Digicon/IBC 2013 National BIM Survey Analysis

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Digicon is very proud to have collaborated with the Institute for BIM in Canada (IBC) to conduct the latest survey on building information modelling (BIM). The template for the questionnaire was the third National BIM Survey (NBS), developed in the UK and modified slightly for the Canadian market. This survey is more detailed than the previous one prepared by the Canadian Construction Association (CCA) in 2011, and because modified versions of this survey are being delivered in other countries, the results will be used to compare Canada's BIM status to UK, New Zealand and Finland.

Completed between February and March, 2013, 78 people from a range of disciplines and company types responded. The raw survey results may be viewed on the Digicon and IBC web sites, in the format of a PDF slideshow. This analysis has been broken into two primary areas; an analysis of the people, and an analysis of their adoption of BIM. As a result of the limited number of respondents and the relevant disciplines, the results of this survey are limited in its ability to be generalized to the industry as a whole.

Survey Respondent Analysis

The vast majority worked for "multi-disciplinary" teams (32% or 25 people). This result is not surprising and in keeping with modern work environments. The exact composition of these multi-disciplinary teams is unknown and may have a significant impact on the role of architects, engineers, and specifiers. A relatively low 4% of respondents have no idea what BIM is (and none of them came from the one- or two- person firms)!

Significant results about the respondents:
- A clear majority of respondents were aged 35 – 65 (79%).
- By far most (94%) of respondents work in Canada, a handful in USA/North America (5%) and only 1% overseas.
- The respondents' main disciplines include architects (12%), contractors (13%), and various types of engineers (26%). Although specifiers were not singled out as a discipline, 64% of companies (and 51% of respondents) indicated that they prepare specifications.

Type of business:
- By far the largest type of business reported was multi-disciplinary (32%). Architects and Contractors were equal at 12% each while only 8% were Structural Engineers. These results are interesting since "multi-disciplinary" does not identify any specific professional group. The

various types of engineers constituted only 21% of respondents (excluding building services engineers) although 46% belonged to an engineering professional association.

- Excluding the multi-disciplinary team approach, only architects (12% or 9 people) and Structural Engineers (8% or 6 people) are involved in the Project Development process from the conceptual stage to the end of the bidding process.
- 51% of respondents worked for large companies of 50+ employees. In fact, the largest percentage (23%) worked for companies of 501+ people. The large size of the companies suggests that respondents tended to come from government offices. This observation is borne out by the fact that the largest category of work was public housing (46%), health (65%), education (67%) and other public projects (82%); only work on private offices (70%) and other private (68%) reflected work in the private sector.

Within organizations:
- This survey found the organizations that demonstrated the most labor intensive activities associated with building documentation and drawing (17% of staff) were firms of 16-25 persons. This may be the turning point for organizations where the ratio of staff involved in these activities is greater than it would be as the firm grew bigger.
- On the other hand, organizations of size 26-50; 251-500; and 500+ reported that 12% of their staff was involved in building documentation and drawing. This translates into 1 – 2 people/firm: a finding that would not appear to be out of synch with common practice and may be associated with an economy of size.

Services provided by organizations included:
- 22% produced hand drawings (presumably for early phase sketching),
- Development of project drawings was dominated by Autodesk by a country mile, with 43% being generated by AutoCAD and 40% by Revit; the rest split among a variety of others.
- 64% of firms provide specifications, and 51% of respondent individuals indicated that they directly write specifications. Interestingly, almost half (47%) do not reference specifications on the drawings at all!
- 62% provided bid documents,
- 51% provided full design and build packages.

A relatively high percentage of firms use all popular procurement methods to deliver projects. While traditional Design-Bid-Build still holds top spot, Design-Build and Construction Management are very close behind. Partnering and Public Private Partnerships (P3) were least popular procurement methods.

BIM Activity

Today, 66% of respondents indicated that they currently use BIM. A high percentage of responders indicated that they are hearing more about BIM and believe BIM is the future of project information, and fully 97% believe that they will be using BIM in five years.

With regard to the success of BIM (in today's environments and tools), more than half feel that there is not enough good information yet about what BIM really is. Only 24% of respondents believe what they hear about BIM, and 10% believe that BIM is just a synonym for 3D CAD. The fact that 26% of respondents feel that models only work in the software they were built on suggests that BIM 'silos' are

still common (silos are two or more software applications, collaborating to communicate between themselves – to the exclusion of others), and there is a still a great deal of distrust that two or more software programs can successfully exchange BIM data. This is confirmed in a later question where only 52% of respondents reported exporting their data to an open format. The two biggest secondary uses for CAD were visualization and automated schedules. The fact that only half of respondents feel confident in using BIM further suggests that education is a very important factor to the industry's growth in this field.

A few questions inquired as to where designers were getting their CAD objects. It was gratifying to see that most people create what they need in-house and re-use them (83%), but we were a bit surprised to learn that some firms create objects on-the-fly for each project (54%). Of great concern is the use of bundled (pre-packaged) objects, which are typically short on detail, or manufacturer objects which may be either overloaded or lacking in detail.   Digicon intends to use object 'type' information to automate specifications in BIMdrive; on the Revit side, this requires consistent and stable Revit Families.

While only 30% of people think that our government is on the right track with BIM, 54% feel that the government will insist on BIM delivery of projects. The mandatory requirements imposed by governments have proven to be the most effective in other countries (the most recent example being UK, where BIM delivery of public projects has been mandated by 2016). In fact, the UK impetus goes a step further and requires delivery in some form of "open BIM" format (non-proprietary data format).

This leads to the respondents' feelings about changes being brought about by the use of BIM processes. A vast majority feel that adopting BIM has improved visualization and document coordination, and it is interesting to note that those rewards rated much higher than profitability. Most feel that clients will increasingly insist on the use of BIM (although the survey did not indicate whether deliverables should be required in some form of BIM format).   A majority 71% said that contractors will insist on delivery of BIM design files, although this won't carry much weight in a Design-Bid-Build procurement where the contractor takes whatever is offered.

When analyzing the suggestion that BIM will somehow replace bills of quantities or traditional specifications, a majority of respondents disagreed. There is still a place for those activities in a BIM world.   Of those firms who prepare specifications, a variety of approaches are used to link specifications to drawings:
- 3% use a Plug-in tool for Autodesk Revit,
- 12% automatically add keynote or specification references,
- 18% manually add specification references to the drawings,
- Information is coordinated by:
    - 19% by classification reference only,
    - 16% by classification reference and title only,
    - 26% put full descriptions on drawings without a specification.

The topic of BIM specifications is a relatively 'new' field globally; very few companies in the ICIS (International Construction Information Society) circle of members have operational BIM specification software. We suspect (somewhat from experience with development of our own BIMdrive software) that the major hurdle in the way of BIM specifications is the fact that drawings and specifications are complementary documents, and therefore common terminology (requiring 2-way communication to enforce) MUST exist between them. Another major difference between us and the rest of the globe is that in North America, specifications are largely 'narrative' (natural language) documents; European specifications are very concise and tightly structured documents (ideal for database implementation).

At the other end of the scale, 9% of those who adopted BIM felt that they wish they hadn't! No doubt these respondents exerted the effort to learn the new technology, and did not realize any benefit. In future, this question should be enhanced to find out why.

For firms who have not yet embraced BIM, it will be of interest to note that all but 2% of respondents indicated that adopting BIM required changes in processes.

Summary

The results of this survey may have been influenced by the number and experience of the respondents; it is this author's feeling that most respondents were familiar with BIM, and the results reveal a status of affairs from their point of view. What we did confirm is that those firms use a variety of project delivery methods, they utilize the obvious benefits of 3D CAD modelling (visualization and schedules), but true collaboration still eludes even the experts among us. In particular, BIM specifications are still in their infancy (they are coordinated with drawings largely using manual methods).

It is gratifying to see that despite bad experiences (9% wish they hadn't started), 97% of respondents thought that BIM would dominate their future in five years! Digicon's research into BIM led to the development of BIMdrive; we continue to look for ways to improve tools for specifiers to do their job effectively, and look forward to improving the communication of project data between all project team members.

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About Digicon Information Inc.

Digicon is a publication and consulting company specializing in all aspects of construction specifications and product data development in North America. As specification writers, publishers, educators, and now software developers, we strive to maintain our lead at the forefront of construction documentation and software technology.

Digicon produces the SpecSuite family of specifications, which includes the Canadian Master Specification (CMS), as well as editing software for Word (SpecMacros). Digicon developed and maintains its flagship specification management software BIMdrive, which integrates specifications with building models. All of Digicon's documents and software are available at Spex.ca, an e-commerce web site through which all of Digicon products are sold, as well as the National Master Specification (NMS) and publications produced by Construction Specifications Canada (CSC).

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