

An overview of the Victorian 3D Digital Cadastre Roadmap

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Keywords: 3D cadastre, roadmap, ePlan, Victoria.

1 Introduction

Land Authorities in Australia are reviewing their cadastral systems with the aim to support digital cadastral data. This is mainly because the current systems are not efficient enough to cater for the current and future needs. The cadastral systems reform should have a detailed roadmap that outlines the requirements to satisfying cadastral requirements for the present and the future. The roadmap should define both short and long-term visions and relevant milestones, projects and timeframes.

Accordingly, Land Use Victoria (LUV), the land authority in the State of Victoria, Australia, has defined its visions as follows (Olfat *et al.*, 2018):

- Short-term vision: Provide the infrastructure and services to enable the submission and registration of digital data (ePlan) for all 2D cadastral plans by 2020.
- Long-term vision: Implement ePlan for all cadastral plans and surveys by 2025.

The short-term vision is mainly concerned with supporting 2D plan based applications in a digital format. A key component of the long-term vision is supporting building subdivisions in a digital format. This is following the Cadastre 2034 national strategy developed by the Intergovernmental Committee on Surveying and Mapping (ICSM) in 2015 (ICSM 2015).

As part of its long-term vision, in 2014, LUV commenced investigating a 3D digital cadastre, focusing on providing more efficient and effective services to the land and property industry. Over the past four years, among the technical, legal and institutional aspects of a 3D digital cadastre, the focus has mainly been on investigating the technical aspects including 3D data visualisation, validation (Shojaei *et al.*, 2017a) and modelling (Shojaei *et al.*, 2016) to support building subdivisions in ePlan (Shojaei *et al.*, 2017b). The legal and institutional aspects have not yet been researched.

To support the implementation of the Victoria's digital cadastral long-term vision, LUV in collaboration with the University of Melbourne has commenced work in the development of a roadmap for achieving a comprehensive 3D digital cadastre by 2025. This article aims to provide an overview of the roadmap development progress to-date.

2 Roadmap Considerations

LUV and the University of Melbourne researchers have started running a series of workshops to formulate the Victorian 3D digital cadastre roadmap. All workshop attendees agreed that the roadmap, aiming to support a smooth transition from the current cadastre to a full 3D digital cadastre, should recommend several research projects around the following areas:

- A cost-benefit analysis to justify the government implementing a 3D digital cadastre. The rationale behind this project should consider the economic, social and technical aspects.

- Monitoring the technological trend within the areas of 3D data capture, validation, visualisation, database management, etc. The technologies selected for the 3D digital cadastre should be able to address the scalability, extendibility, and interoperability requirements in the future.
- Determination of the 3D data modelling and format (among LandXML, IFC, etc).
- Exploration of the readiness of the Victorian jurisdiction in terms of adopting a 3D digital cadastre. For example, the legal branch of LUV would need to investigate the legalities of transitioning from paper based plans to digital data for legal purposes, e.g., contract of sale, legal disputes, etc.
- Alignment of the roadmap with the higher-level strategies including the LUV strategic plan, Department of Environment, Land, Water and Planning (DELWP) Corporate Plan and the ICSM cadastre 2034 strategy.
- Identification of the 3D digital cadastre stakeholders and the institutional changes that they need to make. An example would be the potential examination process change in LUV for examining the digital building subdivisions.
- Realisation of the 3D digital cadastre applications such as underground, aboveground, mining, agriculture, and built environment applications.
- Piloting a defined and developed area within Victoria that can be used to better understand the requirements of a 3D digital cadastre, e.g., Fishermans Bend in Port Melbourne.

3 Future Steps

The workshops between LUV and the University of Melbourne researchers will continue until the first draft of the Victorian 3D digital cadastre roadmap is developed. The roadmap will then be discussed with a selected group of the 3D digital cadastre stakeholders in Victoria including surveyors, councils, developers, building managers, and the public community. The stakeholders' feedback will be incorporated into the roadmap, and the first version of the roadmap will be shared with the ICSM to ensure that it is aligned with the cadastre 2034 strategy. Potentially, the Victorian 3D digital cadastre roadmap can be adopted by other Australian jurisdictions.

4 References

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