

MAKING THE MOST OF BIM

While BIM is a huge technological leap in building design and management, its successful implementation is not straightforward. The major design programs use the system in different ways, which can limit its potential.

By **Kerry Thompson**, Co-director, Triptech Ltd, Auckland, www.triptech.net

Building information modelling (BIM) is expected to make a significant contribution to achieving the goal set by the Building and Construction Productivity Partnership of a 20% increase in building industry productivity by 2020.

But while the Masterspec survey of New Zealand architects and designers indicated that many organisations use BIM and even more are thinking about doing so, few seem to relate to what BIM actually is – a virtual representation of a project's design, construction processes and operations over its life.

BIM is about information and process, and its potential comes about by leveraging the information within the building model. A 3D model is only one representation of the information contained within a BIM database.

Problem is programs don't communicate

The major BIM applications available in New Zealand, ArchiCAD and Revit, can both support a BIM methodology, but they are very different in the way they work.

Objects used and built for ArchiCAD do not work with Revit and vice versa. The sharing of BIM models between them is problematic and leads to projects generally using one type of BIM system and CAD techniques to exchange data between different systems at the lowest common denominator.

ARCHICAD

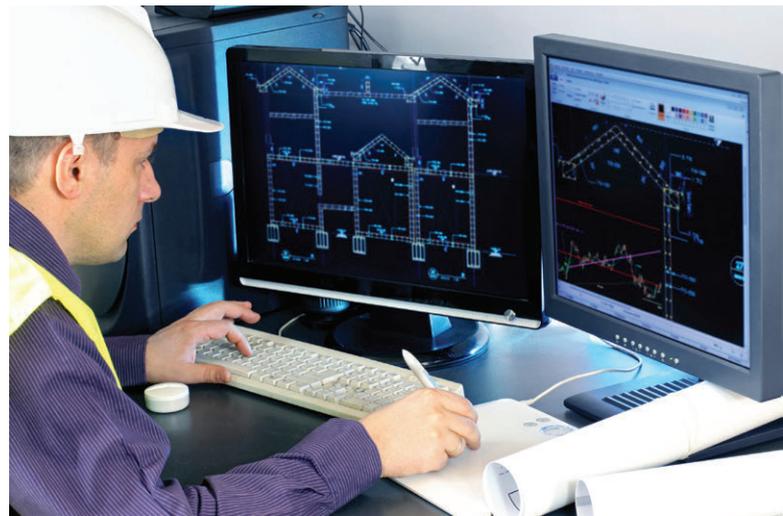
ArchiCAD has its roots in a geometrical 3D CAD system and was referred to as a 'virtual building modeller' before the acronym BIM was popularised by Autodesk. In New Zealand, ArchiCAD was well established during the 1990s when it was sold as an architectural package, with users taken by the relative ease involved in developing and presenting a 3D model. Currently, ArchiCAD tends to be used by smaller organisations and by a significant number of architects and designers.

ArchiCAD allows the user to create a virtual building with elements like slabs, walls, roofs, openings and furniture. A variety of content is supplied with the program, and there are a number of New Zealand-developed additions, that augment the core functions of the system.

ArchiCAD works in 2D or 3D, and two-dimensional drawings can be produced as required. ArchiCAD data is stored in a three-dimensional database. Plans, elevations and sections are generated from the three-dimensional virtual building model and are constantly updated if the user rebuilds the view. Detail drawings are based on enlarged portions of the model augmented with 2D detail similar to the traditional detailing.

REVIT

Revit was launched in 2000 and its parent company purchased by Autodesk in 2002. Autodesk has since adopted Revit as its main building information modelling platform and offered a way to decouple AutoCAD



from its project delivery workflow. The word 'Revit' is derived from the phrase 'revise it' and the package is based on parametric techniques successfully used in the manufacturing industry. It is not based on a conventional CAD system.

The core of the system is made up of building objects that are then used to make a model of the project. This is presented and manipulated in views that may be 2D or 3D representations of the model or provided as information schedules. Any changes to the model are reflected in these views. Because it is a model, implicit information, such as quantities, is also available. The objects also relate to one another, for example, a door is hosted by a wall, walls link to roofs and columns are attached to foundations. Change an object, and the associated elements respond to the change.

At this level, we are no longer draughting – we are producing prototypes of the project in terms of what is to be delivered and the production processes required for delivery. A Revit model drives the general arrangement and location aspects of project documentation, but the detailing is still augmented by 2D drawings.

Changes needed for BIM success

There is no question that the industry is adopting the BIM process, but to have the impact expected from it, BIM has to deliver more than 3D.

The successful implementation of BIM requires a change in the design culture and process of delivering a project. This will require investment in consistent standards, development of content and automation of processes and training. Above all, successful BIM requires the commitment of people, particularly the directors of organisations that are implementing it. ◀