

Automated Interpreted Information Exchange in Engineering Analysis BIM Use

Building Information Modeling (BIM), as an emerging technology, has significantly influenced the building industry during the past two decades. Engineering analysis is one of the uses of BIM that can potentially facilitate design stage of projects. In this BIM use, a building information model is transformed to an analytical model. Although such use is frequently practiced in the industry, the value-over-difficulty ratio of it is still very low, as such transformation is tedious and time consuming. As a result of such difficulties in the engineering analysis BIM use, designers may prefer to create the analytical model from the scratch instead of using BIM for this purpose. With the current state of interoperability, designers need to update the model with several engineering analytical information and make extensive modification to make the transformed model ready for analysis. Automating such enhancements can significantly facilitate efficiently of the engineering analysis BIM use.

In this research that will be presented in this lecture, an automated interpretation mechanism referred to as Interpreted Information Exchange (IIE) is developed as an alternative for Direct Information Exchange (DIE). IIE helps to minimize model enhancement activities required by designer after creating analytical models from building information models. In the conventional Direct Information Exchange (DIE), information is delivered semantically using BIM open/standard file formats such as IFC. In contrast, the IIE approach first builds some interpreted information on top of the information extracted from the input file, then semantically transfers it to the destination. IIE is not a replacement for DIE; it is augmenting the DIE with automating some of the engineering interpretations. In the IIE mechanism, both the input and output files are considered to be represented in IFC files in order to achieve a highly interoperable model transformation mechanism that can connect any BIM authoring and engineering analysis tools.