

Scan2BIM or Scan2Model?



In November, Mark Coombes and Mark King gave the first in the winter series of RICS evening lectures to a packed lecture hall at Great George Street.

This fascinating talk covered the recent project to survey the RICS headquarters building using laser scanning. The topic was introduced by Mark Coombes of the Severn Partnership and largely presented by Mark King, the partnership's scanning guru. The first Mark (Coombes) asked for a show of hands to see where the audience came from. It was split roughly in thirds between geomatics, construction and property. BIM is now of interest to everyone.

The RICS interest in BIM is educational as well as practical. The organisation has recognised that BIM will be central to the future of building and infrastructure and so its employees and members have to understand what it is about. The scan of 12 Great George Street was seen as an excellent way to achieve this as well as putting BIM into practice on its own building stock. The scanning and modelling has been completed but the learning is continuing, with the assistance of the Severn Partnership, as the full potential of the project is explored.

King went through the scanning procedure from the installation of plenty of survey control points around and within the building to collection of point cloud data. At the request of the client, some rooms were scanned in great detail – like the library, whilst others were scanned from outside of the door, looking in. It is worth noting that there are still places where a handheld Disto EDM and tape are more practical and economic techniques than expensive (and heavy) laser scanners.

Dating from the mid 1800's and having undergone many changes over the years, the RICS headquarters building is one of the more complicated buildings that one is likely to come across and King summed it up as a structure where there are no vertical walls and no horizontal floors. Whilst this is of no consequence for point cloud data collection, it is a problem for the modelling process to turn the point cloud into geometrical surfaces. Modelling is a time-consuming business and for the RICS building it took six weeks.

Autodesk Revit is rapidly emerging as the software that will be used to create BIM 3D models. But Revit likes right angles and throws up interesting questions about how to represent an uneven, imperfect real world. As King says, it is possible to model non-vertical and uneven surfaces but the process takes longer and therefore costs more. The sensible solution is compromise, but the client and contractor must be clear on what exactly is going to be done, and for this purpose, close interaction with the client and a sound specification are essential. The purpose of the model is to simplify reality, but that begs the question – how simple. To help reveal the effect of generalisation, Severn Partnership can reveal the 'errors' in the model by colouring the point cloud to show how far each point deviates from the modelled surface.

The talk closed with an introduction to Seeable, an interesting new product offered by Severn Partnership to help release the power of laser scanning on to any platform using games technology.

In questions following the lecture, one member of the audience asked about the cost of BIM. Yes, the speakers said, there is a larger up-front survey cost, but projects already carried out have demonstrated that the savings can be hundreds of thousands of pounds – in the construction phase alone.

"Are we now at the point of observing scans anyway?" asked another. "Yes" was the response. "Scanning equipment is now a standard survey tool." It is becoming clear that the surveyor's role in BIM is to produce the 3D model on which others hang the attributes that turn it into BIM. In other words, the 3D Model is ready for BIM – BIM ready.

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