

IBC RELEASES SURVEY RESULTS

The Institute for Building Information Modeling in Canada (IBC) with its mission “*To lead and facilitate the coordinated use of BIM in the design, construction and management of the Canadian built environment*” has just released the findings of a BIM survey conducted late in 2011. It can be found on the IBC website at www.ibc-bim.ca. It was developed by IBC’s BIM Practice Manual Committee, a group of practitioners representing a wide spectrum of construction disciplines. The latest resource illustrates the use of BIM in the Canadian construction industry, as well as its issues and challenges. These results will provide information towards building a solid foundation and relevant scope for the IBC BIM practice manual that is now under development.

The survey was conducted online and was open to all construction stakeholders nationwide. The majority of the respondents are engaged in the commercial and/or institutional sectors.

According to the respondents, the use of BIM has resulted in some form of benefit in at least four major areas, namely: better end product, productivity enhancement, competitive advantage and improved documentation. At a more detailed level, they indicated that BIM has been adding value to specific activities such as concept-design, coordination, interference checking, massing etc. Specifically, “better end product” and “improved documentation” will bring in greater benefit to the owners.

The BIM survey results serve as a benchmark for assessing the current state of AEC technologies across the country. The survey also reveals that BIM users are aware of the slow adoption process and are looking to the regulatory authorities to advance it. Many gaps are still to be filled, such as the National Building Information Modeling Standard - Canada (NBIMS-CAN), as well as the release of implementation manuals and practice guides; all areas in which IBC is focusing its resources.

BIM CONTRACT LANGUAGE

As previously reported, a working committee has been formed to address the development of contract language documents for the purpose of BIM. Two documents are now being finalized. One consists of Guiding Principles for BIM Contract Language; and the other lists a set of supplementary conditions for use in standard contract forms.

The guiding principles touch on issues such as: add-ons, copyrights, project specific details, process and risk. A BIM execution plan is also under consideration.

COMMUNICATIONS STRATEGY

The Institute is also finalizing its communications strategy assessing the means by which BIM can be implemented in a way and at a pace that enables the stakeholders to understand their roles and responsibilities, and to assess their capacity to participate in this process. Part of the strategy is to provide information sessions/workshops for the various user interest groups.



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Executive Summary BIM Survey 2011 - 2012

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1. BIM Survey – Executive Summary

Building Information Modeling (BIM) has been a buzzword in the construction industry for some time now. Early adopters have reported significant benefits and appear to have attained a competitive advantage. BIM users have often acknowledged the value of BIM because of its potential to reduce duplication /rework such as, re-entering data into models or making changes in the field. It has been proven that as users become more experienced, productivity improves. With this in mind, the Canadian Construction Association (CCA) undertook the development and distribution of a survey focused on BIM. The purpose of the survey was to collect data related to the use of BIM in the Canadian Construction sector, identify bottlenecks in the adoption process, and issues/challenges faced. This report provides an analysis of the survey results, highlights, conclusions and recommendations¹.

This national survey was open to all construction sector disciplines. The major respondents were architects, engineers, private owners and specification writers with the majority of these being from Ontario, Alberta and British Columbia. Most of these respondents were engaged in projects at a commercial or institutional level. Two third of these respondents had some exposure to BIM in the past.

About 70% of the organizations using BIM have realized some form of benefit in four major areas:

1. Better end product,
2. Productivity enhancement,
3. Competitive advantage,
4. Documentation.

The survey revealed that BIM users who haven't experienced any benefits at all primarily fall in the 'just started using BIM' category. It should be noted that almost two-thirds of the users

¹ Please note that if the reader is Canadian Construction Association member and was a respondent to this survey, they are automatically entitled to access the complete survey results to obtain further information.



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indicate they have never participated in any form of a BIM implementation plan. Similarly, many users are not aware of any BIM planning documents, manuals or best practice guides.

About three-quarters of the participants still use traditional CAD systems. Just over 40% of the BIM users employ the 'Virtual Design and Construction' features. They value 'Design & Analysis' as the most important feature (80%), followed by the 'Documentation' capability. At a detail level, the BIM capabilities based on 3D, concept-design, co-ordination, clash detection, massing, Modeling, and visualization features are very much valued. A similar pattern follows for the most valuable outcome derived from BIM usage.

BIM software requirements, according to the survey results, are more or less evenly matched; i.e., 3D/4D/5D, collaboration, data exchange, and rendering. Less than 40% of the respondents indicated they have experienced interoperability problems. The users not experiencing interoperability problems may be using a single product/platform and not integrating tools from different vendors. In contrast, some respondents felt that interoperability with technical analysis tools is required and not sufficiently developed. Not many (< 40%) have experienced issues related to in-house software integration; again, this may typically mean that many users don't need to combine software functionalities of various types. When interoperability problems have arisen, most respondents have dealt with them by using standard formats or vendor specific formats; some also resorted to their own internal procedures. It seems that the DWG format is very heavily used, followed by DWF and DXF for design data sharing. RVT seem to be a popular format in BIM.

The survey data indicates that model ownership should be vested primarily with the architect (about 80%), followed by the owner; there are generic opinions also, which suggests that the model creator owns it. The participants indicate that architects should be responsible for the integrity and reliability of the model at the design stage, while, at the construction stage, both architects and contractors should be more or less equally responsible for the integrity and reliability. Further, at the operation stage, the facility managers and owners should be equally responsible for the integrity and reliability of the model.

More than 50% indicate that sharing BIM models may cause legal issues. The opinion on this matter is overwhelming and varies significantly, which is indicative of the need for an industry-



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wide dialogue. Some form of legal contractual documentation outlining clear responsibilities at each stage of the model evolution is needed.

The survey revealed that Revit is by far the most popular platform. Almost two-thirds of participants update the models with “as built” or “record drawings”. A majority (>60%) generate a working model from a master model. On the need for important software features in the BIM process, the opinions are many, and varied significantly; but features related to Collaboration, Coordination, Interoperability, Clash Detection, Integration, Visualization and Documentation surfaced time and again. Major documents embedded/linked with the model include technical sheets, cost data, manufacturer’s data and specifications.

Survey data shows that among BIM users, many initially started their BIM implementation on smaller projects (less than \$5 million), while the current projects are much larger (\$10 to \$100 million). In many cases, adoption of BIM was driven by internal efforts and internal management. Most of the survey participants have only been using BIM since 2000 and the majority did so during the past five years. Among the 212 survey participants, 65 (approx 30%) use BIM on a moderate or frequent basis and this usage is expected to grow to 102 (approx 50%) in the near future.

2. Conclusions

The results of this survey will serve as a benchmark for assessing the current state of BIM use within Canada’s AEC industry. It is clear from the survey that professionals in the Canadian Construction industry realize the power of BIM for efficient and intelligent modeling. It is also evident that advanced users have developed their own object libraries. Currently the platform for these methodologies seems to be dominated by Autodesk products, specifically applications such as Revit. The survey also revealed that BIM users still leverage CAD applications for the majority of the projects. To summarize, CAD-like features are desired in the BIM world, user desire tools to enable quick design analysis, visualization and documentation capabilities.

It is also evident that the participants are aware of the slow adoption process and are looking to the regulatory authorities to advance it. The survey suggests that one way may be to make BIM



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a mandatory requirement for public projects. Results indicate that it is perceived that an integrated approach will speed up the process and make the process more productive.

The questions identified in this survey and the responses received by various participants from the construction industry will serve as a platform for future activities such as developing BIM guidelines, implementation manuals and practice guides.

To summarize, the conclusions based on the results of the survey are:

- BIM is often interpreted as 3D modeling alone
- Lack of clarity in the definition of BIM
- User understanding of BIM is vendor conditioned
- Interest in BIM is high but true BIM projects are rare
- Perceived BIM benefits are common
- Lack of non-vendor-specific BIM direction/guidance
- BIM is rarely a contract requirement
- Results of the survey are not representative of the entire AEC industry

3. Recommendations

- IBC to reach out to increase awareness among users & non-users
- Forum, discussion groups, etc.
- Participate in industry conferences, seminars, events, workshops, etc.
- Solicit and document Canadian BIM case studies
- Provide user-friendly templates
- Develop supplements to existing contract and procurement documents
- Develop a standard Canadian reference BIM practice manual