

A Brief Summary of the RICS BIM Vendor Showcase

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BIM Vendor Showcase Part 1

At the 2014 RICS BIM Conference we asked a number of software vendors to extract measurements out of a Building Information Model produced from a scan of the RICS Headquarters building in Parliament Square:



The aim of the showcase was not to identify the best piece of software, but to help produce practical and meaningful recommendations based on learning from the assumptions made and approach taken by each vendor.

The measurements requested were those commonly required by a cost consultant for early stage cost planning (GIFA and elemental unit quantities). The measurements are used by the cost consultant who applies them to average building prices and elemental rates, such as those provided by the Building Cost Information Service (BCIS) of RICS.

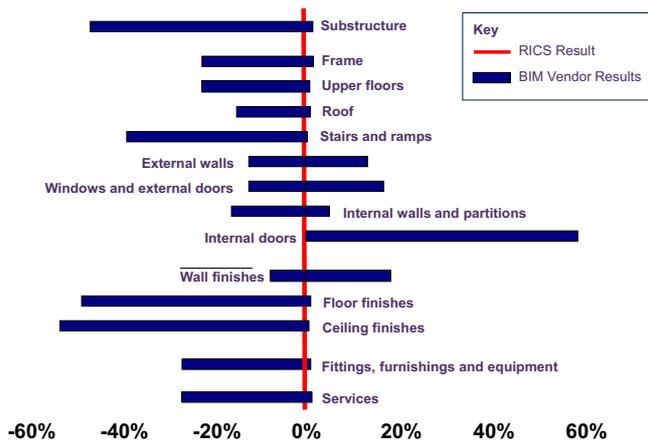
Manual measurements for the GIFA and elemental units were also taken using existing plans and a scale rule.

The results showed a major variance across all submissions. The graphic below represents the gross internal floor area recorded from our manual measurement (shown as a tape measure) and the range returned by the BIM software vendors (on the PC monitor):



If we were to have used the floor areas in an early stage calculation with an average building cost rate of say £4,000/m², the variance in the estimate produced would have been over £5m.

The range in elemental unit quantities extracted was equally as diverse. The red vertical line in the graphic below represents the quantity recorded from our manual measurement, with the blue bars representing the percentage variance range recorded by the BIM software:



We learnt that the majority of variance was a result of the quality of the BIM model produced. When the scan was undertaken, it was at a time when the building was being used so the scanners did not get an opportunity to scan every room. Some of the BIM software helped identify the gaps, while others did not. There were also errors in the model which were picked up by some of the submissions and corrected.

When commissioned by RICS, we did not list the content requirements or identify the potential future uses of the model to the design team responsible. Objects were not named and were coded in a way to help the downstream professions use the model.

We made a number of recommendations to the industry at the end of the 2014 BIM vendor showcase:

- 1) **Produce a content plan to demonstrate the requirements and use of the model.** This plan would have highlighted the need for early stage estimating and made appropriate requirements, e.g. include an object called the 'gross internal floor area' in the model to allow simple extraction of floor areas.
- 2) **Make sure the model is of the appropriate quality.** Model quality is clearly important, including using design objects as they are designed to be used. A recent industry example was discussed of a building model where the design teams had extended the piles throughout the building to represent columns. Any BIM measurement software will not return correct item measurements if the naming and coding of the objects are not correct.
- 3) **Make sure you allow enough time to check any outputs.** Software can undoubtedly extract measurements quickly and correctly, but only if the information itself is correct. Make sure that sufficient levels of checking are applied.

BIM Vendor Showcase Part 2

The second showcase completed for the 2015 RICS BIM Conference expanded on earlier findings. This time focusing on a particular floor of the RICS HQ, we asked the software vendors to produce an estimate of the life cycle costs (LCC) over the next 10/20 and 30 years.

We provided a copy of the BIM model and other information of potential use in calculating LCC, namely a list of components and copies of the BCIS component life expectancies and the BCIS Building Maintenance Price Book.

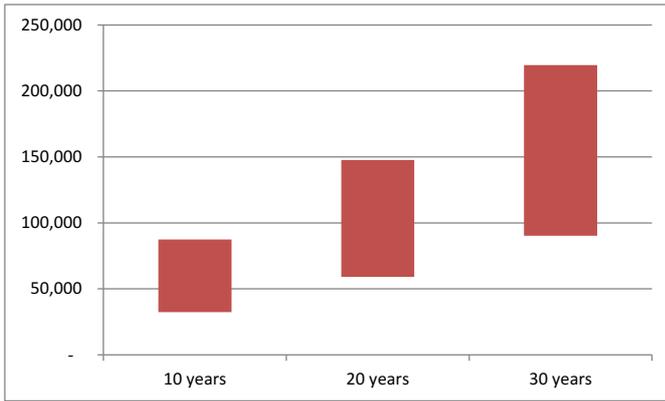
Interestingly, of the eight software vendors who expressed a willingness to participate, only half submitted a response. Some of these were due to capability, others due to availability to complete the task on time. The responses received again showed a large variation in results.

The graphic below represents the gross internal floor areas recorded from our manual measurement of the appropriate floor of the RICS HQ (shown as a tape measure) and the range returned by the BIM software vendors (on the PC monitor):



On further investigation, the variation in areas returned was mainly caused by fitted cupboards within the building that were not accurately converted from the scan data in the model.

The LCC figures returned from the vendors also ranged considerably. The following chart indicates the range of costs returned from the vendors for 10, 20 and 30 year total cost projections:

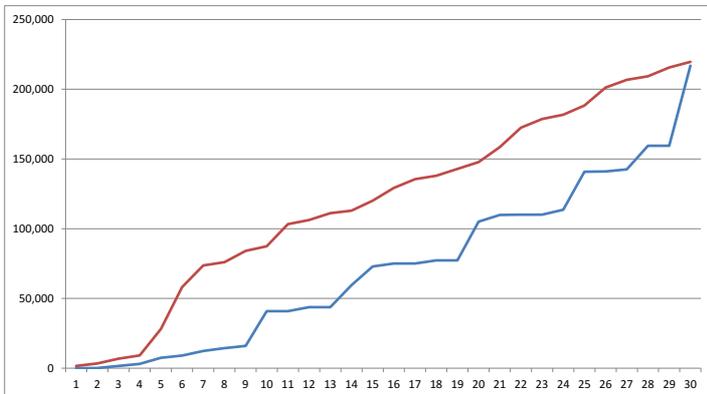


It became clear when looking at the detailed studies produced, although each software package undoubtedly had the capability of calculating LCC, the assumptions made and understanding of the relevant standards were very different throughout the submissions.

In particular, assumptions varied very widely for the following:

- The condition of the assets (and in particular what remaining life they had)
- The quality/condition that each asset needed to be in.
- How much each asset could be sweated or stretched before an intervention was required
- What costs and activities should be included/excluded in LCC
- The cost of each of the activities

This is reinforced when we look at two of the vendor submissions which over 30 years returned a total cost value very close to each other. When plotting the cumulative expenditure it becomes very clear that the assumptions made on when to undertake maintenance or replacements are very different:



We made a number of recommendations at the end of the BIM vendor showcase part 2:

- **Know the standards.** The software vendors are accelerating rapidly in this field and RICS Standards are being embedded – but the user still needs to know and understand them. In particular, different terminologies were used by the vendors (present costs, real costs, future costs, sunk costs, etc.). If we don't understand them, how can we know we are asking or giving the right information and comparing like for like?
- **Agree the scope and boundaries.** Should you include cleaning, energy use, soft FM operational costs, etc.? The answer depends on what you are trying to study and produce. In our vendor showcase we did see different activities included – one of the biggest reasons for the wide variation of results. We deliberately kept the brief vague by just asking for LCC, but none of the vendors came back and asked for confirmation of what should be included.
- **Garbage in, garbage out.** Not only is the quality of model important as we learned in last years' showcase, the availability of benchmarked independent data is just as important. This may be data related to how long a component lasts, or how much it costs to do an activity – both are equally important. BCIS has some of this data already, but needs to structure the data to make it easier for the software vendors to support the NRM3 standards.
- **BIM is also for Building Surveyors.** In order to complete a LCC of an existing building it is imperative to know the condition of the components or assets within it, how far they are into their lives and when the next intervention is required. For this to work efficiently we need building surveyors to understand BIM and be able to structure condition surveys to support the information in the model. One of the software providers demonstrated this link and completed their own condition survey; others relied on the poorer quality information provided by us.
- **Make sure you allow enough time to check any outputs.** As in the previous showcase we found that the software can undoubtedly extract measurements quickly and correctly, but only if the information in the model is correct. Make sure that sufficient levels of checks are applied.

Want to find out more?

If you would like more information about the vendor showcases, please get in touch with the relevant contact:

For general queries on the research please contact James Fiske, Director of Product Delivery and Operations at RICS (jfiske@rics.org).

For technical queries relating to BIM and how BCIS data can support it please contact Paul Burrows, Data and Information Product Solutions Architect at RICS (pburrows@rics.org).

For queries relating to embedding RICS standards or BCIS in the software you are using, please contact Louise Weale, RICS and BCIS Data Licensing Manager (lweale@rics.org).

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