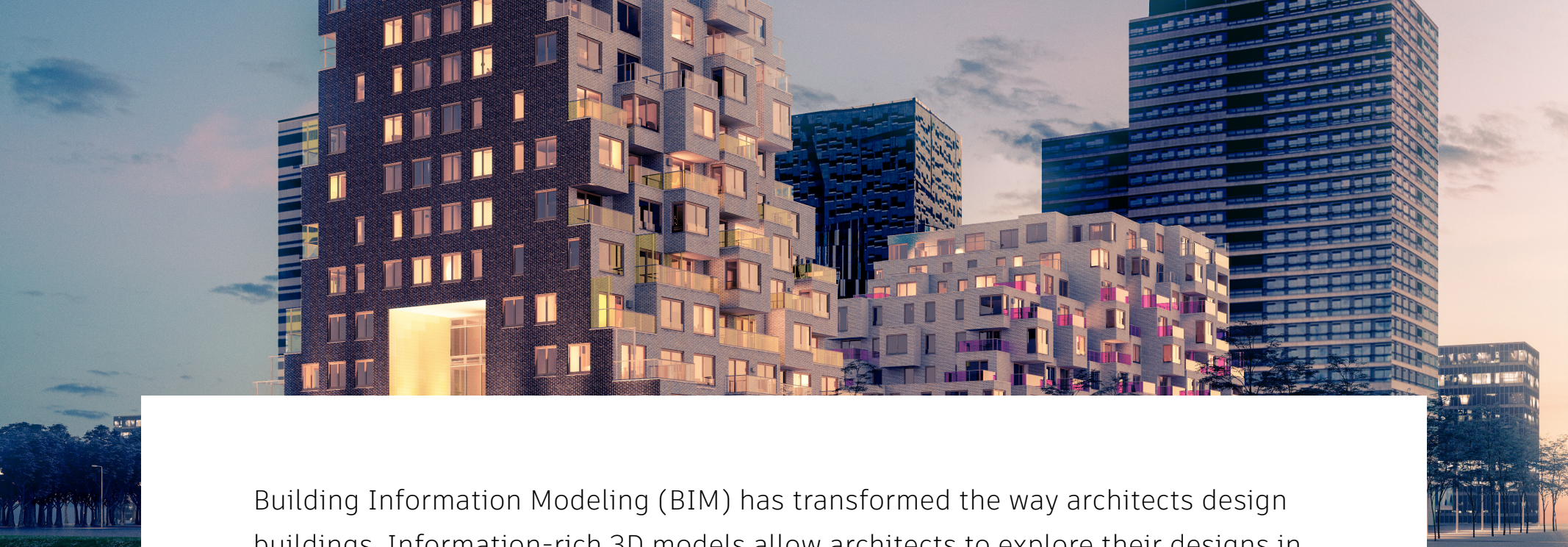# AUTODESK.

SIX BEST PRACTICES FOR

Immersive Visualization

Building Information Modeling (BIM) has transformed the way architects design buildings. Information-rich 3D models allow architects to explore their designs in unprecedented ways, and get a much more accurate view of the final product, even in the earliest stages of design.

Since the advent of BIM, architects have been able to produce high quality renderings and walkthroughs as a by-product of their design models, and rendering capabilities have improved over time to allow designers to more easily achieve near-photorealistic visualizations. Cloud-based rendering capabilities have made visualizations even more accessible to architects, speeding processing time from hours to minutes and alleviating the need for costly hardware.

Still, while static renderings and walkthroughs are effective for showing designs to architects and stakeholders, they are limited in their ability to communicate an experiential view of the final design product.

But technology innovation has changed the game for architects. Now, they have an opportunity to reset expectations with clients and project stakeholders by providing them an opportunity to step inside their design to visualize and experience it in a different way.

This new, unique design perspective gives clients and project stakeholders an opportunity to refine and improve the design—and break free from set, prescribed pathways—before the first brick is laid.

Technology Innovation Has Unlocked the True Power of Visualization

Through technology innovation, new visualization tools give architects and project stakeholders a better way to experience their designs before construction.

Visualization innovation typically falls into four categories: Virtual Reality (VR), Immersive Visualization, Augmented Reality (AR), Mixed Reality (MR).

"We see the discussions of a design review go in a totally different direction than what our customers say when reviewing plans, static renderings, or an animated fly-through. All of a sudden they are talking about spatial relationships and function... it is a great thing!"

– Taylor Cupp, Technologist, Mortenson Construction

Virtual Reality

Virtual reality is a fully immersive, highly realistic experience where the user wears head-mounted displays (HMDs) that close them off from the outside world. With technology like the Oculus Rift™ or HTC VIVE™, architects and stakeholders can navigate through a virtual building in real time.

Immersive Visualization

Immersive visualization provides an experience like VR, but does not require special HMDs. Users can choose their own path and navigate through a building on a computer screen or mobile device and observe all viewpoints and angles.

Augmented Reality

Augmented reality animates data over a real-world scene through smaller devices like a phone or a tablet. This technology can be used to help two remote engineers collaborate on a repair. It's most popularly used for games, like Pokémon Go.

Mixed Reality

Mixed reality mixes aspects of VR and AR by overlaying virtual objects in the context of the real world. Two architects can connect in a virtual world and collaborate on a virtual building in a real-world setting.

Visualization innovation is a rapidly evolving industry—and architects are embracing its promise and incorporating these new technologies into their design process to significantly improve the way they design and better meet their clients' ever-evolving expectations.
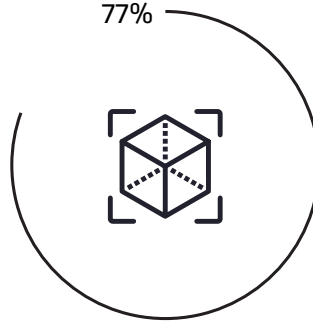
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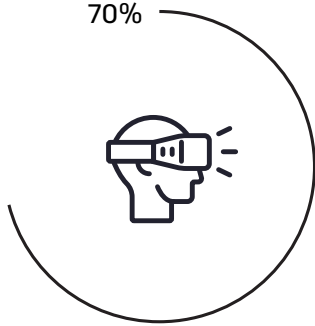
70%

of global architect respondents use virtualization technology in production—or are planning to

77%

77%

of global architect respondents experiment with visualization technology or are planning to experiment with it

BY **2020**

the VR, AR and Mixed Reality market will reach

$150

BILLION

*Source: http://www.cgarchitect.com/2016/07/survey-results-vr-usage-in-arch-viz

Immersive Visualization
Is a Game Changer for Architects

Of all these visualization tools, immersive visualization is among the most accessible to architects because it does not require special hardware or training, it's intuitive, and it's easy to integrate into the design process.

It gives architects, clients, and extended stakeholders the ability to explore a design in a uniquely engaging way—by stepping into the design itself. Now, designers can test new ideas, validate decisions, and adjust designs with stakeholders—before construction begins—by easily moving between their 3D model and a deeply immersive visualization.

Immersive visualization provides architects with a compelling presentation tool that—unlike traditional renderings or 3D models—clients and stakeholders can interact with in real-time to explore and experience designs.

"Visualization matters. It's really, really critical that people understand what they're looking at and can contribute meaningfully to the dialogue. You want experts and non-experts to be able to derive actionable insight from what they're seeing."

– Matthew Krissel, Partner, KieranTimberlake

Six Best Practices for Taking Full Advantage of Immersive Visualization

Speed Iterations, Validations, and Decisions

1

Immersive visualization tools allow architects to make quick iterations in their BIM model and immediately see the effects of their decision in a realistic context. Architects can validate their decisions and observe how small changes affect the overall look and feel of their design.

With immersive visualization, architects can step into the design to check off-angle views and sightlines or test new ideas, while avoiding costly rework. Additional opportunities for quick iterations put architects in a better position to recognize unintended or unrecognized consequences of the design before the physical space is built—reducing surprises and expensive rework during construction.

No BIM model or static render will give architects this degree and depth of insight into their design.

2

Experience Your Design From Every Perspective

Immersive visualization tools enable architects and clients to better understand a design from the occupant's perspective. With immersive visualization, architects can test the functionality of a space to more clearly understand how tasks might be helped, facilitated, or potentially impeded by design elements and design decisions.

Architects might use immersive visualization tools when designing a hospital to better identify the optimal location of vital medical equipment—or to experience the space from the height of someone in a wheelchair to review the design for ADA compliance.

3

Unlock and Unleash Collaboration

Immersive visualization enables the extended design team—architects, contractors, engineers, building officials, prospective tenants, and owners—to review a model from multiple viewpoints to gain a deeper understanding of the design intent and to catch errors.

Experiencing the design from shared points of view empowers stakeholders to better understand and refine design decisions. By reviewing the design in context, the extended team can discuss all elements of a design—from structure to electrical and plumbing—to ensure that everyone is in agreement and alignment before construction begins.

Easily Integrate with Virtual Reality

Immersive visualization tools also allow users to take their design into virtual reality with VR hardware.

Tools like Revit Live allow users to easily take their immersive visualization into VR in two mouse-clicks to extend the interactive experience. Users can move around the scene using room-scale VR. By replicating real-world movement, this type of VR makes the virtual environment seem more real than a self-contained environment or seated/standing VR.

"[Architects will] see something in virtual reality that makes them say, 'Oh I didn't realize that was going to come out like that. Let's go to the plans or the sections and see how this is actually coming together.' It really becomes an integrated and seamless part of the review process."

– Efrie Friedlander, Architectural Researcher, KieranTimberlake

Increase Profit Margins

5

With visualization tools like Revit Live, architects can quickly and easily create countless immersive visualizations for both design validation and review. When clients and stakeholders can see the design from additional angles and viewpoints before construction, they can request changes and adjustments early in the design process. This results in reduced design cycles and the need for potentially costly rework during construction.

Removing additional costs, reducing the number design cycles, and preventing the need for rework during construction means architects make more money on each project—with more satisfied clients.

Extend BIM Workflows

Now, it's easy to extend your workflows from BIM to immersive visualization. Many tools offer a simple workflow from a 3D modeling tool, like Revit, that serves as a hub of information to house everything from schematic massing to construction detail. Immersive visualization tools like Revit Live plug directly into Revit, providing fast, immersive access to the project design to anyone, at any time, and on any device.

Revit Live also enables architects to transfer and access the BIM data in their visualization. For example—users can click on a light fixture to access the metadata to analyze factors like cost and material type to facilitate design review discussions with stakeholders. So, in this instance, a designer and client can now discuss the range of material choices to optimize cost, without sacrificing the design aesthetic.

6

Autodesk® Revit® Live Makes it Possible

Autodesk® Revit® Live is an immersive visualization cloud service that enables architects to turn their Autodesk® Revit® or Autodesk® Revit® LT models into interactive experiences.

The workflow between Revit or Revit LT and Revit Live is remarkably simple. Once installed, the Revit Live service is accessible right from within Revit or Revit LT—no training or assistance from a visualization specialist required. In a single click, models are sent to the cloud for rapid processing.

Valuable data from the user's Revit model is automatically transferred and optimized in Revit Live. As a user explores the model, they can interact with the BIM data as doors open, leaves and characters move, and lights automatically turn on.

Using editing tools, architects can customize the visualization for client review by defining navigation points, adjusting location-based lighting, and applying a render style for presentations.

Users can navigate through their model on either desktop or mobile devices and share their designs with stakeholders via a free app. They can receive instant feedback from clients and make changes in their Revit model to reflect the client's vision.

Architects can also take their Revit Live model into virtual reality with the help of a VR headset for an even more realistic experience. It's easy to explore the design and validate design decisions before construction, eliminating project delays and costly rework.

Transform Your Design Process

From the Junior Associate to the Principal at a firm, any architect can use visualization tools to improve their design process, create better designs, and improve client satisfaction.

If your firm has already made the investment in BIM, it's time to extend the value of your model and incorporate immersive visualization into your design process. Try Revit Live today.

Experience the power of Revit Live with the technical Best Practices Guide and demo dataset

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