



Lessons learned from the creation of the LADM based country profiles

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LADM based country profiles

- **Creation:**

- Is documentation of the existing cadastral data model available (known) to public or academia?
- Should anybody from the national mapping agency be involved in the process of the creation of the profile?
- In which way the LADM based profile (for given country) was created?
- Does LADM based profile describe the current or future situation?

LADM based country profiles

- **Dissemination:**

- How has the LADM based country profile been promoted to the bodies responsible for the cadastral system development?
- Has the LADM based country profile already been applied in the production environment in given country or is going to be applied in the near future, e.g. in the next five years?

Approach

- The four national case studies (Croatia, Czech Republic, Poland and Serbia) were explored in detail.
- The authors of the selected LADM based country profiles were personally involved in this research and contributed with their experience.
- Based on the shared common experience the conclusions regarding the development of LADM based country profiles and their further application are given.

Three ways to develop LADM based country profile

1. To use LADM classes, attributes, codelists and relationships between classes “as is”.
2. To show an inherited structure between the LADM and the existing cadastral model.
3. To show a mapping of elements between LADM and the existing cadastral model.

Development of LADM profile is common work

- To fully understand the international standard like ISO 19152 LADM requires not only the technical knowledge but also deep knowledge of the domain of cadastre.
- As the data model of the cadastre is not always available to public (inc. academia), the experience of professionals who utilize the cadastre on a day-to-day basis is necessary.
- Therefore a team consisting of members from various sectors (academia, government, industry) could work very well.

Reverse engineering applied

- The first step in creation of the LADM based country profile is to describe the existing physical data model (tables, attributes, code lists, relationships), the existing cadastral data structures are formulated in UML.
- For countries with the well-developed cadastral systems, the LADM based country profile could be created in the way that one demonstrates an inherited structure between LADM and the existing cadastral model.

Conformity with ISO 19152 LADM

- The described (LADM based) country profiles were compared with LADM.
- It can be concluded that LADM based profiles of the examined countries contains the necessary classes for conformance Level 2 (medium level according to the ISO 19152 LADM) and even some classes for the Level 3.

Reflecting a country legislation

- The created profile could then be extended for the new (country specific) classes which have no equivalent in LADM.
- These classes enable to capture all the requirements coming from legislation of particular country.

Extension of the LADM based country profile

- For example, if the utilities are not (but are going to be) registered in the cadastre, then LADM class ***LA_LegalSpaceUtilityNetwork*** can be considered as the extension of the created LADM based profile.
- Another example, in case that legislation will allow for registration of 3D spatial units, the LADM class ***LA_BoundaryFace*** will be most probably considered.

Dissemination of the profiles

- The described LADM based country profiles were promoted via scientific journals or international conferences.
- Such activities are needed, it could be used as a type of guideline for others conducting or planning a similar activity.
- Furthermore, the profiles were promoted at the regional or national level (conferences, workshops,...).

LADM country profile – benefits

- The creation of the LADM based country profile could be one of the first steps on the way to establish the 3D cadastre as there are the benefits of adopting LADM – a standardization, support for registration of 3D spatial units and harmonization at international/EU level.
- It is understandable that the official representatives of these bodies are often saying that there are still many issues to be solved in the existing 2D cadastre, but the arguments for the 3D cadastre should be continually presented 😊

LADM country profile – benefits

- In Croatia, the Integrated Land Administration System Project (ILAS Project) in the framework of the Organized Land national programme is a follow-up to successfully completed Real Property Registration and Cadastre Project (RPRC Project) which was implemented by the State Geodetic Administration (SGA) and Ministry of Justice.
- The World Bank recommended data models based on LADM in the preparation of the new loan for ILAS project (2018-2021) for improving cadastre and land registry.
- Through the RPRC Project, the two institutions together with their cadastral offices and land registry offices, successfully completed the first phase of the land administration reform. Above mentioned loan is the third phase of the land administration reform.

BIM/IFC → LADM country profile

- In the Czech Republic, the Strategy for the BIM implementation was approved by the Czech government.
- From 2026 the Czech Office for Surveying, Mapping and Cadastre is obliged to ensure the reusing of the BIM data for 3D cadastre purposes.
- It can be expected that this Strategy will enforce the change in the existing cadastral data model towards the registration of 3D spatial units.

LADM country profile as a base for the new system

- In Serbia, the development of the new cadastral information system based on a new data model is planned by the national mapping agency.
- Despite the fact that it is not known if the new system will be based on LADM it is important to have Serbian LADM country profile available and to argue that its implementation in the production environment will probably not cause significant additional costs.

Cost analysis needed (for 3D)

- However, the further research dealing with LADM implementation should elaborate more on the cost analysis, especially in case when 3D spatial units are going to be included in the profile and implemented in practice.

Thank you very much for your attention!