BIM Macro Adoption Study: Establishing Ireland’s BIM Maturity and Managing Complex Change

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ABSTRACT

Since 2016, the BIM Innovation Capability Programme (BICP) has captured the capability of the Irish construction industry and the higher education institutes response to the increased requirement for BIM on construction and engineering projects. One of the primary responsibilities of the BICP research team was to collate data to assist the National BIM Council of Ireland in the formulation of a National BIM Roadmap. To assist the council with this task, the BICP research team applied five macro BIM maturity conceptual models to assess Ireland’s BIM maturity. The application of the models has helped identify the key policies’ outputs and the macro maturity components that were used to identify deliverables within the now-published Irish roadmap. The results from the models were further utilised to develop a managing-complex-change matrix. The matrix has helped identify the necessary ingredients for a successful digital transformation programme for Ireland’s construction industry for the period 2018-2021. The results from both studies have provided crucial information in highlighting areas that will need to be addressed if Ireland is to continue its current momentum in promoting the use of BIM within the Irish construction industry.

KEYWORDS

BICP, BIM Macro Adoption, Building Information Modelling, Digitisation Ireland, Managing Complex Change, Public Works, Roadmap

INTRODUCTION

The BIM Innovation Capability Programme (BICP) came about as a direct response from Enterprise Ireland (a semi-state body charged with industrial development) to a number of Irish Governmental publications calling for the promotion and adoption of BIM across the public capital programme (Construction 2020, Government Publications, 2017 and Action Plan for Jobs, Governmental Publications 2017).

The global adoption of BIM and in particular the mandating of Level 2 BIM in the UK, has resulted in a response from the Irish construction Industry, so as to prevent loss of international

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contracts, particularly those in the UK. The BICP research team sought to capture the capability of the Irish Construction Industry and the Higher Education Institutes (HEIs) response to the increased requirement for BIM on Irish construction and engineering projects.

This has been primarily achieved through a combination of desk-top based research and consultation with both public and private sector bodies. The importance of this research has been reinforced through recent Irish publications, which have identified BIM as fundamental to enhancing the industry’s competitiveness, namely Construction 2002 (Government Publications 2014), Action Plan for Jobs (Government Publications, 2017) and the Public Sector BIM Adoption Strategy, OGP 2017).

The recent BIM in Ireland 2017 reported on an array of BIM initiatives, activities by BIM champions, promotion of BIM within HEIs and BIM adoption by industry and government leaders (Hore et al., 2017a). All these initiatives have played an important role in the movement of the Irish AEC sector towards digitisation and innovative practices.

The BIM in Ireland 2017 report also presented the results of macro maturity component models that have been utilised to measure macro BIM adoption across the world.

The Macro BIM Adoption in Ireland 2017 Study is part of the BIMe Initiative Macro Adoption Project and is based on the published research by Succar and Kassem (2015). This was a landmark study for BIM in Ireland and represented a collaborative knowledge-sharing agreement signed between the BIMe Initiative, Construction IT Alliance (CitA, a not-for-profit research and dissemination group) and the Dublin Institute of Technology (DIT).

This paper will provide a focused review of this study and will provide detailed analysis of the data collected.

BACKGROUND TO THE STUDY

As part of the BICP study it was agreed that the research team would establish the maturity of BIM within the Irish AEC sector. To achieve this, a number of maturity models were explored which included Barlish and Sullivan (2011), who conducted a review of over 600 sources of information in analysing the current information available with regards to benefits derived from BIM utilisation.

The National BIM Standard (NBIMS) Capability Maturity Model is a tool to plot one’s current status and plan ahead for one’s goals for future aspirations. It addresses software issues and maturity levels (NIBS, 2007). Another maturity model discussed was the Indiana University’s BIM Proficiency Matrix. This is an evaluation tool used to assess the proficiency of a respondent’s skill when working in a BIM environment (IUAO, 2009). The Virtual Design and Construction (VDC) scorecard developed by Stanford University’s Center for Integrated Facility Engineering (CIFE) was discussed as a possible tool to use. This scorecard assesses the maturity of the VDC implementation of a project across 4 areas, 10 divisions, and 56 measures, and derives a confidence level measured by 7 factors to indicate the accuracy of scores (CIFE, 2017).

Despite the benefits of these models within their respective environments, they do not provide an understanding of BIM diffusion or Macro BIM adoption. As this research was to be used to assist the National BIM Council (NBC) of Ireland in the development of a BIM Roadmap (NBC, 2017), it was important that the collated data could help in assessing current or developing new market-specific BIM diffusion policies.

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To this end, the BIM macro maturity models developed by Succar and Kassem was adopted by the BICP team. This framework consists of five conceptual models which have been utilised to measure macro BIM adoption across the world (Figure 1). These models can be used for:
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