

Automatic workflow for 4D-BIM based modelling

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Abstract

Four-dimensional (4D) simulation could reduce the uncertainty relating to the building processes increasing the visibility of the construction workflows and supporting the detection of the potential conflicts and safety hazards at the construction site. The aim of the research is to provide an automatic approach for the real-time scheduling through the Building Information Modelling (BIM) methodology in order to select the best scheduling alternative. The availability of information relating to the duration of the work tasks execution, within a unique digital building model, allows performing 4D modelling in the early building design stages in order to enable stakeholders to assist decision-making and to optimise the site layout plans and the work tasks themselves. The object identification codes (ID) and the implementation of the temporal parameters linked to the building information model elements, within the 3D model, make possible the automatic execution of the 4D BIM. This methodological approach could decrease the very time-consuming activities of data entry that are usually conducted at the end of the construction (building) stages. Furthermore, this procedure allows increased the coherence of information among different design activities, such as between modelling and scheduling that are often found to be asynchronous and affected by inconsistencies.

Keywords: Construction management, 4D-simulation, BIM.