

Victorian 3D Digital Cadastre Investigation Progress Update

3D Digital Cadastre Roadmap Development

The Victorian 3D Digital Cadastre Roadmap aims to define a path towards 3D Digital Cadastre implementation in Victoria by 2025. It is being developed by Land Use Victoria, Department of Environment, Land, Water and Planning (DELWP) in collaboration with the Centre for Spatial Data Infrastructures and Land Administration (CSDILA), The University of Melbourne.

The roadmap will define the major milestones, responsible parties and timeframes of the Victorian 3D digital cadastre project.

The Virtual Fishermans Bend case study has been recommended as part of the roadmap.

The prototype has received positive feedback, nationally and internationally. For more information, please refer to the journal paper entitled Design and Development of a 3D Digital Cadastre Visualization Prototype¹.



3D Data Visualisation

An interactive prototype has been developed which illustrates how the legal and physical objects of a building subdivision plan can be stored, visualised and queried in a 3D web-based visualisation application.

This prototype is available on the [SPEAR website](#).

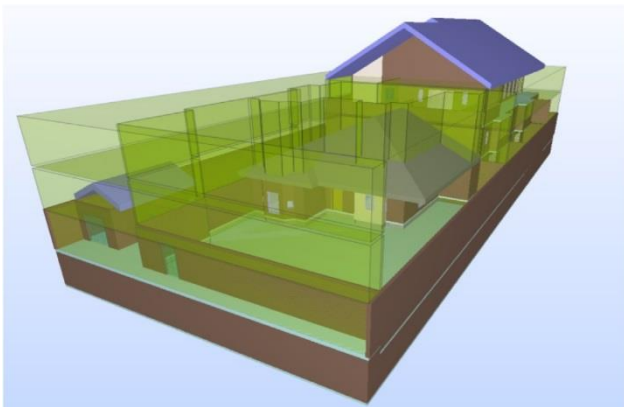
3D Data Storage

The storage of 3D ePlans was investigated. Several databases were assessed, and Oracle was selected as the most suitable, based on its high performance in storing, retrieving and analysing spatial data. Currently, the Oracle database is in production for storing registered 2D ePlans. The next phase is designing and implementing 3D ePlan storage in Oracle.

3D Data Modelling

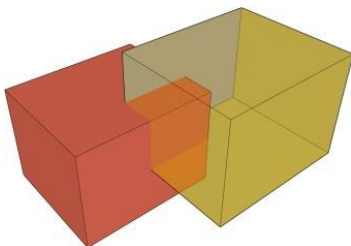
The national ePlan LandXML Protocol was investigated in three main phases to understand how it can model various building subdivision plans. It was concluded that buildings with flat faces can be modelled in LandXML.

However, buildings with curved surfaces can be approximated with small flat faces. This is due to the limitation of LandXML for 3D modelling. The outcome of this research was published in a journal paper².



3D Data Validation

As part of this study, 3D validation rules required for examining ePlans are being investigated and developed based on the existing 2D ePlan validation rules. These validation rules form a sub-set of required rules to comprehensively check the 3D data quality (completeness and correctness). The outcomes of this study have been published in a journal paper³.



Virtual Reality Prototype

The ePlan team is investigating the potential of Virtual Reality (VR) technology for representing, identifying and querying ownership rights, restrictions and responsibilities (RRRs) in 3D. In this research, various VR applications have been reviewed and a prototype is being developed to showcase RRRs in 3D.



- 1 Shojaei, D., Olfat, H., Rajabifard, A., Briffa, M., 2018, Design and Development of a 3D Digital Cadastre Visualization Prototype, ISPRS Int. J. Geo-Inf. 2018, 7(10), 384, <https://doi.org/10.3390/ijgi7100384>
- 2 Shojaei, D., Olfat, H., Rajabifard, A., Darvill, A., Briffa, M., 2016, Assessment of the Australian digital cadastre protocol (ePlan) in terms of supporting 3D building subdivisions, Land Use Policy, V 56, PP 112-124, <http://www.sciencedirect.com/science/article/pii/S0264837715300818>
- 3 Shojaei, D., Olfat, H., Faundez, S., Kalantari, M., Rajabifard, A., Briffa, M., 2017, Geometrical data validation in 3D digital cadastre – A case study for Victoria, Australia, Land Use Policy, V 68, PP 638-648, <https://www.sciencedirect.com/science/article/pii/S0264837717303150>

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