

Proposed Workflow of 3D Modelling conversion and enhancement in Quantity Surveying Profession

Lam Tatt Soon^{1,2}, Hasnanywati Hassan², Nazirah Zainul Abidin², Myzatul Aishah Kamarazaly¹, Boon Tik Leong¹, Kenn Jhun Kam¹

¹ Taylor's University, No 1, Jalan Taylors, 47500 Subang Jaya, Selangor, Malaysia

² Universiti Sains Malaysia, 11800 Gelugor, Penang, Malaysia

Lamtatt.soon@taylors.edu.my

Abstract. The three-dimensional (3D) models created by BIM modellers have limitations in providing accurate quantities following the standard method of measurement for a bill of quantities preparation. This creates problems for QS in preparing cost estimation, taking off and bill of quantities. Several QSs in Malaysia create a 3D model internally for quantities and costing purposes using QS software without further enhancing the 3D model owing to a software limitation. Therefore, this research aims to propose a workflow of 3D modelling conversion and enhancement in quantity surveying profession to promote proactiveness for QS in enhancing their competitiveness in developing a data-rich 3D model based on designers' drawings and specifications. To achieve this aim, a case study has been conducted on a 25-storey condominium project in Malaysia to validate the proposed workflow. The 3D model created by a quantity surveying firm has been exported to an Industry Foundation Classes (IFC) file and hence been enhanced in BIM modeller software. This research will serve as a guidance to QS to strengthen their competencies in developing a data-rich 3D model in implementing BIM in future.

Keywords: 3D modelling, quantity surveying, workflow, conversion, enhancement.

1 Introduction

The Malaysian government encourages construction players such as design consultants and QSs to apply Building Information Modelling (BIM) to construction projects to reduce construction projects problems and disputes. (Latiffi et al., 2013) The Eleventh Malaysia Plan (2016-2020) clearly emphasises that the use of technology, such as building information modelling (BIM) is crucial in improving the efficiency of construction project implementation. Additionally, the Fourth Industrial Revolution (4IR) has introduced digital technologies to the construction industry, where BIM has become the central repository for collating digital information about a construction project (Maskuriy et al., 2019). Moreover, the Construction Industry Development Board (CIDB) developed the Malaysian BIM roadmap for the development of a Malaysian BIM strategic implementation plan (Hadzaman et al, 2015). In short, the Malaysian