

How BIM is changing the face of the New Zealand architecture industry

By Mike Russell

From envisioning a building using sketches, physical models and drawings to current practices with technology such as building information modelling (BIM), innovation is now a key element for the architectural services sector to meet the challenges of digital transformation.

A PwC report has revealed that New Zealand's design sector contributes approximately \$10.1 billion in a year to the country's economy and is equivalent to 4.2% of New Zealand's GDP, meaning innovation in the architecture and design industry is a priority for the nation.

Driven by specialised design software solutions supported by BIM, the building and architecture industry is undergoing significant change. Architectural design has transformed from paper sketches into a digital representation of a building with physical and functional characteristics that are communicated to all agents of the project using BIM.

As a major driver in the transformation of architectural processes, BIM is an intelligent 3D methodology that allows architects to envisage what a completed design will perform in detail ahead of time. Virtual models of buildings are digitally designed and can be altered throughout the development phases using intelligent capabilities. Across all stages of planning, designing, constructing and managing buildings, BIM increases efficiency and cross-discipline integration.

ARCHITECTURE DESIGN PROCESSES

In an architectural design project, the complexity of the process lends from the plethora of interactions between multiple

agents throughout the lifecycle.

To intelligently manage information, BIM incorporates time and costs into the drawings for transparency across all agents. Projects modelled in BIM can include the real products and materials that will be used to build them, incorporating physical properties, characteristics and costs into the model.

This streamlines the process of design and communicates complicated information accurately to everyone involved. Considering that 38% of the survey respondents mentioned that BIM use allows for better coordination between parties, BIM has a clear advantage which lies in allowing the joint work of architects, clients, builders, engineers and other stakeholders to occur within a single intelligent and shared process. These advantages make BIM a critical tool for the digital age.

THE ROAD AHEAD

The current state of BIM adoption in New Zealand has plateaued and is reaching a general sense of maturation, reflecting the greater role the government should be playing to drive growth in adoption or develop national standards.

The 2017 BIM survey results found that BIM was only used in 2% more projects in 2017 compared to 2016, indicating a need for greater government support through setting standards and training. However, the establishment of the BIM Acceleration Committee (BAC) since 2014 means there has been greater effort to develop more efficient work processes through the application of BIM and open standards.

In the New Zealand practice of architecture and design, the workforce needs to reflect industry transformation by adopting BIM in their daily practices to prepare for the future. Currently, 25% of survey respondents in the 2017

BIM benchmark survey found that further education was needed for clients to understand BIM and 23% mentioned that there needs to be an increase in the quantity of BIM operators and staff. Clearly, training is a crucial element in the approach of improving adoption and driving change in the design industry.

For instance, Ctrl_Space, a New Zealand business, has reacted to the demand of these critical skills by effectively implementing BIM training programmes. By adopting this methodology, there is a clear increase in capabilities when delivering high-quality design to current date standards as projects are completed with greater integration and efficiency.

This shows how crucial the expertise on design tools is for the growth and development of the industry. To achieve sustained growth, a key priority for businesses is to adopt BIM as part of their design process and drive innovation in the architecture industry.

MAXIMISING POTENTIAL

While BIM is an invaluable process offering an abundance of benefits to the architecture and design industry, the adoption rate in the New Zealand market has plateaued as it is reaching maturity in the market.

New Zealand's current design and architecture landscape can maximise BIM's potential when businesses are investing in training, knowledge and skilled resources to utilise the software. From the example of Ctrl_Space in their adoption of BIM to reap the benefits of integration, cost-efficiency and flexibility, New Zealand's design industry can definitely drive sustained innovation using technology.



Mike Russell is the chief operating officer at Central Innovation, a team of technical specialists, architects and engineers who bring best-of-breed technology and workflow solutions to leading architecture, engineering, construction and manufacturing industries in Australia and New Zealand

Construction firms lose billions per annum in labour costs on unproductive work

'Unproductive work' is costing construction businesses in New Zealand and Australia nearly NZ\$53 billion a year, according to new research.

The findings are part of a survey of the global construction industry covering 599 respondents internationally. The Construction Disconnected research included 80 construction leaders and decision-makers from New Zealand and Australia.

Tomy Praveen, Asia Pacific managing director of construction productivity software provider PlanGrid, which partnered in the research, says the project reviewed how teams spend their time while on a jobsite. It also studied the challenges associ-

ated with poor data management practices and miscommunication, and companies' technology investments.

"Construction companies on both sides of the Tasman are losing a third of all working hours to unproductive activities. That equates to over NZ\$53 billion a year in financial waste," states Mr Praveen.

The research found that each construction worker on a jobsite spends 11.5 hours every week on non-optimal tasks. The most time-consuming unproductive activities are: looking for project information (4.9 hours), conflict resolution (3.4 hours) and dealing with mistakes and rework (3.2 hours). This comes despite nearly half of all businesses (46%) saying improving pro-

ductivity is the main reason behind their technology investments to date.

A CALL FOR INNOVATIVE TECHNOLOGY

Mr Praveen points out that New Zealand's KiwiBuild initiative is calling for innovative technology and productive construction to drive down costs and make housing more affordable. "Investing in the right technology on jobsites will deliver savings and reduce rework, not just for the residential market, but any major construction project in the heavy civil, commercial and residential sectors," he says.

Firms are turning to technology to address the challenges caused by poor data and communication. Based on survey responses, the top purchasing drivers behind investments in digital tools are improving accessibility (36%) and accuracy (34%) of project data.

However, the report points to a discon-

nect between the priorities of those selecting technology and the needs of field workers. At present, technology is purchased mainly to suit the needs of the office (54%) rather than workers in the field (36%). Only 17% of firms considered gathering feedback from potential users of solutions before making the purchase.

"Businesses have made a positive start by investing in technology; now there is a great opportunity to refine their approach by choosing tools tailored to the needs of employees on the jobsite," says Mr Praveen.

"Embracing technology will improve performance on every project by reducing errors, improving communications and enhancing employee engagement. Bringing field workers into the conversation when selecting technology will not only benefit individual firms, but help to keep construction in Australia and New Zealand at the forefront of the industry worldwide."