO 19152:2012 Land Administration Domain Model (LADM)
- OGC LandInfra, 2016; - InfraGML, 2017

Standards basically specifies classes and the relations among them. The richness of variations of the domain calls for code lists as a supplement.

Code lists are flexible, negotiable; hence potential for cooperation on use and development of standards
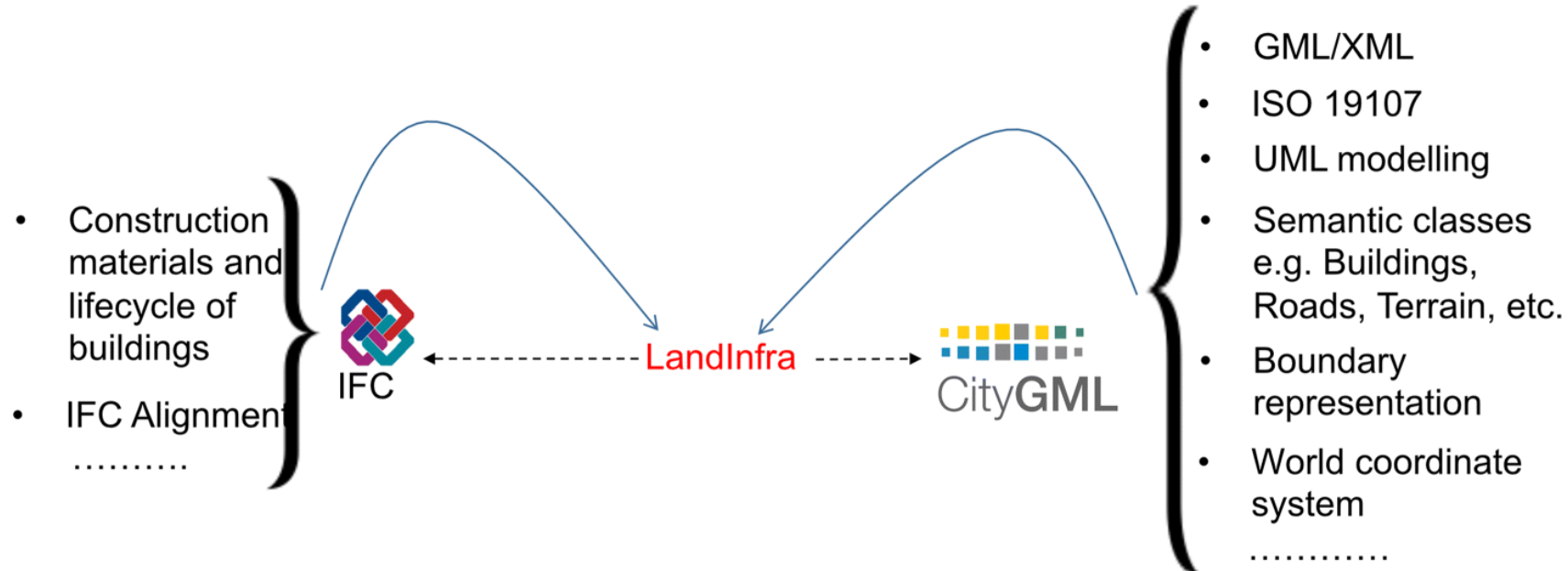
A domain thesaurus with code lists: Tool for cooperation

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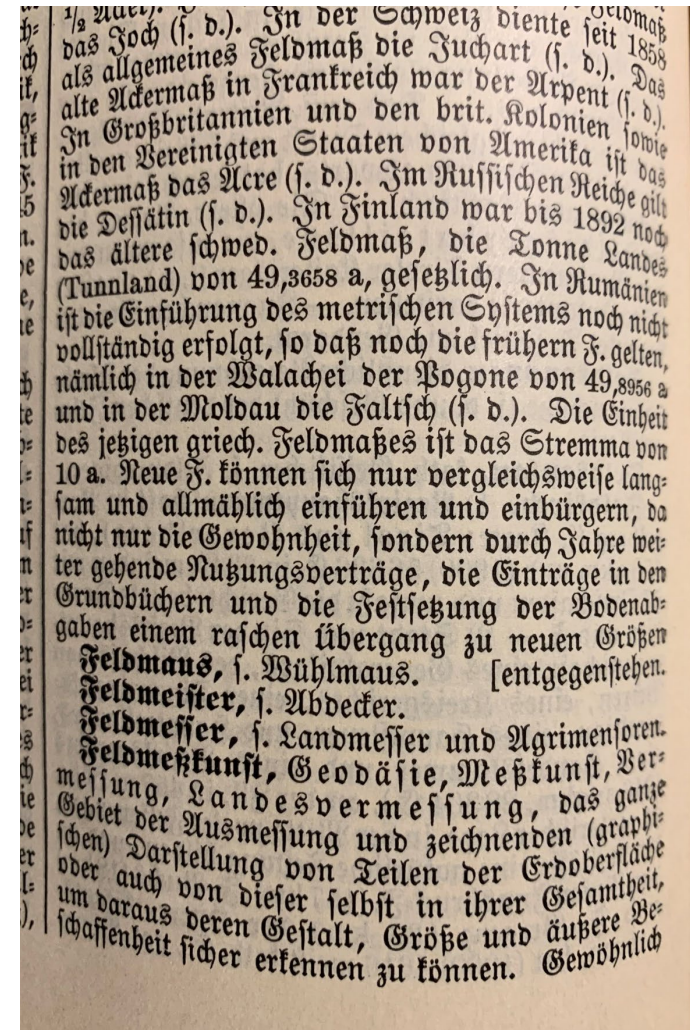
LADM in BIM and GIS Lifecycle

GIS

BIM

Regulation & Permitting

Register & Admin

GIS Data

Preliminary Design & Plan

Detailed Design

Preconstruction

Operation

Monitoring & Maintain

BIM Data

Documentation

Construction

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Where does LADM fit in?

LandInfra a connecting bridge between IFC and CityGML, but is conceptually, semantically, and geometrically closer to CityGML

LandInfra / InfraGML

http://www.opengeospatial.org/standards/landinfra
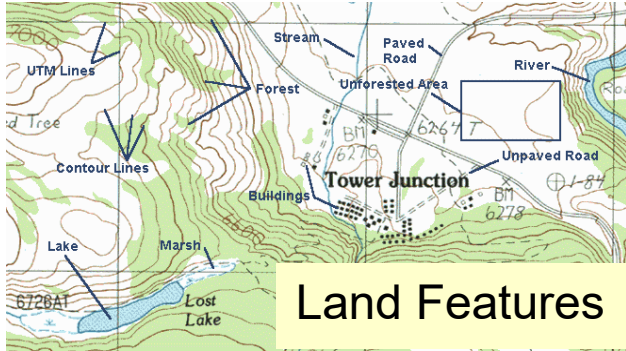
Facilities

Projects

Land Features
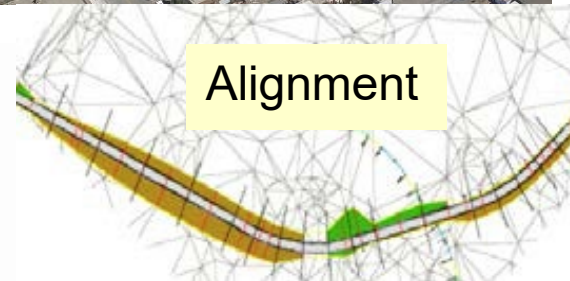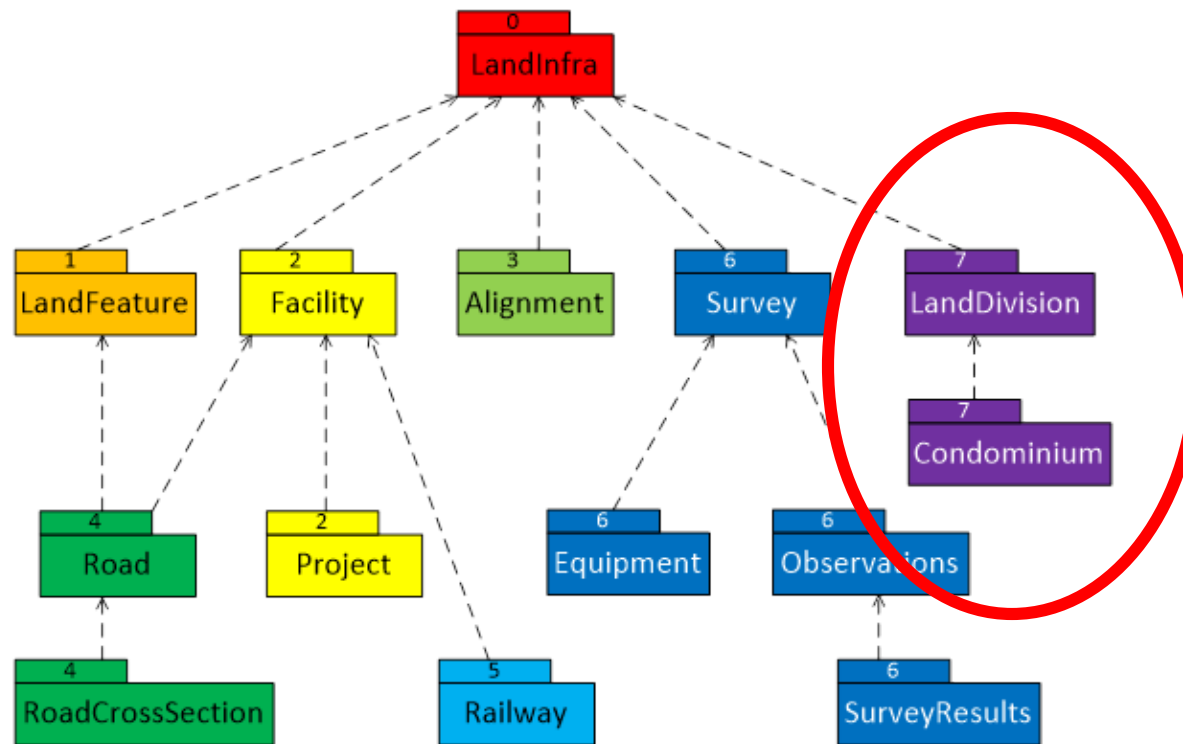
Alignment
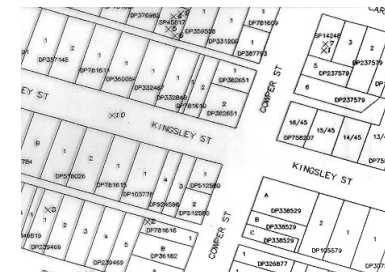
Land Division

Core

Roads

Condominiums

Railway

Survey

LandInfra / InfraGML Structure

- Split in 7 Parts (containing all 14 InfraGML Requirement Classes matching LandInfra RCs)
- Each part have its own (standard) document
- Encoding & Application could choose which parts it will support (with involving dependencies)

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CaLAThe – Graphical overview

Cadastre and Land Administration Thesaurus (CaLAThe)

Introduction

This web site presents a Knowledge Organization System in terms of a thesaurus for the domain of cadastre and land administration. The main purpose is to create a semantic model, a controlled vocabulary, which may improve organization of knowledge, e.g. in terms of a formal ontology of all or parts of the domain. The *Cadastre and Land Administration Thesaurus*, in short CaLAThe, could also be used for information retrieval (i.e. tagging articles, projects) and for development or improvement of teaching material, especially in the context of e-learning. CaLAThe is encoded as a Simple Knowledge Organization System (SKOS), according to specifications developed by the World Wide Web Consortium (W3C). The SKOS representation of CaLAThe is available on request.

The term *Cadastre* is related to Venetian (1185) catastico ("list of citizens possessing a taxable property"), which through 18th century French developments was adopted into English meaning 1. a public survey of land for the purpose of taxation, and 2. a register of such surveys, showing details of ownership and value. The term *Land Administration* appears in a 1973 Seminar on Land Administration in Kuala Lumpur, Malaysia [1]. The UN/ECE in 1996 published *Land Administration Guidelines* with special reference to countries in transition, and authors of a textbook on Land Information Management in 1999 issued a renewed version with the title *Land Administration* [2].

Scientific reflection of this domain resulted in 2002 in a proposal for the development of a standardized *Cadastral Core Domain Model* based on the geographic standards from ISO and OpenGIS (from 2004: Open Geospatial Consortium, OGC) and to be developed in cooperation with the International Federation of Surveyors, FIG [3,4]. The proposal was through further developments finally approved as the ISO 19152:2012 *Land Administration Domain Model* (LADM). The draft LADM standard made the base for preparation of the initial version of CaLAThe, which was related also to existing thesauri, primarily the GEMET thesaurus, the AGROVOC thesaurus, and the STW Thesaurus for Economics, and issued September 2011.

The user can access the thesaurus through term search as well as an alphabetical listing, and through graphical overviews, which render the main groups: Activity, Documentation, Land, Law, and Party, respectively, in addition to graphical rendering of all thesaurus term relations. Finally, the development of CaLAThe is outlined in Version overviews.

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CaLAThe – Graphical overview

- **Cadastre and Land Administration Thesaurus (CaLAThe)**
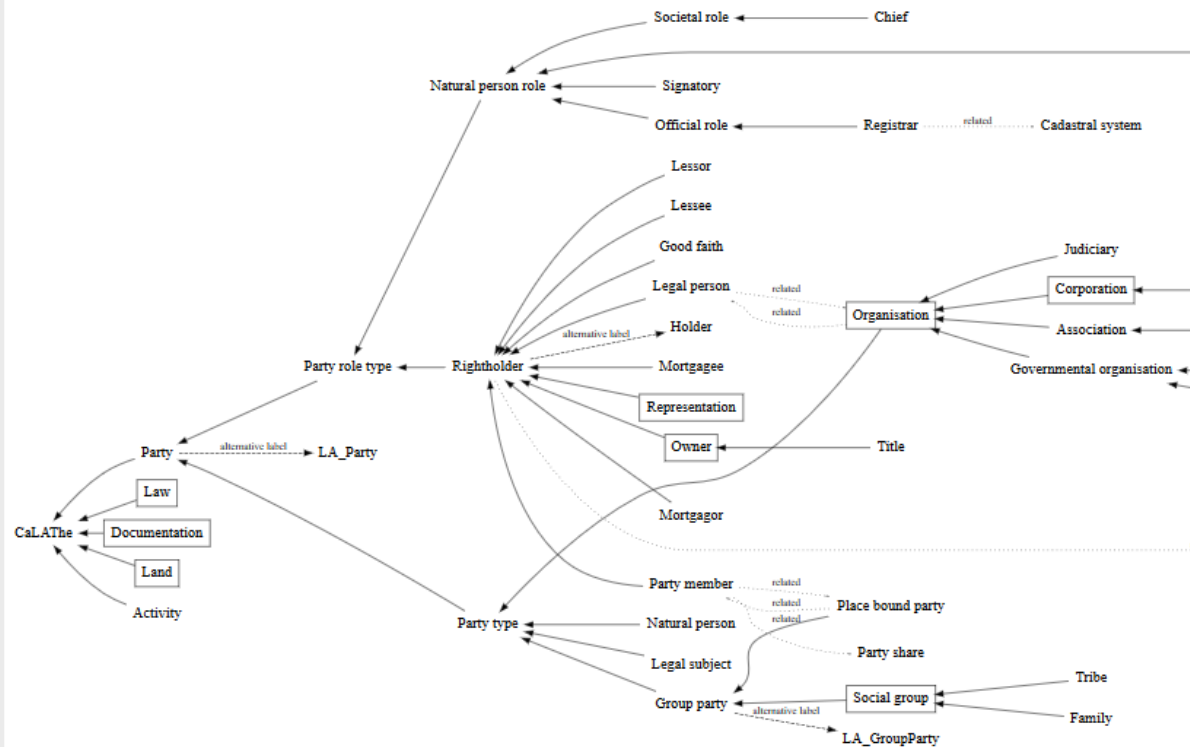
Ownership

Alternative label:
Freehold
Private ownership

Broader terms:
Real right

Narrower terms:
Individual ownership
Public ownership
Co-ownership
Adverse possession

Related terms:

Definition:
Collection of rights to use and enjoy property, including right to transmit it to others. The complete dominion, title, or proprietary right in a thing or claim (Source: Black, 1991). Possessive relationship with a title established between an owner and their property (Source: Legal Dictionary of Property in Canada - Dualjuridik). Includes the right to grant a lease, an easement, or a security interest and other lesser rights. Ownership in land includes buildings and fixture on the land parcel, unless lawful process is performed in terms of establishment of condominium units (Source: OGC LandInfra, 4.8.13)
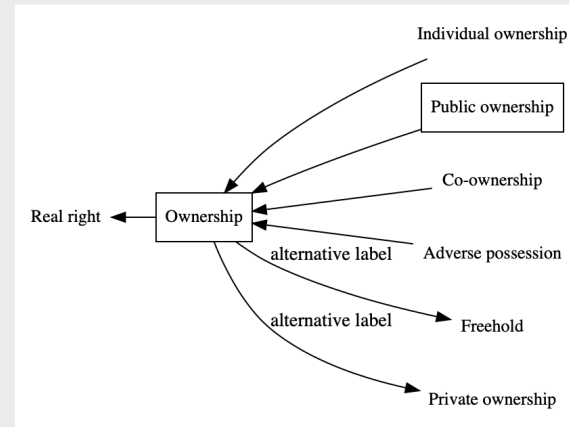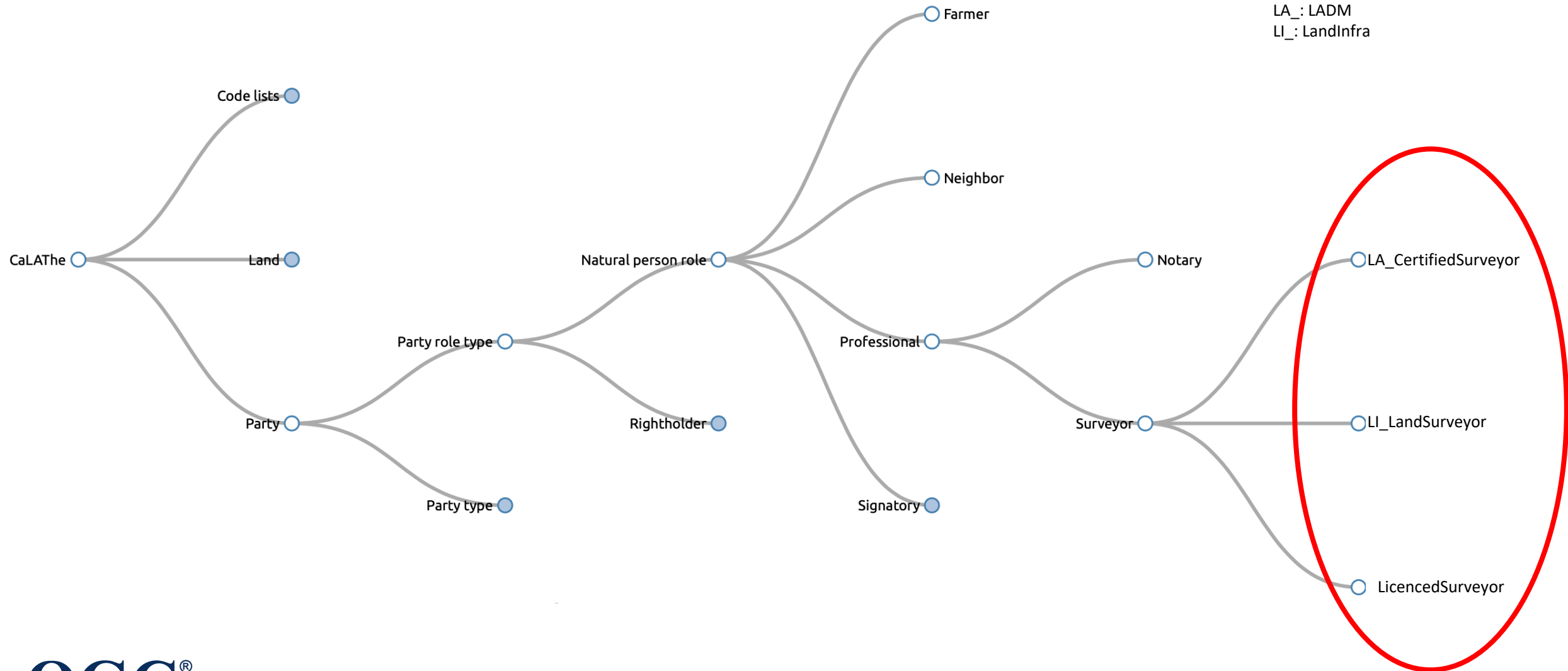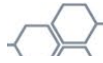
Scope Note:
GEMET term

Identifier:
http://www.cadastralvocabulary.org/CaLAThe/Ownership

Exact match:
http://www.eionet.europa.eu/gemet/concept/5971 http://aims.fao.org/aos/agrovoc/c_5466

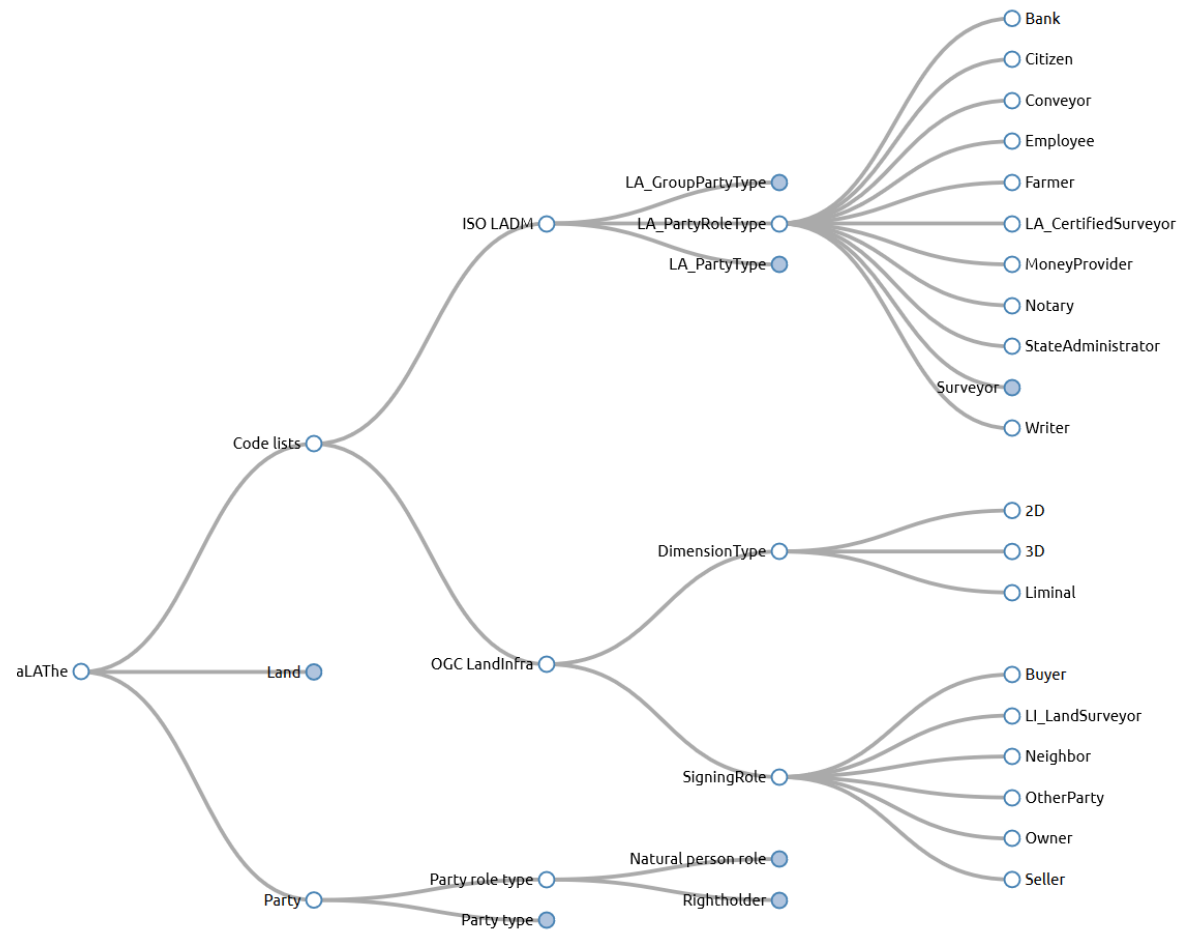# CaLAThe – Tool for alignment of standards (v4_draft)

LA_: LADM
LI_: LandInfra

Code lists

CaLAThe — Land

Party role type

Party

Party type

Farmer

Neighbor

Natural person role

Rightholder

Professional

Signatory

Notary

Surveyor
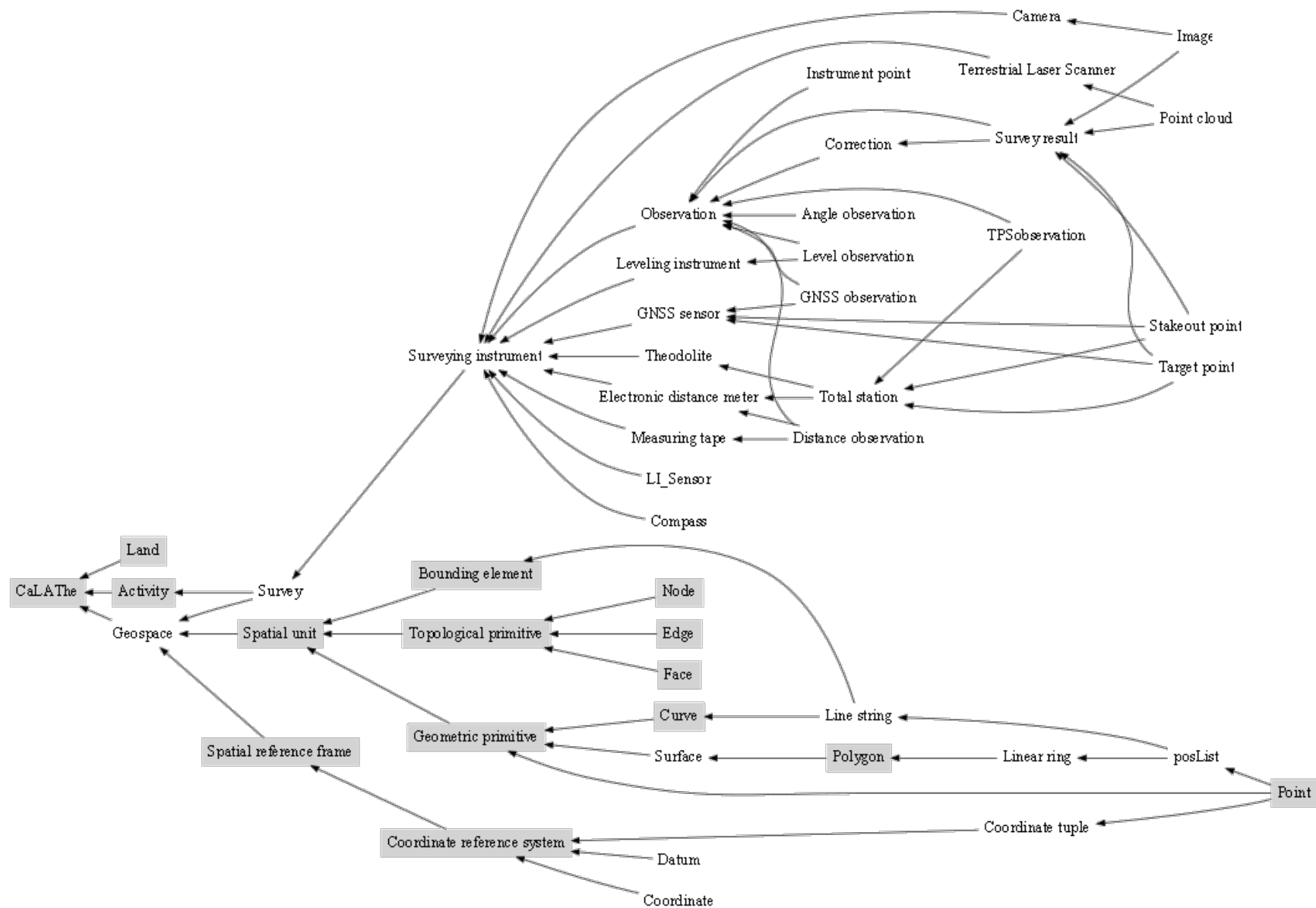
LA_CertifiedSurveyor

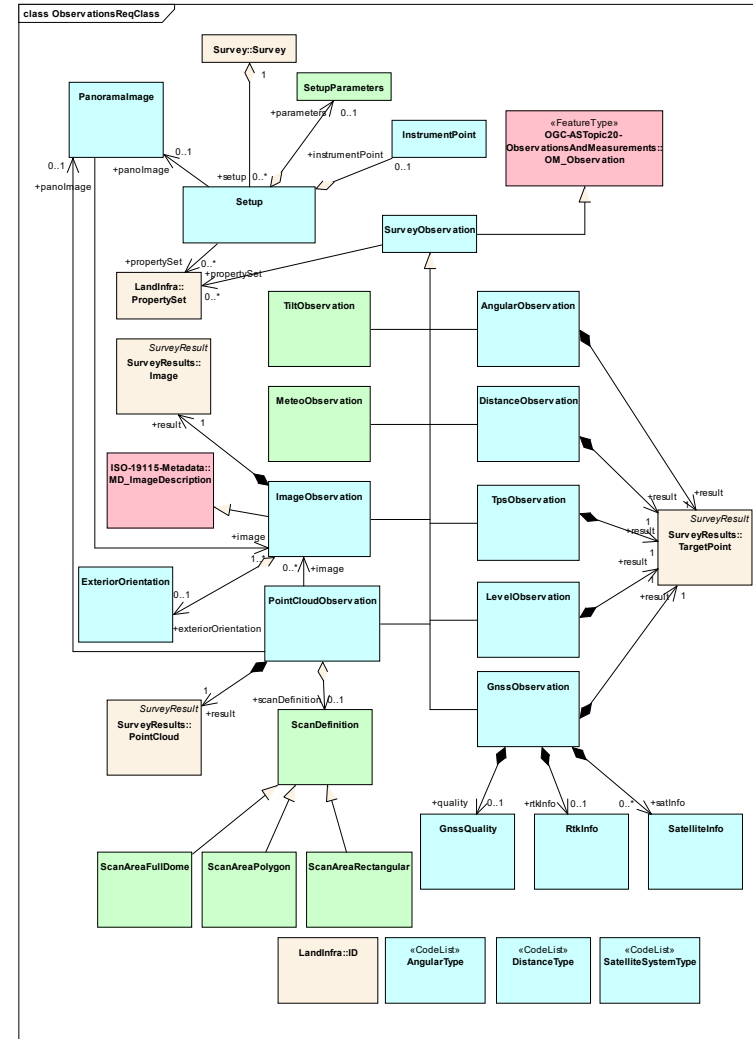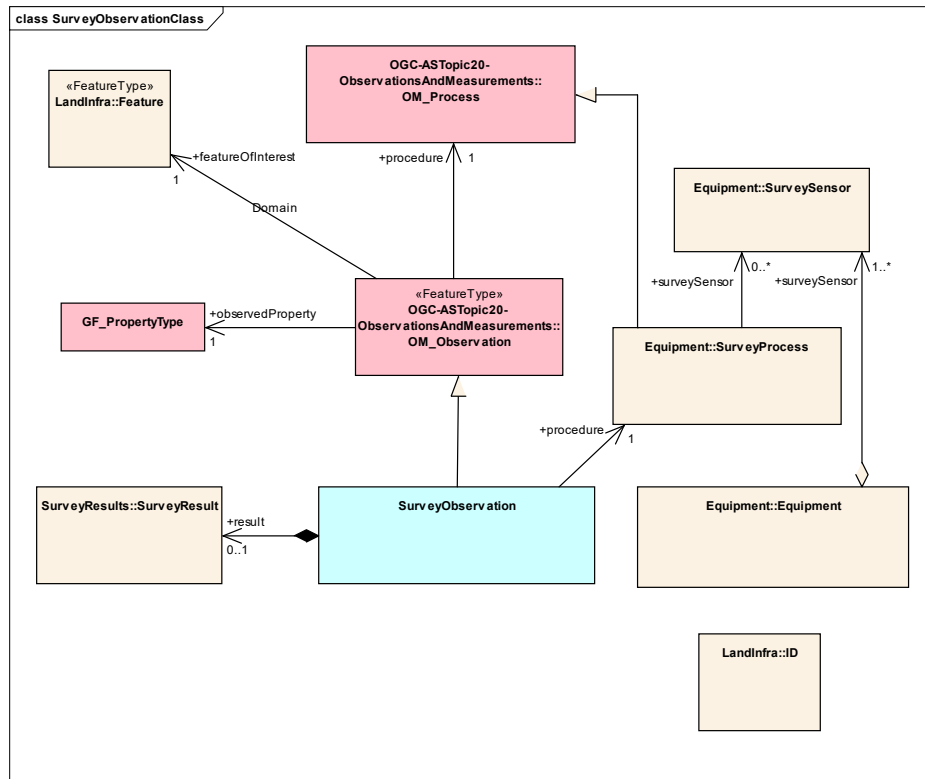LI_LandSurveyor

LicencedSurveyor
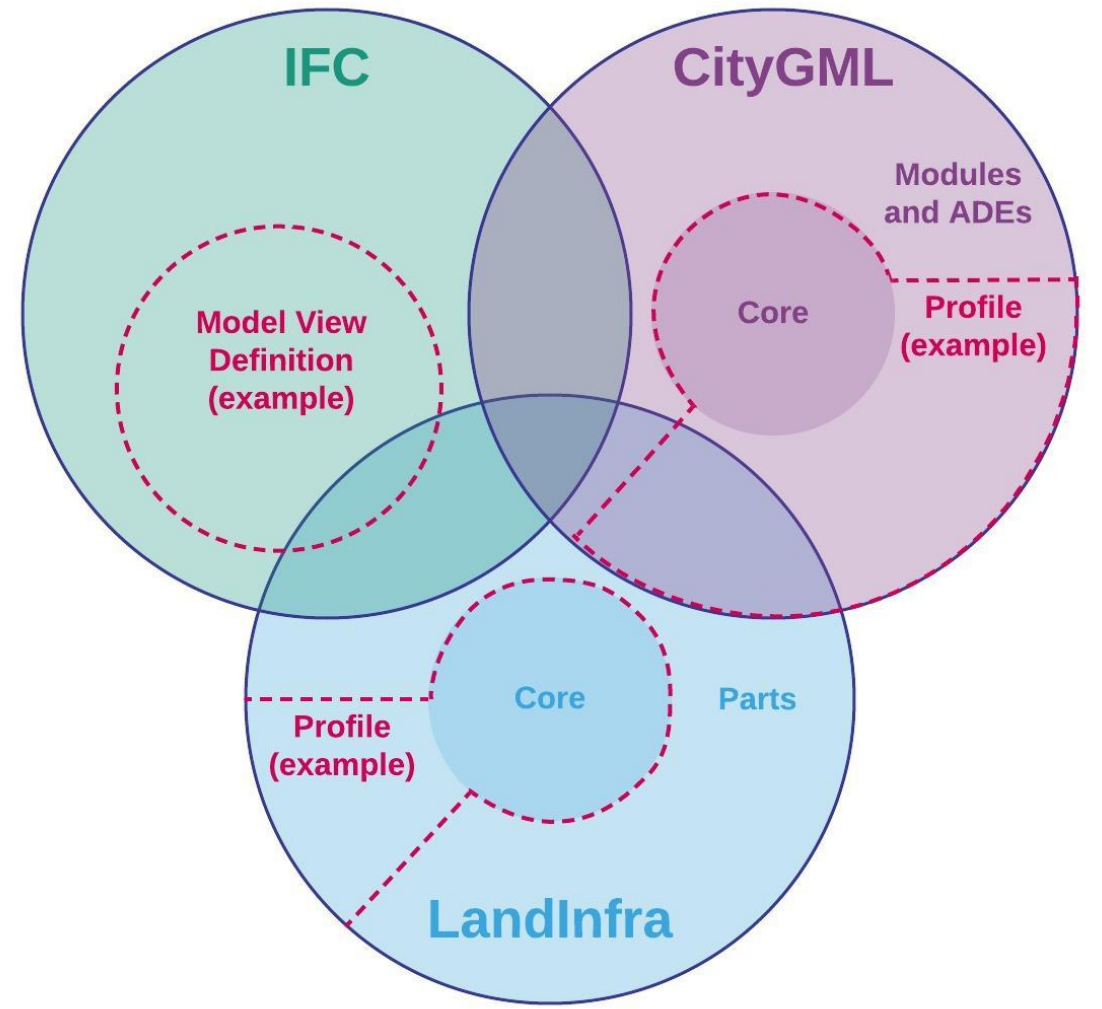
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CaLAThe excerpt – Code lists are integrated
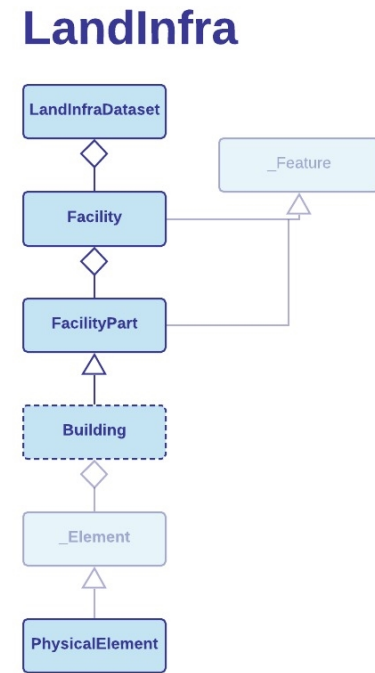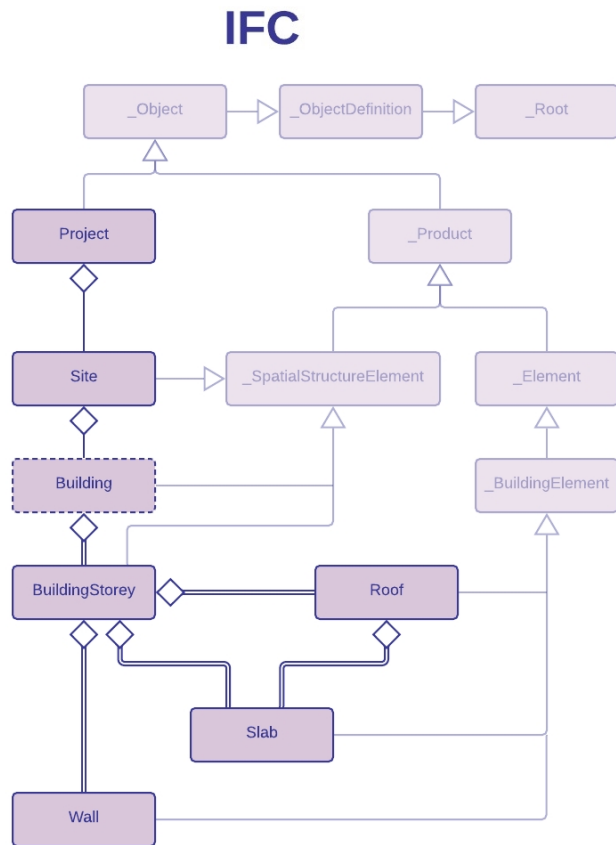
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CaLAThe V4 – Survey more fully covered
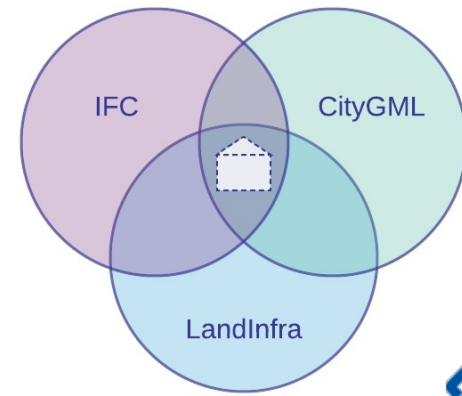
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LandInfra Survey UML Representation

Interoperability needs alligment of Standards (Example BIM)

IFC   CityGML   LandInfra

IFC   CityGML

Model View Definition (example)

Modules and ADEs

Core

Profile (example)

Core   Parts

Profile (example)

LandInfra

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International home of openBIM®

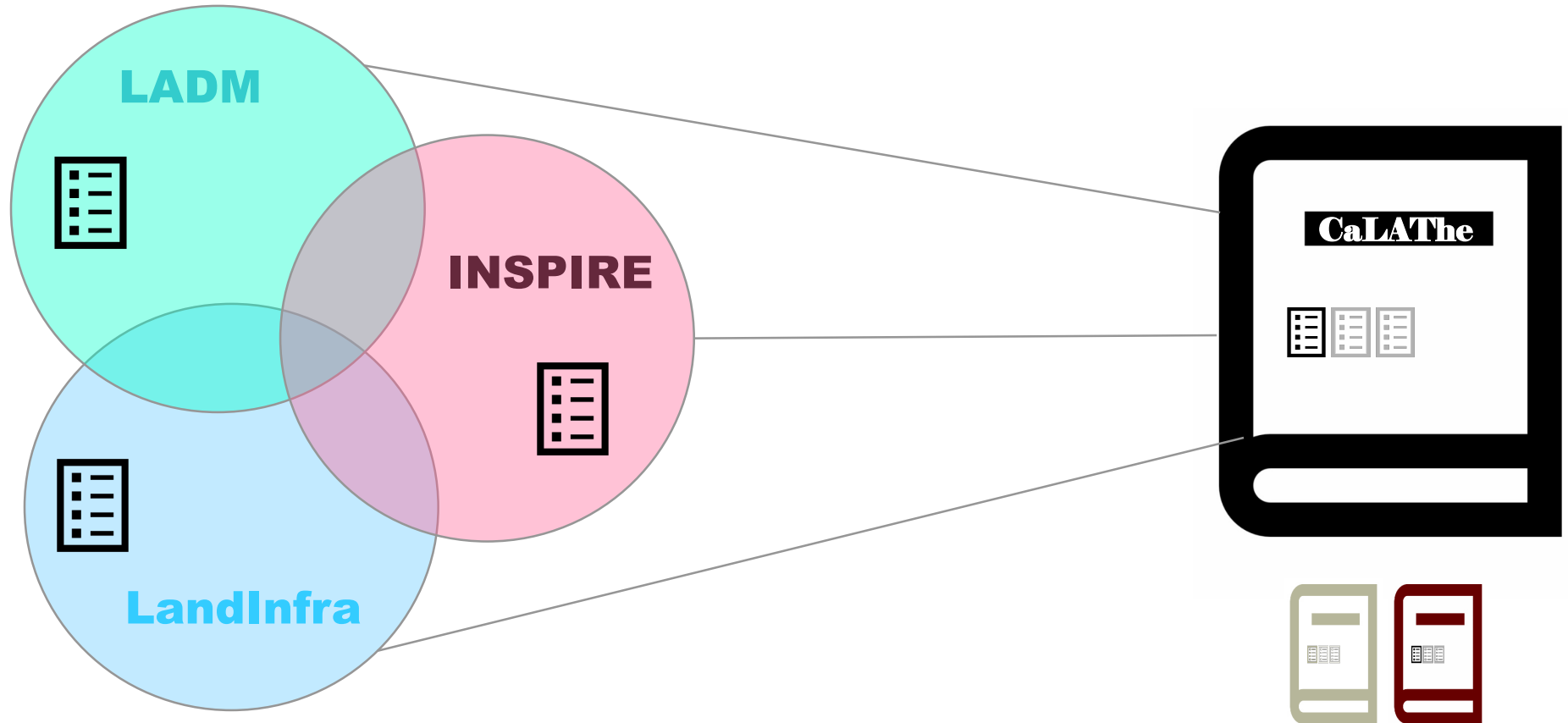# Interoperability needs alligment of Standards (Example BIM)
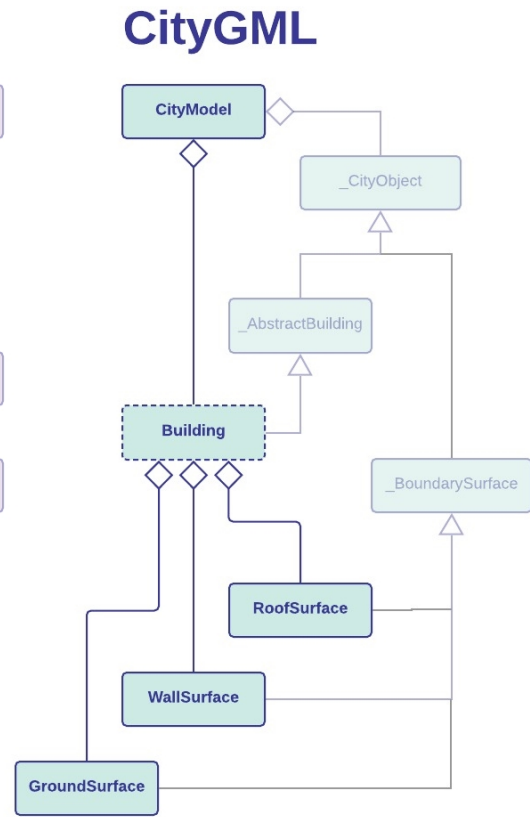
IDBE – OGC/bSI Collaboration WG
(Integrated Digital Built Environment)

New Collaboration strategy and MOU launched in 2-day Workshop in Nov 2016

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CaLAThe: A Tool for Alignment of Standards

LADM

INSPIRE

LandInfra

CaLAThe

Summary

- Interoperablity is needed in LandAdministration Domain that request alignment of standards

- CaLAThe: Tool for the alignment of ISO LADM & OGC LandInfra and will be hosted by OGC end 2019

- BIM interoperability example provides a good solution and should also be applied in the LADM domain.

- Working party similar to the IDBE Colloberation Group should be established

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