

Developing the refined survey model for the LADM revision supporting interoperability with LandInfra

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SUMMARY

The origin of surveying has a close connection with the designation of land boundaries, while cadastral surveying is the basis for land administration, serving as an important tool to gather, assess, and update geographical spatial data. Accurate knowledge of land and an accurate description and record of such knowledge are the fundamentals to their rational use and conservation and form the core of well-established Land Administration Systems (LASs). Although, surveying models and approaches are important for Cadastres and LASs, they are not always documented in detail, while with the rapid advances in technology and geoinformation they need to be revised quite often.

The ISO 19152:2012 Land Administration Domain Model (LADM), which focuses on standardised modelling of information at the conceptual level, has a dedicated sub package for Spatial and Surveying representation. The first edition of the standard provides multiple spatial representations, from text to 3D parcels, and needs to be revised to support a broad range in surveying and data acquisition approaches, and the relevant accuracies, considering the evolution of technology and equipment and the encodings that are used in practice. Currently, LADM revision is ongoing and the development of a refined survey model aims to address improvements in workflows of land management organisations, extend the functionality of cadastral surveying techniques and facilitate interoperability with technical standards used to describe surveying approaches and results. A conceptual model of the refined survey model is expected to be included in Part 2 of the new edition of the standard, while its technical implementation(s) via GML/ JSON formats/ RDF/ Interlis, covering both 2D and 3D boundaries, will be considered to be included in Part 6.

In this context, this paper aims to present the fundamentals of the refined Survey Model of ISO 19152 LADM Edition II, considering the need to support the interconnection with the ever-evolving

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surveying methods and acquisition techniques in a standardised way, including among others the Galileo High Accuracy Services (HAS) requirements and the alignment with other standards. One of the standards which synergy with LADM is investigated in this paper is the OGC LandInfra, and specifically Part 6 Survey, that provides a framework for information about observations, processes and their results collected during survey. What is more, the connectivity between LADM and the International Land Measurement Standard (ILMS), which sets out a structure for describing and reporting relevant land information for land transaction purposes, will be examined. Results and conclusions of this paper will be verified through case studies by accessing e.g. cadastral data from the Hellenic Cadastre, needing update and upgrade by using Galileo HAS, in order to meet the improved accuracy requirements, as well as using survey plot plans according to Danish practice.

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