

A Geometric–Topologic Exemplification for 3D Cadastre

Edward Duncan and Bernad Siew (Malaysia)

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SUMMARY

Professional surveyors all over the world are the repository of locational geoinformation data, in the form of either implicit or explicit data formats as defined by the Open Geospatial Consortium (OGC). Two dimensional (2D) cadastre data is not difficult to realise, for 3D data acquisition and modelling, this is a challenge. Different three-dimensional (3D) spatial data models exist for different purposes and applications, therefore, the need to select a single spatial data model for all applications is still difficult to realise. This paper outlines the requirements for a unified spatial data model for 3D cadastre capable of representing volume parcels for man-made objects in a city centre such as a block of flats in a city centre.

Microsoft visual C++ 2008 programming language, OpenGL and Qt libraries were used to develop an application for 3D cadastre. The algorithm and modelling techniques are discussed and an implementation for 3D cadastre highlighted. The concepts highlighted are significant for 3D cadastre in an urban environment due to the multiplicity of ownership for the same parcel of land. The 3D Tetrahedralization Model (3DTM) is significant and can be adopted as the geometric representation for 3D cadastre. The model can also be used for facility management and change detection. Further works will research into indoor navigation for 3D cadastre.