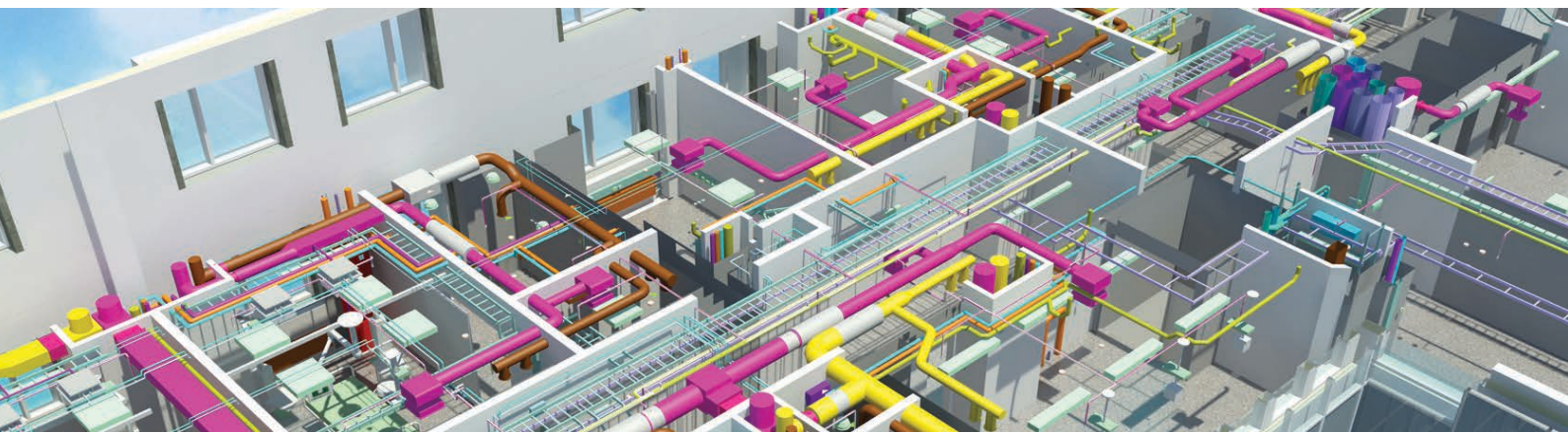


# The Project Benefits of Building Information Modelling (BIM)



D. Bryde, M. Broquetas, J. Marc Volm, *International Journal of Project Management*, 31.7 (2013), p.971-980

## **KEYWORDS**

- Business Information Modelling (BIM)
- 3D BIM
- 5D BIM

## **Article Highlight:**

This article provides an outlook on the potential use and advantages of BIM in the construction sector for project managers. It has been taken from the *International Journal of Project Management*.

## **What does the paper cover?**

All UK Government contracts will require the use of 3D BIM. Project professionals will not be able to avoid BIM when working public sector projects.

BIM is software for modelling and information input but also incorporates project management tools and processes. BIM can therefore be used in construction projects by project professionals, for example to improve stakeholder collaboration.

### **BIM potentially enables:**

- 1. Better communication and collaboration:** In complex inter-organisational, BIM could lead to an integrated database opposed to the sharing of documents.
- 2. Organise the project schedule and budget:** BIM allows the updating of schedule and budget when any project design change occurs.
- 3. Budget control:** 5D offers the project manager more tools to monitor and keep tight reins on costs.
- 4. Rapid analysis of different scenarios and feedback to owner:** BIM allows the project manager to show how design decisions impact cost and schedule.
- 5. Lean management:** BIM has been linked to the development of lean approaches, as the enhanced collaboration and information sharing can contribute to reducing non-value-adding waste.

### **BIM's uncertain effects:**

- BIM may change the roles of key parties including the project manager in ways which are uncertain.
- The fragmented nature of the construction industry means that knowledge gained by a team in one venture may not be retained for the next project.

## **Methodology:**

This paper reports analysis of secondary data from 35 case studies relating to the use of BIM that have been documented in academic literature or otherwise placed in the public domain.

The study aimed to explore whether the use of BIM has resulted in benefits to construction projects by assigning quantitative values to a number of key success criterion over a 2 year period.

## **Research findings:**

**Cost:** BIM had a positive effect on reducing costs in 60% of the studies and the minority of negative effects were of a smaller magnitude than the large positive gains that could be made.

**Time:** BIM had a positive effect in 34% of cases on time.

**Communication:** While not all projects reported a change in communication success, those that did found that it had a positive effect.

**Quality:** The effect on quality was positive thanks to more accurate designs and the incorporation of sustainability features which may become a key driver of demand. However, this is slightly muted owing to the capacity of the software.

**Negative effects:** These were observed particularly with regard to software and the difficulty of interoperability. The software was unable to deal with large amounts of data in large projects. This may be rectified as the BIM market matures.

**Additional costs:** There was often an initial one-off additional cost in converting systems to the BIM platform.

## Conclusions:

- Research suggests that BIM provides an effective tool in improving certain aspects of the delivery of projects particularly cost, time and communications.
- Many of the negatives, particularly relating to software, can be corrected given time, expertise and investment.
- People may not agree common platforms and collaboration to share BIM models. This may cause difficulty because interdependency is needed.
- BIM allows a wider definition of success than the Iron Triangle permits alone.
- There is a need for a rigorous cost/benefit analysis of BIM in order to convince practitioners.

## Significance of the research:

BIM has been heralded as being able to reduce both transaction costs and error. In this study most of these benefits have been realised. In time, however, yet more may be seen with negative technical issues being ironed out.

This article promotes confidence in BIM before the technology has been fully integrated, highlighting an opportunity for enterprising project professionals in construction.

## Comments from author:

As project management practitioner's awareness and knowledge of the concepts of BIM increases over time, attention is now also focusing on how BIM can be effectively utilised on "real" projects. This requires an appreciation that BIM has a key role to play in both the promotion and advancement of collaborative and integrated team working, through such approaches as Integrated Project Delivery. It is by looking at the wider picture, and understanding what BIM means for project design and delivery, that the project benefits of BIM will be realised.

*Professor David Bryde*

## Complete article

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## Association for Project Management

Ibis House, Regent Park  
Summerleys Road,  
Princes Risborough  
Buckinghamshire,  
HP27 9LE

**Tel (UK)** 0845 458 1944  
**Tel (Int)** +44 1844 271 640  
**Email** [research@apm.org.uk](mailto:research@apm.org.uk)  
**Web** [apm.org.uk](http://apm.org.uk)

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## Glossary:

- Business Information Modelling (BIM):** a set of policies, processes and technologies generating a methodology to manage the essential building design and project data in digital format throughout a building's life-cycle.
- 3D BIM:** all project and asset information, data and documentation must be in electronic form.
- 5D BIM:** Includes all of the above plus scheduling information and information for estimating the project from the model.
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