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How virtual and augmented reality will shape the future of built environments

Stakeholders serious about garnering support for infrastructure projects can turn to technology to tell the story and highlight value.



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The evolution of virtual and augmented reality (VR, AR) in the past few years has unveiled a wide variety of use cases for the infrastructure sector, from design to marketing. However, the technology's former incarnations—defined by low-quality imaging and cost-prohibitive expenses—have led to barriers to widespread adoption. Jan Bunge of Squint/Opera, an agency focusing on design, animation, and interactive exhibitions, discusses the evolution of this technology, the ways its new form will change how contractors and project owners can win community and investor support, and how it can redefine internal process to get much-needed infrastructure plans off the ground.

VOICES: *What role can VR and AR technology play in communicating infrastructure projects?*

Jan Bunge: VR and AR are revolutionizing the way we approach infrastructure projects. When it comes to imagining the future, we each have our own set of ideas in our heads. The challenge for anyone involved in creating buildings, infrastructure, or cities is to unlock the vision so everyone can share it, shape it, agree upon it, and deliver it. But it's difficult to communicate complex ideas in a short amount of time and make sure people understand the core, unique selling point of the proposition. You need to get people excited about projects and places that don't yet physically exist. Success requires compelling storytelling.

In the past, we relied on two-dimensional plans, drawings, and imagery, or perhaps three-dimensional models to convey a sense of the future project or place. Three-dimensional models offer a big leap forward in understanding, and so too do the fantastic digital renditions of buildings and places, but they still require a good eye to interpret. And even if we manage to create the best project descriptions, images, films, and physical models, we still need the viewer to make that big conceptual leap into thinking themselves into the space and imagining how it would feel.

Now, thanks to VR and AR, we have the ability to manipulate perception to such an extent that we can enter another type of “reality”—and this changes everything. For the first time in history it is possible to get a feel for a space, to walk through it, before it is built. Simulating the visual experience as well as the actual soundscape facilitates an emotional connection with the space. People can get a sense of the volume and scale, the ways the spaces are linked, the views, the material palette, the way buildings sit in the landscape, and even the way the sun travels around the spaces during the day. And, not surprisingly, this capability will change the way we design these projects as well, because we can adjust to take ever greater advantage of views, natural sunlight, finishes, and so forth.

VOICES: *Can you give an example of how VR has altered the path of a project?*

JB: One recent example of using VR and AR to communicate an idea was during a community meeting about a new bridge river crossing. Community members expressed anxiety that the proposed new structure was too big and would be too prominent in the landscape. A consultation day involved the use of VR headsets so people could see different

bridge designs and how they would sit in the landscape. In the end, participants voted in favor of the largest structure on the grounds it would become a beautiful, local landmark.

It's human nature to be cautious of change, and I'm convinced that outcome would never have been possible using only two- or three-dimensional plans and drawings.

VOICES: *Why now? What has changed to make VR and AR more viable technologies for use in infrastructure?*

JB: A couple of years ago there was resistance to using VR; it was expensive, the images were less sophisticated, and the headgear was clumsy—the size of a motorbike helmet. But the barriers are gradually diminishing; the assets are becoming less expensive, higher quality, and more agile. The best way to convert anyone who is skeptical is to give them a demonstration of how the technology works—they'll be onboard very quickly.

And with the likes of Amazon, Facebook, and Google—as well as entire industries such as health care and the military—heavily invested in VR and AR technology, we are seeing fast-moving, constant improvement in adoption across the board. As the tech evolves, and production costs come down, we can expect VR and AR to become part of the everyday design and consultation process.

VOICES: *How is this technology helping bridge the bankability gap in funding infrastructure?*

JB: While it is widely accepted that there is an infrastructure gap (demand far outstrips supply in many cities), it is also acknowledged that there is plenty of private investment money that could help much-needed projects get off the ground. Many of these private investors may be new to the infrastructure sector, and companies can use VR and AR once again as a tool to explain the proposition in a compelling way. Financial projections will be part of that package, but the appeal is stronger when people can “see” what they are investing in.

VOICES: *How do VR and AR fit into a broader vision for how the infrastructure and real estate sector could function in the future?*

JB: We see the use of VR and AR becoming firmly embedded in every stage of the process of all types of new developments in the future. It's useful in developing concepts, helping inform design, evolving ideas with city administrators and developers, explaining future projects to communities, and supporting marketing and sales efforts.

In real estate, for example, we see the possibilities of buyers being more proactive in the process of designing their own spaces. Developers can offer people the opportunity to virtually explore unbuilt properties and make choices about things like the style of bathroom or kitchen. In future, that experience could be richer and deeper. Why not specify the exact materials, move walls around, import your furniture to see how it looks, and experience how the space will look and feel—and even smell? And it will be possible to do this with a friend

or partner even if they are in a different country; you can meet in the virtual space and “walk” around together. The same experience of course applies to train carriages, stations, or any other parts of the built environment. I could see a future where every large infrastructure project kicks off with a project expo where all stakeholders (planners, investors, and local residents) could come and explore the whole proposal. Participants could walk through spaces, fly over and around the whole scheme, and enjoy the views. I believe when people can understand the future they can get excited about it. 🌐

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