chaos
ENSCAPE

7 Solutions to Overcome

Architectural Challenges with Real-Time Visualization

Evolving architecture through technology

Like many industries, architecture continuously faces a series of constraints that force creative solutions: tight budgets, accelerated timelines, staff shortages, and experience deficits. Successful firms are looking towards technology to overcome these challenges to remain profitable and competitive.

Architects are using a wide range of technologies, from computational design tools to innovative apps—all with the goal of reducing costs and optimizing performance. A frontrunner in the race, becoming a standard in every architect's toolkit, is **architectural visualization**. Real-time visualization gives architects the ability to continually view their project model in 3D throughout the design process and show clients how their building will actually look once it's complete.

What is real-time visualization?

Generally speaking, real-time visualization is the real-time processing and publishing of visual data. For architects, real-time visualization essentially means **architectural** renderings, the process that involves creating 2D and 3D images and animations that illustrate proposed architectural designs on-demand. Consider it the ability for your modeling software, coupled with a robust rendering plugin, to produce highly detailed renderings instantaneously.

These renderings become an impactful decision-making tool available throughout the design process. Reviewing these readily available renderings often allows you to make adjustments and modifications based on how the building will present itself in the physical world.

Real-time visualization, alongside other impressive technologies like **virtual reality (VR)**, offers a powerful design workflow tool for architects with limitless capabilities. VR allows a sense of scale, space, proportion, and the associated emotional response that aligns with what you will experience in the real world, which cannot be experienced via other mediums.

Let's explore common challenges architects face throughout the lifecycle of a project and within business operations and how real-time visualization can provide the support and solutions you need to overcome them.

01 Communicate design intent

In the early stages of project development, presenting 2D layouts or hand-drawn sketches to your clients for their input may not be the most effective deliverables. Too little detail leads to questions, but too much detail causes clients to focus on the wrong things. Real-time visualization allows architects to choose the right level of detail to communicate effectively.

Enter architectural rendering software:

Bringing surface-level project concepts to life with 3D renderings gives your client the ability to visualize their design options accurately and ultimately make a more informed decision.

Architectural visualizations are especially useful for clients who lack more technical knowledge, whether it's a public official with a non-technical background or a community member unable to read architectural drawings. Real-time rendering solutions bring vivid depth and colors to a previously flat, complicated design.

From the realistic renderings, clients can see how their project fits in with the surrounding environment, how the layout would adapt to their needs, and how finishes and materials interact. With this supplemental information, clients feel confident making changes that will ultimately lead to a better design.

A common challenge for architects (and for your budgets) is finding a balance between offering multiple project concepts to your clients and diving too far into the details of a project that may never see the light of day. Real-time rendering technology creates instant visualizations directly from your modeling tool of choice, ensuring effort is not wasted as renderings are quickly and seamlessly produced.

02 Manage client expectations

Setting expectations is typically done through clear communication, whether in conversations or the written word. Even then, sometimes, words alone are not enough to accurately portray an idea or propose a solution. When it comes to managing design expectations for your client, a picture (or a perfect rendering) is worth a thousand words.

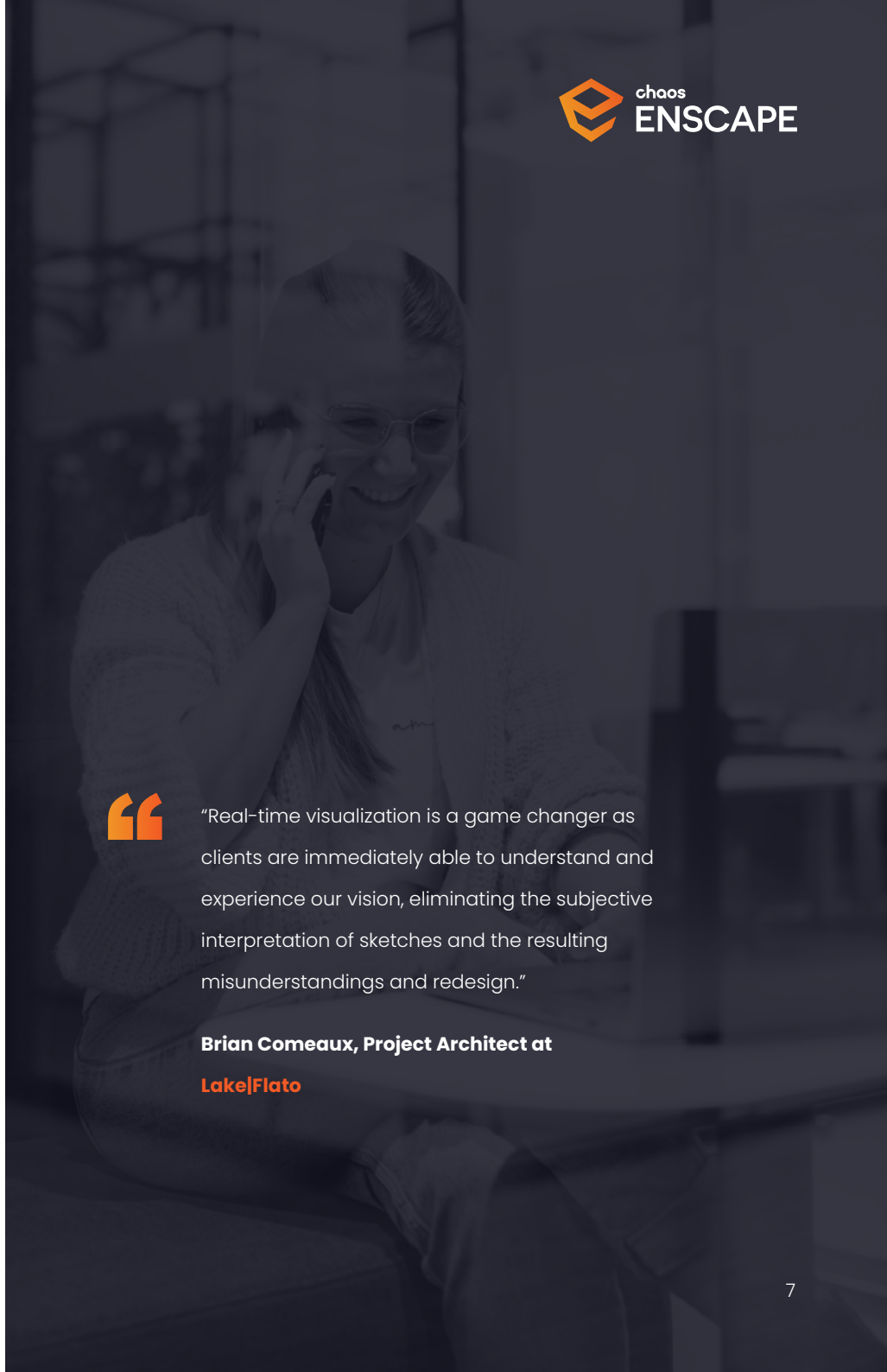
The detailed and realistic renderings created with real-time visualization offer architects a powerful tool for:

Incorporating last-minute changes. High-impact client change requests always seem to come at the eleventh hour. With real-time visualization, you can adjust your model accordingly, quickly create a new rendering, and instantly begin to review the change. The importance of this capability is highlighted as projects face many imminent deadlines.

Rapidly exploring client requests. Now and then, a client may request a design change that is not practical or even possible. Rather than explain your reasoning with design terminology that may be difficult for your client to understand, let a rendering communicate the issue. This often leads to your client reaching the conclusion on their own.

Negotiating and decision making. Using architectural renderings to explain your stance on a design decision will always be more effective than language alone. In fact, renderings are a powerful negotiation tool. Rather than leaving the impact of a decision up to the imagination or black and white blueprints, a realistic image can physically present the issue, leading to more constructive negotiating and actionable decision making.

Real-time visualization allows you to portray your design vision to your clients accurately. Clients can then provide more detailed feedback and see that feedback addressed in real-time, ultimately enhancing the overall customer experience.



"Real-time visualization is a game changer as clients are immediately able to understand and experience our vision, eliminating the subjective interpretation of sketches and the resulting misunderstandings and redesign."

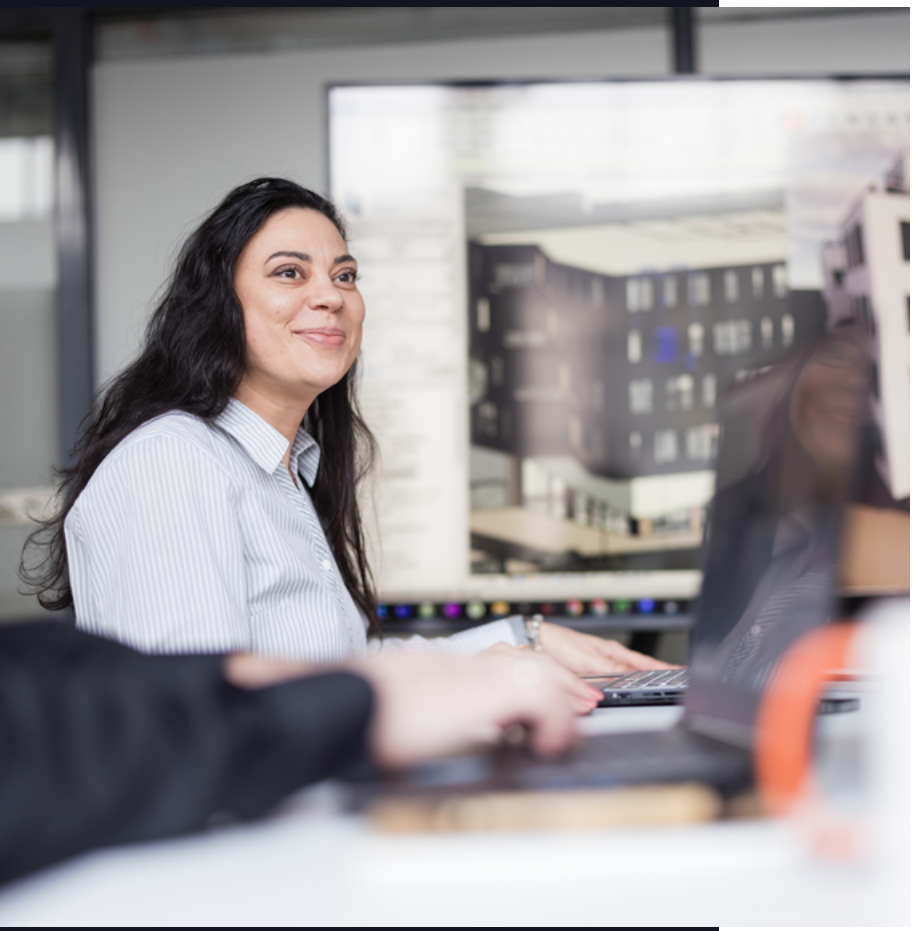
Brian Comeaux, Project Architect at Lake|Flato

03 Deliver on time: conquer time management

Teams lead successful projects by managing their time effectively and efficiently. This is done by mitigating delays, errors, or any changes that would adversely affect the project's schedule. The best way for architects to contribute to an on-time project schedule is to nail the design.

Design errors that are not caught in the design phase have to be addressed while construction is progressing. Even worse is when the errors are not caught until after construction is completed. Due to time and monetary constraints, this rushed decision making does not always lead to the most ideal solution.

Pre-construction architectural visualizations ensure inevitable design errors are avoided through early error detection. Regularly reviewing project renderings throughout the design process with your team, your client, and other stakeholders such as contractors and consultants allows you to identify issues unapparent in the design documents.



Utilizing renderings throughout your design process enables you to:

Detect Clashes: Most BIM programs have built-in clash detection capabilities that alert a user if components of the model are intersecting. Real-time visual-ization enhances this feature by allowing you to explore the clash in 3D from different viewpoints, setting the framework for a more effective solution. Catching these design errors before they are incorporated into the construction documents saves time and money.

Ensure Functionality: Architectural visualization and virtual reality allow you and your client to view the project from a real-world perspective. The key is to truly imagine yourself in the space, envision how you would use it daily, and make adjustments to optimize the functionality. Using VR during the design phase lets you focus on the functionality and avoid correcting errors during the building phase.

Maximize Existing Features: Real-time visualization programs can produce incredibly realistic environmental effects. This includes precise sunlight angles that consider the time of day and cloud cover, as well as a photorealistic view of surrounding buildings and vegetation. Viewing these environmental elements in the renderings allows architects to make intentional design choices before a building is constructed.

04 Work with unified workflows

Streamlining processes is advantageous for any business. While many architectural firms understand the benefit of incorporating rendering technologies into their design process, the approach taken to do so is often antiquated. Design firms typically incorporate visualization into their design process using one of these methods:

- **Utilizing complex rendering software** that does not pair well with your existing modeling software. This method requires importing and exporting models from one program to the other and waiting for prolonged rendering tasks to complete.
- **Dedicating a separate in-house team to create renderings.** While this method removes the rendering tasks from the architect's to-do list, it isn't ideal for visualization in a fast-paced design workflow as it increases the need for back-and-forth conversation and coordination, bogging down resources.
- **Outsourcing rendering services to a third party.** This method further increases the need for coordination and pushes it to an outside source. Additionally, using a third party for renderings typically produces fewer architectural renderings for the project.

These methods have one thing in common: They limit the impact architectural visualization can have on improving a design product. The barriers in these fragmented workflows disconnect modeling and rendering while reducing the number of rendering iterations you can review throughout the design process.

> "It revolutionized our process. We find that we can get to decision points earlier, and we can extend the length of time that we're spending on design."
>
> **Bob Shemwell, Senior Principal at Overland Partners**

Real-time visualization connects design and visualization processes into one.

Advanced visualization software offers real-time rendering plugins that link directly to your modeling software. Architects are able to create renderings instantly while designing, enabling the ability to view the design through **photorealistic still images or even 360-degree panoramas**.

Rather than only reviewing renderings at significant milestones throughout project development, the team can review them as often as desired, whether weekly, daily, or even multiple times a day. This more frequent review will ultimately reduce design errors and the resulting delays.

Real-time visualization gives you the ability to quickly render your own design, review, and iterate—the way design should be.

05 Keep up with the evolution of software

Technology transforms at a rapid pace in this modern world. Companies that fall behind and often become victims of their own demise are onesthat don't adapt. For architecture firms, standing out among the competition means embracing new technology.

What does keeping up with cutting-edge technology look like for an architect?

- It means watching and learning from industry changemakers who are not afraid to take risks.
- It means automating manual processes through the integration of new technologies.
- It means strategically choosing technology that will keep up with the evolution for you.

Firms should look to utilize real-time visualization software that is both **intuitive and adaptive**. Intuitive in that it is easy to use and seamlessly integrates into your standard operating procedures. Adaptive in that you can rely on your software provider to always be at the forefront of changes in technology.

Whether it is increasing speed, offering more lighting capabilities, or simplifying procedural steps, there is always a feature that can be improved upon for a better rendering experience. Leading visualization services constantly develop new features and improve functionality to enhance the customer experience. These changes are implemented intuitively to ensure products are always easy-to-use and feel familiar.

Using a software service you trust to be in the know on technological advancements removes the responsibility from your company while allowing you to continue to present your firm as innovative and tech-savvy.

06 Stand out from the competition

Winning an exciting project or the opportunity to work with a dream client can usually be traced back to a few key identifiers that ranked you above the competition. And they are not always the identifiers you would expect. Every company will have successful past projects, an award-winning team, and a qualified proposal in a competitive bidding environment.

The identifier will be a unique feature your company was able to offer that the others could not and that stakeholders saw a lot of value in. It could be a creative project approach that would reduce the overall schedule, a dedicated focus on sustainability and environmental impact, or a supplementary design tool that will enhance the project's quality and delivery.

Offering your client architectural visualization and virtual reality technologies puts you at a significant competitive advantage.

Show off your real-time visualization capabilities

Share the impressive renderings of past projects with your prospective clients and the impact the visualizations had throughout the project lifecycle. In the pre-planning phases, renderings are used to vet design concepts quickly and assist in catching design errors.

Your client can also utilize the architectural renderings for marketing and outreach purposes on their end. Dive fully into the details of how visualization technologies help in reducing project costs and timelines.

Immerse potential clients in VR technology

There is already an instinctual appeal to virtual reality technology. The ability to step into a building that is not yet built revolutionizes the capabilities of design.

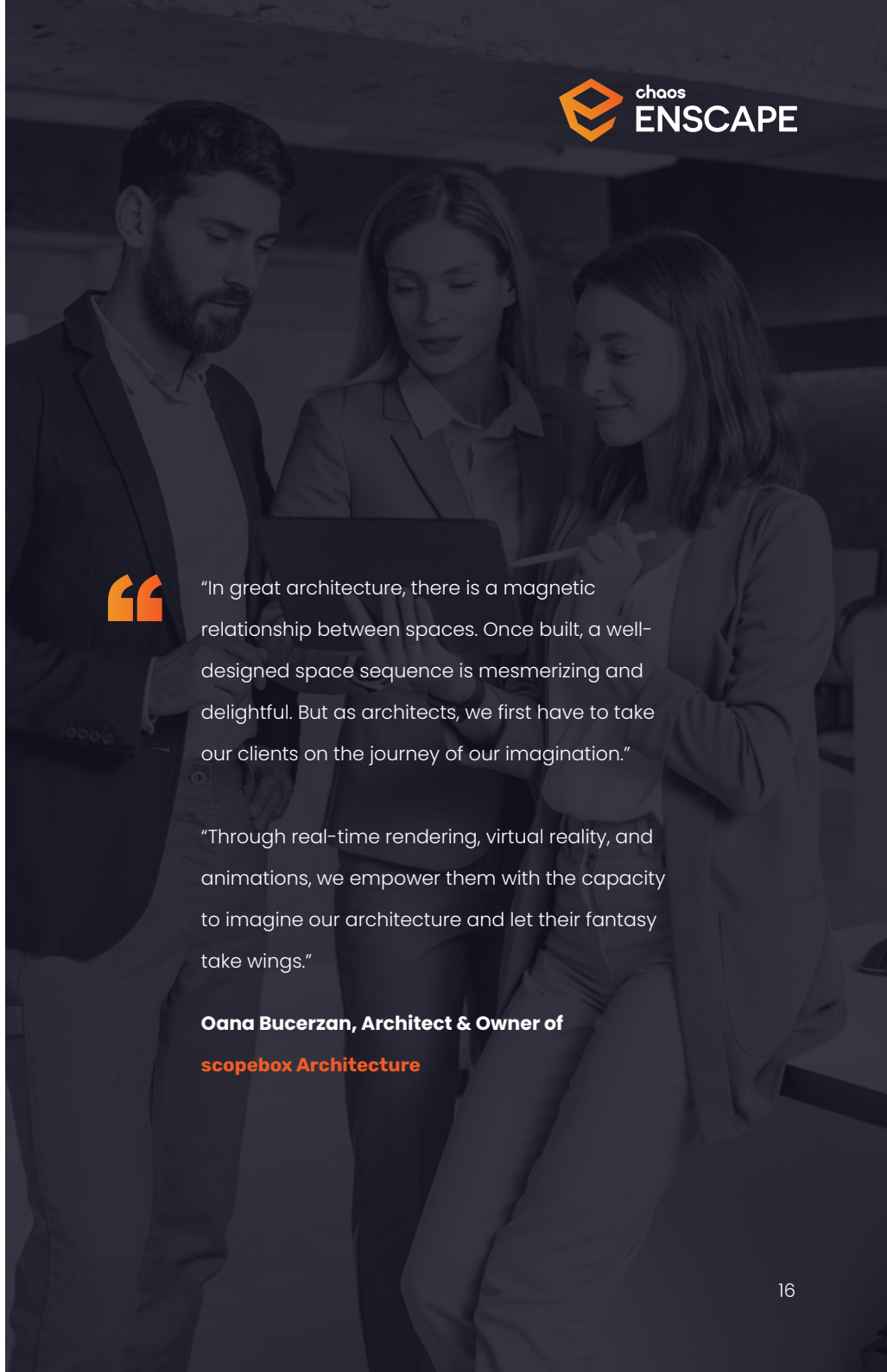
In designs where the layout is crucial, VR allows your client to take a closer look and feel how the space will function. Focus on this impact. Using VR technology to experience a design before it is built allows immediate changes to be made that would otherwise cost more time and money in the physical world.

07 Stay innovative and inspired

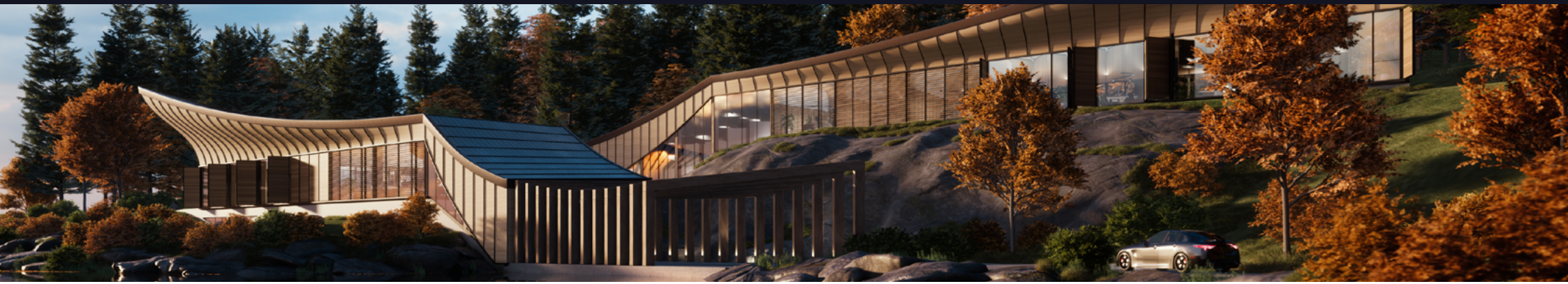
The **capabilities of real-time visualization tools know no bounds**. As the technology expands its reach and grows in popularity, users have begun to fine-tune their skills and develop expertise in the art of architectural renderings. Now, there exists an entire community of rendering artists who join to share their work and inspire brilliant designs.

Your team can draw inspiration for your renderings from the libraries of beautiful renderings available across organizations. Whether it is a distinctive rendering style or an impressive lighting technique, you will be amazed by the capabilities of rendering software and what talented designers can do with them. You can also view unique project solutions through renderings that could find a fit in one of your projects.

The inspiration does not have to stop in-house. Bringing your clients along on the journey of developing impressive and one-of-a-kind renderings secures your position as an authority in the industry and a limitless creative figure.



> "In great architecture, there is a magnetic relationship between spaces. Once built, a well-designed space sequence is mesmerizing and delightful. But as architects, we first have to take our clients on the journey of our imagination."
>
> "Through real-time rendering, virtual reality, and animations, we empower them with the capacity to imagine our architecture and let their fantasy take wings."
>
> **Oana Bucerzan, Architect & Owner of scopebox Architecture**



Architectural visualization is a must-have design tool for architects and the entire project team.

Architects are assisted with creating better designs with fewer errors in less time and provided a portfolio of beautiful imagery representing their work.

Clients are presented with higher quality project deliverables and enabled to make more informed decisions.

Construction managers can visualize the final product before bidding or building and, therefore, develop a better project execution plan.

Community members and stakeholders are presented with images that accurately represent the impact of a new structure and can anticipate a new neighborhood amenity.

Architectural visualizations give the project team more information, control, and assurance than ever before.

Incorporating real-time renderings into your standard operations leads to:

- Clearly communicated design intent
- Appropriately managed client expectations
- Projects delivered on time, always
- Seamlessly rendering directly from your model
- Remaining on the cutting edge of technology
- Setting yourself apart from the competition
- Continuous innovation and inspiration