3DGeoInfo2019 (chair)

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Submission 34

The submission information is shown below.

Paper 34

Title:	Data conversion and linkage to build comprehensive 3D environments
Author keywords:	BIM geoBIM standards smart cities IFC CityGML workflows value chain
Abstract:	In order to create a comprehensive virtual representation of the built environment it seems paramount to use a variety of input data, including surveyed data from 2D and 3D GIS, CAD and BIM models as well as live sensor feeds. The integration of geospatial and design/construction data for integrated visualisation and analysis is possible today but generally regarded as being difficult. We will look at overarching workflows to connect different types of data and discuss the suitability and availability of data from the Architecture, Engineering and Construction (AEC) industry. There is little incentives for AEC to create data in BIM that is suited for uses beyond the immediate design and construction tasks. This could include data structures that explicitly identify the rooms and other spaces classified by usage type within an building. Within the design and construction workflow in BIM there may not be explicit requirements to identify these spaces, whilst space planning and facility management uses in the operational phase of the building require these. That means that the creators of the BIM models or the parties commissioning these models will not necessarily benefit from these extra data requirements and may not be incentivised to model such concepts. On the other hand explicit demand for additional is often not explicitly stated, either from owners or regulatory bodies. Strong use case stories are simple steps to create a narrative that bridges this gap by improving understanding by owners and regulatory bodies for why this information is important and therefore enable the Geo domain to drive demand for this information. These could include the developments of services that improve indoor/outdoor mobility and navigation to/from spaces between buildings or even to/from assets within a building. In addition to technical requirements in source datasets including native BIM formats as well as open publication formats such as Industry Foundation Classes (IFC) will be discussed in conjunction with potential business models for the creation, use and exploitation of this data. A lack of openness and willingness to share or make data available is often perceived or existent. Reasons for this may include Intellectual Property rights and the commercial value of data relating to the way that BIM models may have been created. BIM models could also be seen to be particularly sensitive security-issues. These reasons are generally valid, but creates silos of information that prevent the broader ecosystem from improving, but also prevents development of compelling examples and use cases at a scale that is greater than one building in isolation. We will present a practical example for the conversion and linkage of AEC and geospatial data, particularly focussing on open standards such as IFC and CityGML. The creation of particular extensions or subset of these standards will be discussed, particularly the create of a geospatial Model View Definition for IFC. This could be used by the BIM industry to ensure that the data is there for critical use cases and provides a structured method to extract a relevant subset of data from IFC. Regulatory bodies, such as planning and technology agencies would benefit from this and it would create a defined and standardised interface into the geospatial domain, facilitating improved data exchange and the re-use of data beyond design and construction. The presentation will focus on one of two use cases, such as indoor navigation and space planning, and highlight particularly challenges associated with the use of BIM in a geospatial context including 1. Data accessibility – which we have experienced as a hugely limiting factor; 2. Transfer of data across design, construction and operation, with data isolation being a critical limitation; 3. Security, privacy and safeguarding and trust, which can prevent access to data in the first place. 4. Scalability of a the utilisation of BIM from individual buildings, to districts and entire cities. The paper will present insights gleaned from working with BIM and 3D geospatial data in Singapore and identify areas of future research and investment.
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Decision:	

Bidding and assignment information

Assigned to:	nobody

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Bid:	yes: none maybe: none

Authors

first name	last name	email	country	organization	Web page	corresponding?
James	Crawford	James.Crawford@os.uk	Singapore	Ordnance Survey International		✔
Carsten	Roensdorf	Carsten.Roensdorf@ordnancesurvey.co.uk	United Kingdom	Ordnance Survey		✔
Jeremy	Morley	Jeremy.Morley@os.uk	United Kingdom	Ordnance Survey		
Rudi	Stouffs	stouffs@nus.edu.sg	Singapore	National University of Singapore		
Patrick	Janssen	patrick@janssen.name	Singapore	National University of Singapore		✔