How can drones, 360 photography, 3D visualization, and virtual reality add value to your next project?

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In-person meetings are irreplaceable, and no matter the challenges, communication is paramount. But what if your project team is in multiple cities, across multiple companies, located all around the world? A project team needs to maintain clear and constant communication, and transparency in collaboration is a must.

At Stantec, our project teams have found tremendous value for our clients and their projects through leveraging technology like unmanned aerial vehicles (UAS or more commonly, drones) and virtual reality (VR) to better capture, analyze, and communicate site design information.

How are land developers using drones?

It can be cost prohibitive to take an entire project team to a site visit. By using a combination of drones, 360 photography, and geolocated photos, we are able to clearly document a site for preliminary design or even construction. In many cases, maybe 10% of a project team may ever put boots on the ground, but by sharing our virtual site visit with the team, we can get as many experts identifying opportunities/challenges as possible, catching problems before they arise further into design.

Russell Thomman, a project manager in Stantec's landscape architecture and planning studio in Austin, uses his drone at Lakeway Medical Center to gather 360-degree spherical photography for a virtual site visit.

With drones, we can fly a preprogrammed flightpath, helping to visualize a site layout, or a view from a building floor.

All of this info can also be shared, often through a web browser, to all stakeholders involved, giving all parties a clear and consistent picture of a site. Through a VR headset, you can also take a virtual walk through a site to better understand site challenges.

National Instruments Aerial: By designing in 3D and communicating with virtual reality goggles, Stantec made the National Instruments redesign a reality.

Adding value to site design

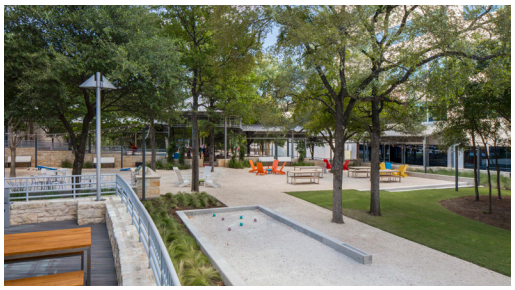
In architecture, the process of leveraging building information modeling (BIM) has rapidly matured over the last 10-15 years, and this process is often very streamlined and efficient. In land development services, this process is still evolving. Many companies use a variation of 2D and 3D drafting softwares, and many times these softwares are not compatible with other disciplines. Coordinating this process can be tedious to do well.

Design communication is critical to any project, and our landscape architecture studio utilizes photorealistic 3D visualization tools to bring together civil, landscape, and architecture models to give our clients and project teams a coordinated, transparent, multi-disciplinary view of a proposed design.

From due diligence and programming, to documentation and construction administration, every step of the design process must be carefully crafted and communicated. A lapse in communication can lead to lost time and money for a project team. Therefore, we embed 3D visualization and virtual reality into our design process.

By investing our time into developing 3D models, we learn from what we build. We coordinate in 3D, sharing our models with consultant teams, resolving early design conditions that would often be missed in 2D, saving time and effort with RFIs later. We can understand exactly what a view would be from inside a building without having to physically build it. We step into the model in VR and understand what a design feels like at the human scale to get a better product. Through this workflow, we produce opportunities for QA/QC for all consultants as we work together to visualize the project, and by viewing these coordinated models together, we each gain a clear understanding of project opportunities and constraints.

National Instruments 3D Visualization: 3D visualization helped Stantec showcase the opportunities possible in the courtyard of National Instruments.



National Instruments Outdoor Space: The final courtyard for National Instruments includes an outdoor huddle space, bocce ball, outdoor kitchen, and a biergarten.

Using 3D modeling and virtual reality on your next project

Drones and VR are tools for today's (not tomorrow's!) designers. For decades, landscape architects have held the role of balancing the site aesthetic with site engineering. Pretty picture with technical documentation, and organic with manmade. We utilize systems thinking to connect the human experience to all the infrastructure on site, as well as to its context.

On projects large and small, we leverage these tools to get designs started in the right direction, keep them moving efficiently, and help give owners confidence to make tough decisions as project budgets tighten. We've seen the benefits of 3D modeling and VR on countless projects and encourage teams to keep these technologies top-of-mind when embarking on a new site design.

About Russell Thomman

Russell Thomman is a project manager in Stantec's landscape architecture and planning studio in Austin, Texas. With a decade of experience in landscape architecture, urban planning, and project management, his work includes projects in nine different countries. Russell spearheads 3D visualization and virtual reality for community development projects in Austin, and he has his FAA Airman Certificate for Small Unmanned Aircraft Systems (sUAS)—allowing him to fly drones commercially.