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Towards digital facility modelling for Sydney opera house using IFC and semantic web technology

The challenges of maintaining a building such as Sydney Opera House are immense and are dependent upon a vast array of information. The value of information can be enhanced by its currency, accessibility and the ability to correlate data sets (integration of information sources). A building information model correlated to various information sources related to the facility is used as definition for a digital facility model. Such a digital facility model would give transparent and an integrated access to an array of datasets and obviously would support Facility Management processes. In order to construct such a digital facility model, two state-of-the-art Information and Communication technologies are considered: an internationally standardized building information model called the Industry Foundation Classes (IFC) and a variety of advanced communication and integration technologies often referred to as the Semantic Web such as the Resource Description Framework (RDF) and the Web Ontology Language (OWL). This paper reports on some technical aspects for developing a digital facility model focusing on Sydney Opera House. The proposed digital facility model enables IFC data to participate in an ontology driven, service-oriented software environment. A proof-of-concept prototype has been developed demonstrating the usability of IFC information to collaborate with Sydney Opera House's specific data sources using semantic web ontologies.

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