igloo

How to accelerate the uptake of BIM and extend its benefits

The case for Shared VR in the architecture, engineering and construction (AEC) sector.

What needs to happen for more businesses to get more besotted with Building Information Modelling (BIM)

For many Igloo clients, BIM is already Business as Usual (BAU). But they're often frustrated by its rate of uptake across the wider industry...

When does a future-trend become a current-thing?

Way back at the start of this year – just like the start of every other year – all the architecture, engineering and construction (AEC) consultants and commentators made their predictions. They stuck their necks on the line, naming the trends and technologies they believed would take root in 2019. So, we looked through these predictions, did a quick tally, and here is what we found:

What are the big AEC trends and technologies to watch in 2019?
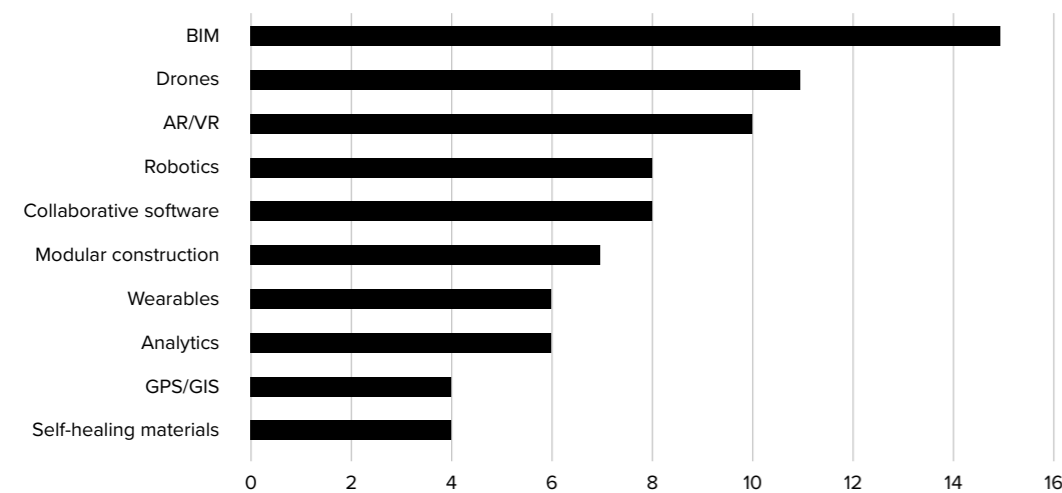
Source: analysis and predictions from AEC commentators and media including: McKinsey & Co, Deloitte, B1M, Let's Build, FMC, Viewpoint, Visipoint, Rhumbix, PBC Today, Highfield, Asite, Enscape, eSub

This tells us a lot. Building Information Modeling (BIM) was mentioned by EVERYONE. Without exception. The consensus is clear: BIM is set to have a HUGE impact across the AEC industry.

But, here's the thing: If you had done the same exercise in 2018, or 2017, or even 2016, it could well have been the same story. In all likelihood, the picture would still have been dominated by BIM.

So, you are forced to ask yourself the question, why don't more people regard BIM as BAU?

Why hasn't it stopped being a future trend?
And why hasn't it started being a current thing?

After all, BIM (level 2) is already a requirement for UK public sector contracts. BIM is picking up steam worldwide. And many of the clients we work with already live and breathe BIM.

BIM 101

BIM (Building Information Modeling) is an intelligent 3D model-based process that gives architecture, engineering, and construction (AEC) professionals the insight and tools to more efficiently plan, design, construct and manage buildings and infrastructure.

Whereas traditional building design was largely reliant upon 2D technical drawings (plans, elevations, sections, and so on), BIM extends this to 3D and beyond – for example, the three primary spatial dimensions (width, height and depth) can be augmented by time as the fourth dimension and cost as the fifth.

BIM, therefore, covers more than just geometry. It covers spatial relationships, light analysis, geographic information, and quantities and properties of building components. And, for the professionals involved in a project, BIM enables a virtual information model to be handed from the design team (architects, landscape architects, surveyors, civil, structural and building services engineers, etc.) to the main contractor and subcontractors and then on to the owner/operator.

At each stage, more discipline-specific data can be added to the single shared model. This reduces information losses that traditionally occurred when a new team takes 'ownership' of the project, and provides more extensive information to owners of complex structures.

A 3D vision trapped inside 2D tools?

At Igloo Vision, we work with a lot of BIM evangelists from across the AEC lifecycle, as well as facilities management and operations specialists. We are forever discussing BIM models. And one thing we hear a lot is that BIM has never truly escaped the confines of 2D.

Yes, the models may be 3D, but they are typically created and viewed on 2D screen – which is a little like composing an entire symphony, then having to play it back within the confines of a single octave.

Of course, there are many other challenges standing in the way of BIM implementation (a lack of client demand, for example, or a scarcity of skills, or the costs of implementation, or issues with version-control, or the gargantuan size of files, and so on). But even when these issues are addressed, the 2D versus 3D dilemma remains.

The emergence of the new generation of VR headsets helped. With them, it became possible to explore models in true 3D. But the exploration is always a lone exercise.

And, when a big part of the BIM rationale is the improved collaboration and hand-off between all of the different parties in a project (clients, architects, surveyors, engineers, contractors, sub-contractors, and eventually owners and operators), shared solutions are essential.

Five reasons to set the models free – and benefit from immersive visualisations

So, for Igloo, the answer is simple - it's time to free BIM models from the confines of 2D screens and the isolation of VR headsets, and start investing in 3D immersive environments.

Here are five reasons why they can bring new benefits and create more value:

① Explore your designs from every conceivable perspective

Immersive 3D visualisations enable developers and architects to understand a design from the occupant's perspective.

For example, you can check the functionality of any space, and see how working or living within it could be improved – or impeded – by different design elements. For example, when designing a school classroom, you could choose the best location for additional teaching aids, or experience the space from the eye-level of a pre-teenage child.

At some stage, you will want to discuss the details with colleagues or clients. And it's difficult to do that when the collaboration is blocked by the impenetrable barrier of a VR headset. So there's a pressing need for a group of you to explore the designs in a shared immersive space.

② Extend your BIM workflows

These days, it's simple to extend your workflows from BIM to immersive 3D visualisation. Many tools offer a direct link between 3D models and construction details. And this enables you to access detailed BIM data from within a visualisation.

So, for example, as part of a design review discussion, you could select a light fitting, access the meta-data behind it, and assess factors like cost, material type, and alternative options. So, in this instance, a designer and client could discuss options to optimise cost, without sacrificing the design aesthetic.

The implication is that this is done as a shared, collaborative process - which necessitates a shared, collaborative immersive environment.

③ Speed-up your iterations, validations, and decisions

With immersive 3D visualisations, designers and engineers can make quick iterations in their BIM model and immediately see the impact in a true-to-life context. You can validate decisions, and see how small changes might affect the overall look and feel of designs. You can step right inside a design to assess sightlines. And, by making it easier to make and check quick iterations, it becomes easier to refine and perfect a design – well before the physical space is built. No BIM model or static render delivers this degree or depth of insight.

The thing about insights is that, to become meaningful, they need to be shared - and the best way of sharing them is by using a shared immersive environment.

④ Bring more collaboration to your projects

With immersive 3D visualisations, an extended design team – architects, contractors, engineers, planning officers, prospective tenants, and owners – can review a model together, from multiple viewpoints to get a deeper understanding of the design intent and catch any errors.

When they see a design from shared points of view, stakeholders are better able to understand and refine design decisions. And, by reviewing the design in context, the entire project team – from structure to electrical and plumbing – can get aligned before construction begins

This one barely needs explaining. Our clients tell us that VR headsets block collaboration - whereas a shared immersive space enables it.

⑤ Boost your bottom-line

With today's visualisation tools, architects and engineers can quickly and easily create countless immersive visualisations for validation and review. And, when clients and stakeholders are able to experience the design from additional angles and viewpoints, they can raise concerns and request changes and adjustments early in the design process.

As a result, you benefit from reduced design cycles and minimise the potential for costly re-work during construction. And, by speeding up the timescales, improving efficiencies and avoiding errors, the financials behind any AEC project are improved – benefiting all stakeholders..
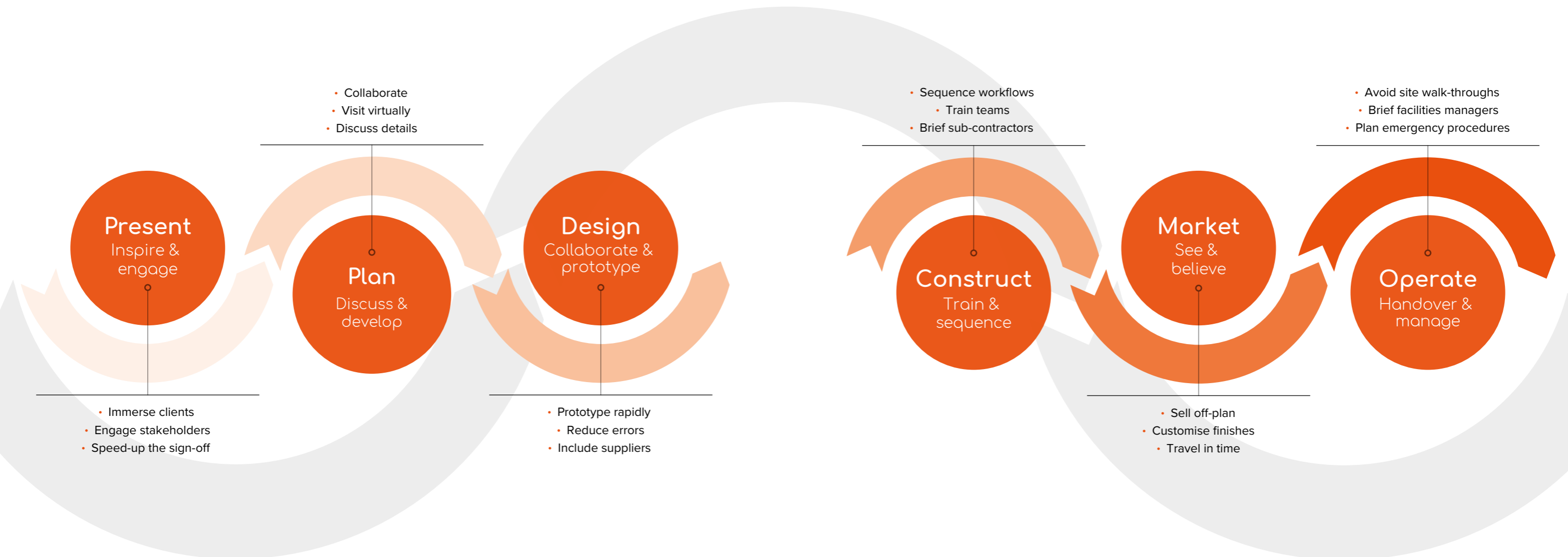
This only becomes meaningful when multiple stakeholders are involved, as a team, in the validation and review process - which shouts out for the use of a shared immersive space.

Creating value across the project lifecycle

The benefits of 3D visualisations extend well beyond the initial planning phase.

Indeed, our clients are telling us that Shared VR can create value across the entire project lifecycle, from the initial designs, to the delivery, to the handover, and beyond. At each stage, it can help them:

- **Save money**
- **Reduce planning errors**
- **Increase engagement**
- **Improve collaboration**
- **Accelerate delivery**

Present
Inspire & engage

- Immerse clients
- Engage stakeholders
- Speed-up the sign-off

Plan
Discuss & develop

- Collaborate
- Visit virtually
- Discuss details

Design
Collaborate & prototype

- Prototype rapidly
- Reduce errors
- Include suppliers

Construct
Train & sequence

- Sequence workflows
- Train teams
- Brief sub-contractors

Market
See & believe

- Sell off-plan
- Customise finishes
- Travel in time

Operate
Handover & manage

- Avoid site walk-throughs
- Brief facilities managers
- Plan emergency procedures

For more information

Igloo Vision is the Shared VR company.

From bases in the UK, USA and Australia, we work with clients worldwide, and have partnered with many of the biggest names in AEC and real estate, including Arup, AECOM, Kier, Skanska, BAM Nuttall, Lendlease, SEGRO, Extell, Cushman & Wakefield, and Hudson Pacific.

Our systems work, out-of-the-box, with the design and visualisation tools which AEC firms already use as part of their everyday workflows.

And our vision is for Igloo Shared VR to be deeply embedded in the way the AEC sector works.

We envisage a time (not too far into the future), when an Igloo is standard in every architect's office, in the home office of every engineering and construction firm, and onsite at every sizeable construction project.

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