

BIM: Rules of Engagement

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There are challenges within the collaborative process of Building Information Modelling (BIM). BIM creates the need to consider liability exposures, ownership issues and protection of intellectual property. The authors contend that the right contractual framework is fundamental to fostering and promoting this innovation. An Australian-first, a draft BIM-friendly clause bank is discussed to ensure consistent, agreed to rules of engagement, including its application in the Australian building context. The authors' experience and learnings will have applicability to those seeking collaborative processes for BIM.

Keywords: BIM, collaboration, challenges, clause

1. Introduction

BIM is a process that involves the generation and management of digital representations of physical and functional characteristics. The building information models that are developed become shared knowledge resources to support decision-making, from cradle to grave – that is, from earliest conceptual stages, to design and construction, operation and eventual cessation.

BIM does away with old ways of design where upfront architectural work is traditionally done with little input from other project participants (for example, engineers, contractors and facilities managers). A key strength of BIM is the ability to bring all parties together early in the project and provide a virtual 'design' forum to connect them and enable a review of simulations. A further strength is the ability to ask questions, share information and raise issues for collective resolution.

It is the focus on collaboration in the early stages of a project that sets BIM apart. Everyone is 'on the same page' with increased data sharing between the design and the construction participants and the facilities managers.

Understanding and incorporating the 'Rules of Engagement' is essential to seeking agreement and implementing BIM. Information exchange is core to this understanding as it is when information is exchanged that barriers typically start to appear and impede contractual arrangements.

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1.1 What's happening here and elsewhere?

In the United States, the American Institute of Architects (AIA) recently released for comment a suite of draft contractual documentation 'Digital Practice Documents' which aim to facilitate the use of BIMs in projects (cited in Chen 2012). AIA have outlined several legal issues related to BIMs, including identifying the scope of work and determining participant responsibilities for managing digital data and the BIM model (Chen, 2012).

In the United Kingdom the government is focused on addressing the impacts on contractual obligations and protection of the design and data. The government has mandated the use of Level 2 BIM for all projects commencing from Summer 2012, aiming for fully collaborative BIM by 2016. The Royal Institute of British Architects (RIBA) published the BIM Overlay to provide straightforward guidance on each RIBA work stage to successfully design and manage construction projects in a BIM environment (Cost Solutions, 2012).

The Australian Institute of Architects (2010) recognised and reported on a significant challenge for BIM, namely the lack of a documentation framework to underpin contracts where BIM is used.

In July 2012, the Australian Government's Built Environment Industry Innovation Council advisory body outlined the productivity and environmental benefits of BIM within the built environment (Department of Industry Innovation Science, Research and Tertiary Education, 2012).

With this background in mind, the authors report on their professional experience in implementing BIM and, in doing so, make an important contribution to addressing some of the issues raised above.

2. Identifying and meeting the challenges to establish the Rules of Engagement

2.1 Overview of the Australian design industry today

BIM is not widely used in Australia, at least in a formal structural way to maximise its benefits.

At present the Australian design industry has strong dynamic skills and a comprehensive understanding of the mechanisations of 3D modelling and its parametric benefits. The tricky part comes when people start to explore the exchange of information and barriers start to emerge. These barriers are contractual, rather than technical in nature, revolving around liability, risk and protection of data and intellectual property.

For example, in the quantity surveying space, the authors have added dynamic links to the BIM to allow accurate quantity take-off and estimating, but the information is not passed down the line. The missed opportunity to be capitalised upon is a trusted common set of common quantities that can be easily interrogated by each party as they are visual.

2.2 Key challenges

Three key challenges have been identified.

- Challenge one: People display a degree of hesitancy in implementing BIM on a project because they view the project at its most complex.
- Challenge two: People express liability concerns such as who bears the risk, who controls the design and who owns the BIM. While a company may want to use a BIM, no contract may be in place that allows them to utilise it with security.
- Challenge three: Not many are asking for BIM projects.

2.3 Responses to challenges

Experience highlights achievable solutions to these challenges.

- Challenge one response:
 - Working with BIM on a project is quite achievable.
- Challenge two response:
 - BIM manager helps to reduce liability: As the different companies involved have records of when information is sent to BIM manager, responsibility for an inaccurate model rests elsewhere.
 - Establish a contractual strategy: Provide clauses within the contract to encourage collaborative work arrangements, and provide protection for project participants.
 - Develop a BIM Execution Plan (BEP): This will include the phase of the project the BIM applies to, the level of detail being sought, and the desired level of collaboration between the different fields. A 'risk cube' is a useful tool in this context.
- Challenge three response:
 - The client shouldn't have to ask for a BIM, it should be expected. All stakeholders (clients, designers and builders) must work together to demonstrate the full value of BIM.
 - Ensure contractors can readily demonstrate the value of the BIM in each phase and be confidently proactive.
 - Have fully coordinated designs to resolve issues early in the building process as this saves time and money, and is much more efficient.

3. Rules of engagement

Based on the identification of the challenges and responses above, a framework for use of BIM in the design process was developed. It focuses on a useful tool - a 'BIM Clause Bank' - to enable consultants to confidently manage a contractual framework, promote BIM, facilitate the use of coordinated design, protect intellectual property rights and assist with dispute resolution.

The BIM Clause Bank will help address issues associated with current contract documentation in Australia developed for traditional delivery structures. These include Design and Construct (D&C), Design Build Operate Manage (DBOM) and Early Contractor Involvement/Engineering Procurement Construction (ECI/EPC), all of which are not easily used to foster collaborative teamwork which is essential to BIM.

A BIM clause bank set out to implement the Rules of Engagement assists users with the basic clauses that will facilitate the use of BIM in more common scenarios of the traditional contracting environment.

The clauses have to cover the basic permissions and risk allocations without adopting the no fault/no claim ethos of alliance contracting

The key areas that require coverage are:

- Who is controlling/responsible for the model and its development
- Liability for design input and use of the model
- How is the collaboration and model development to occur

These issues are not unfamiliar when there is design coordination. The development of energy/environmental rated buildings has seen many similar issues and clauses which can be drawn upon to manage BIM issues.

4. Conclusion

The authors contend that the prospects for BIM implementation in the design industry in Australia and elsewhere are good, and the challenges and risks can be readily overcome by using a 'Rules of Engagement' approach supported by the 'BIM Clause Bank'. Having the right tools to facilitate collaboration and gain permission to share information is sure to be beneficial to building contracts.

References

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