

Applying BIM to achieve sustainability throughout a building life cycle towards a Sustainable BIM Model

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ABSTRACT

The research addresses the issue that there is no an integrated approach or model to activate and implement sustainability in a project throughout its life and not benefit from the potentials of Building Information Modelling (BIM) technology in achieving and supporting all sustainability aspects as a human need. Therefore, the research aims to establish and achieve a Sustainable BIM Model for applying within projects throughout their life cycle, managing the relationship between BIM and sustainability, and obtaining the best interoperability performance. Consequently, sustainability and the potentials of dealing with it by modern techniques and tools were investigated and identified to simulate its indicators and criteria. Besides, strategies to establish sustainability that can be activated. Then related sustainability indicators to the performance of project aspects were collected and categorized to facilitate linking with BIM platforms. Moreover, the potentials of the overlap between sustainability and many BIM platforms were examined and demonstrated, and their employability in supporting sustainability aspects in a balanced manner. Eventually, a methodology to manage the relationship between BIM and sustainability was deduced and formulated to achieve a Sustainable BIM Model during a building life cycle.

Keywords: Building Information Modelling (BIM); Sustainability aspects; stakeholders; Life Cycle Assessment (LCA); Sustainable BIM Model.