



TECHNOLOGY

# OPENING VIRTUAL WINDOWS ON THE WORLD OF DESIGN

**A Hong Kong early adopter of VR visualisation says architects can now immerse their clients in precise 3D renderings of rooms and buildings**

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Architect Vincent McIlduff is often in a world of his own. Wearing a HTC Vive headset, the Irish architect may be physically present in his office but in (virtual) reality, he is on site at his latest design project.

Not only does he see an exact rendering of what he has designed, he can become totally immersed in it, able to interact and explore. Two sensors in the form of small black boxes track his movements so his alter ego can also walk around, sit, bend and get down on hands and knees. Whichever way he looks, the screen on his face follows and the picture he sees shifts accordingly. It shows him a different perspective of his design and gives him the same field of view as if he were looking around a real space.

He can walk from one virtual room to another, from floor to floor and from indoors to out. He can turn on taps, switch lamps on and off and open doors. He can change everything about his project down to the smallest detail, including lighting, colour, furniture and finishes.

In projects such as villas in Lombok, Indonesia, where the view is important, he uses an on-site 3D camera to take photos of the surroundings and superimposes those images into the VR model. When you look outside the virtual window, what you see is what you are actually going to get.

"Designers can now build rooms in the same way that gamers build worlds," says McIlduff, who came to Hong Kong with Dutch architectural firm OMA in 2011 and set up his own company, Alt-254, five years ago.

"The technology gives me a 3D idea of the space – such as how high the ceilings are – so I can experience what it feels like to be inside a particular design as well as see it. The virtual images and the actual result are very similar."

What he sees through his headset also appears on a computer screen so other people in the room can keep pace. In the VR

designs for new Hong Kong hotel Mojo Nomad Central that he shows me, the detail is incredible; even the grain of the wooden floor and the nap on a stool cushion are visible.

The more hard core construction details such as floor plates, interior elevations, wiring and plumbing are all done in another phase in conjunction with building information modelling (BIM). This digital process creates and provides information about every aspect of a building's construction across the project life cycle.

The dimensions of McIlduff's virtual interiors match those of the office he is standing in to prevent him from banging into real walls. A blue screen, meanwhile, runs around the edges of the virtual space. Users, apparently, often get so carried away – moving their limbs, pointing and touching virtual features – that without these on-screen borders they would run the risk of injuring themselves.

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VINCENT MCILDUFF, ARCHITECT

"The virtual reality set-up is rendering live," says McIlduff, who believes Alt-254 is the first and, so far, only architectural firm to use VR technology in Hong Kong. "It creates 40 images per second, which is how it allows us to do a walk-through in real time."

Compare this to the hours it can take for some computer technology to show a single photo-realistic, but static, rendering on screen, and you can see why he is convinced VR applications are the future of architecture and design.

It began with the film *Avatar*, McIlduff says, which kicked off the first big phase of commercial 3D. The creation of 3D imagery was pounced on by the gaming

industry, which has run with it ever since, developing increasingly sophisticated technology.

One of the challenges architects face is communicating their design vision and aligning it with a client's perception, requirements and expectations. VR technology makes life easier for all parties.

It helps Alt-254 become more efficient and produce better-quality work faster and facilitates quick client decision-making, avoiding endless rounds of revisions. For example, McIlduff can select a brick in a virtual wall and change it to concrete in seconds, enabling his client to see two different effects and instantly choose the preferred one.

"The importance of visualisation in getting client sign-off is everything," McIlduff says. "As an architectural firm, it's our benefit to translate our design into an image as fast as possible so that the client can see it and sign off on it as fast as possible [enabling construction to begin]."

To make matters even easier, McIlduff has swatches and samples at hand so clients can touch the materials and see their size, appearance and texture up close, as well as see their look in VR. He can also upload the entire VR model onto an iPad Pro, which clients can then take back to their home or office to choose their desired interiors at leisure.

"VR already saves so much time compared to older methods of working," he says.

"The technology will only get faster, more sophisticated and more affordable, and make traditional detailed drawings obsolete. Plus, our client [demographic] is changing – they are getting younger and are more used to this kind of technology, which is what they will come to expect."

McIlduff is not sure why more architecture firms are not adopting VR. He says there is a lot of resistance to new technology, but wants to challenge the status quo and inject a more entrepreneurial spirit into his profession.

"Architects are renowned for being the last to catch on to new technology," he says.

"In the 1980s, we were still using pencil, paper and rulers when industries such as engineering were miles ahead with computer technology."

This time, he is certainly not going to be left behind.



Wearing the HTC Vive headset allows clients to see an exact rendering of a design. Photo: Handout