

# Towards Understanding BPR Needs for BIM Implementation

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## ABSTRACT

*This paper reviews BIM concepts, with a particular focus on its applicability and uptake within the business processes in the construction industry. An exploratory study is being carried out to examine the current state of BIM practices using the instrument of survey questionnaire and literature review. The partial findings from an on-going survey show that, the inevitable need for organisations to reengineer existing processes in order to fully capitalise on BIM potentials is acknowledged by the industry participants. BIM implementation in the business processes reveal that organisations are attuned to the significance of Business Process Re-engineering (BPR) for BIM development in their practices. However, more efforts are still needed to educate people regarding culture change so that BPR is recognised as a platform for successful BIM implementation in the construction sector. The paper concludes with proposing a need of business information management through BIM adoption that will enable organisations to take advantage of BIM investments.*

*Keywords: Building Information Model (BIM), Building Information Model Investments, Business Process, Business Process Re-Engineering (BPR), Construction Sector*

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## 1. INTRODUCTION

In a business information modeling (BIM) platform, an introduction of a systematic network of technologies causes a new wave of proliferation in the socio-technical linkages within and among organisations. As a result, the existing tasks, technologies and business practices that are already established in organisational settings are challenged. This raises new questions about how

to effectively coordinate the cross-disciplinary interfaces at various developmental phases of a project including the selection and appointment of specialists from various disciplines (such as architect, engineers, fabricators and contractors, etc.) so that the access to their specialist knowledge and design information could be gained (Mitchell et al., 2011).

Currently in the UK, the architecture engineering and construction (AEC) sector lacks the theoretical understanding about BIM vocabulary and a degree of confusion exists

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among academic circles with a clear lack of consensus on what it is (Bazjanac, 2004; Arayici et al., 2012). The process frameworks developed so far at national and international level provide some guidance on how to entrench BIM practice, processes and mind-sets. However, postponing BIM implementation for business process management represents the preferred option rather than a clear practicable way as to how different business processes shape BIM practices within an organisation and across project team. Despite the fact that emphasis on BIM adoption with a need to change the current business processes to gain advantage from BIM is being increasingly identified in government reports and various academic and industry forums (Morell, 2010, Kirby, 2007; Laiserin, 2007; NIBS, 2007; Mihindu et al., 2008), the effect of process changes on the interrelationships between project network companies (Taylor, 2008) still remains uncharted territory.

An overarching debate exists in literature about whether to accept BIM as a supporting technology and a business process enabler. However, radical (e.g., reengineering) and incremental changes in the existing business process and workflow at organisation and project level are not entirely understood. While the use of digital information such as BIM model to support efficiencies in business processes is gathering interest, different technology vendors are actively campaigning for BIM as a solution to provide a reliable foundation to enable BPR. BIM “as a modelling technology” (Eastman, 2008) could allow for major productivity improvements through integrating the work of the construction project network (Taylor & Bernstein, 2008). As research concerning BIM enabled business process has evolved to explore how organisations use BIM to manage pre-BIM business processes, researchers have begun to incorporate the role of process innovations. At the same time, there is limited knowledge about the qualitative and quantitative impacts of BIM on the business processes and there are no methods to adequately gauge these impacts (Eastman, 2008). Moreover, the focus on BIM enabled BPR emphasises the strategic significance of value added processes

resulting from information centric activities that transcend organisational boundaries.

*“Business Process Reengineering is the fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance such as cost, quality, service and speed.”* (Hammer, 2005)

In view of the above, the current knowledge remains insufficient and incoherent to satisfactorily assist project teams effectively implement and manage BIM in their organisations. To address this need, a literature review is presented first, which describes BIM enabled business process Re-engineering (BPR) concepts in order to delineate the operational scope of BIM related research. Next, partial findings of an on-going survey are presented which highlight the current status of BIM adoption. Subsequently, the paper lists some of the drivers and barriers for BIM uptake in order to identify the BPR needs within the context of organisation and project level processes. Finally, the paper concludes with proposing a need of business information management through BIM adoption that will enable organisations to take advantage of BIM investments.

## 2. LITERATURE REVIEW

### 2.1. CONCEPTUALISING BIM ENABLED BUSINESS PROCESS

The term ‘BIM enabled business process’ emerges in an attempt to further understand the organisational and business process impacts of BIM. Based on analysis of BIM-enabled business process literature, it appears that there is no clear distinction between the interrelated concepts of organisational strategy, management, information technology and business functions at project and organisational level. Although, BIM is gaining rapid popularity and its adoption continuously increasing (Young et

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