

An investigation into Building Information Modelling Assessment Methods (BIM-AMs)

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Whilst a significant amount of research has been carried out on the implementation of BIM in the AEC industry, far less attention has been paid to the evaluation and measurement of BIM performance. This study aims to provide an investigation into the mapping of Building Information Modelling Assessment Methods (BIM-AMs) in the Architecture, Engineering and Construction (AEC) industry. Drawing on insights from the literature, twelve BIM-AMs were initially analysed and compared. Some of the key points distinguishing AMs are level of detail and areas of measurement. Based on the fact that BIM-AMs span the full range of the complexity spectrum, two methods were used in a number of case study projects to explore their variations. The first, a simplified tool, is the National BIM Standard Capability Maturity Model (NBIMS-CMM) developed by the National Institute of Building Sciences (NIBS). The second is the more detailed Virtual Design and Construction (VDC) Scorecard, developed at Stanford University.

A comparative case study methodology has been implemented to explore performance and characterisations of the two AMs. The analysis included two different phases. The first phase assessed the reliability of using one BIM-AM on a single project but completed by two members of the same team to explore subjectivity. The second phase applied two BIM-AMs to the same project to see whether they gave consistent assessments. Observations of the results identified limitations of BIM-AMs, in particular in their dependency on qualitative judgments. BIM-AMs are beneficial for industry, stakeholders and decision makers to measure BIM performances but attention needs to be given to the possibility of using more quantitative measurements in assessing BIM-AM maturity. Future research will build on the existing BIM-AMs research to propose an automated tool. This suggestion will help AEC professionals to assess their projects internally and define areas of weakness for improvements. BIM-AMs can classify, rank, assess and evaluate BIM level of maturity when an accurate, usable and practical tool is developed.