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Planning and DESIGN through the LOOKING GLASS

Summary

With recent advancements in the technology, Virtual Reality (VR) may finally be living up to its promise and potential. There are two ways that VR could fundamentally change the game for city builders: (1) as a powerful communications platform and (2) as a collaborative design tool.

Résumé

Grâce aux récents progrès réalisés en technologie, la réalité virtuelle pourrait finalement tenir ses promesses et répondre aux attentes. Il y a deux façons qui pourraient radicalement changer la donne pour les bâtisseurs de ville : (1) une plateforme de communication puissante et (2) un outil de conception collaborative

Imagine a future where you can immerse yourself in a story. Picture yourself interacting with someone's imagined environment, or creating and sharing your own virtual world. That future is, of course, already here as virtual reality (VR) technology continues to make its ascent into the mainstream. The technology is already having major impacts on industries beyond gaming and entertainment and it stands poised to influence the world of planning, design and community engagement.

For those who haven't yet experienced VR, it is a computer-generated simulation of a real or imagined environment, immersing a user visually, and even audibly, in a digital realm. Typically, the hardware utilizes a wide-angle, head-mounted display that shows stereo images in 3D – offering full visual immersion. Sensors in the hardware track your movements and change your view accordingly. They can simulate your physical presence, allowing for exploration and interaction with a digital world.

The promise of VR could make for the provision of important new tools for those involved in planning, designing and communicating changes to the built environment. The technology allows us to visit spaces we can't otherwise access, explore places that don't yet exist, toggle through various options or scenarios, communicate visions of the future, tell powerful stories, and illustrate our imaginations. It moves us from strictly intellectualizing the future to planting ourselves in a visceral immersion of possibilities.

As VR moves from futuristic and expensive gaming platforms to everyday consumer devices, the technology is getting into the hands of more and more people. VR content consumption and content creation are becoming increasingly accessible. What will be the impact of this technology for planners and urban design professionals? How will it change the conversation with the public? What do planners need to know about this new frontier of the 'digital city?'

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“IMAGINATION CREATES REALITY.”

Richard Wagner, Composer, 1813-1883

■ VR AND PLANNING

Research into, and discussion about, how VR might impact city planning has been around as long as the technology itself. But only recently has the discussion progressed from largely hypothetical to applied, as advances in 3D modelling and GIS have successfully combined with more powerful and more accessible VR technology. We are finally witnessing how VR can create interactions capable of opening up new realms of collaboration, discussion, arguments and debate in modern city zoning, urban planning and design. VR offers planners an unprecedented opportunity to build our cities in advance, virtually – and much more collaboratively.

Twenty years ago, researchers predicted that planners and designers would utilize VR in two key ways that could fundamentally alter their work. Today, we are seeing that prediction realized first-hand:

First, on the lower end of the complexity and engagement scale, VR can be used as a presentation and evaluation tool. The technology offers the ability to interactively visualize projects and proposals in context, with all sorts of relevant information layered on top. We can foster better understanding and ready comprehension of designs concepts, compared to sharing traditional flat rendered images or cross sections of streetscapes. The presentation and implications of alternative scenarios is, for example, greatly simplified. Making information more accessible and comprehensible in this way could allow for broader more meaningful public participation. By enabling full, self-directed exploration of a model or planning scenario in context, planners can minimize misconceptions and build trust between the public and the professional. Through immersive visualization in VR, city building

becomes more of a dialogue between architects, planners and the public, fostering a deeper knowledge and providing a platform for shared understanding, even the creation of empathy.

VR is already being used in these ways by planners, design professionals and public engagement practitioners. Architecture and design firms have been using VR to obtain buy-in on design proposals from their clients and to help stimulate internal design discussions and public dialogue. Architecture and planning firm SOM took their designs for Philadelphia’s 30th Street Station District Plan into VR to share their vision with the public. At the same time, VR video is being used as a civic outreach tool in Los Angeles to allow anyone to explore the history and ecosystem of the LA River.

Second, a more technically-complex exercise involves using VR as a real-time, collaborative editing, design and design





■ THIS IS REALITY

Virtual Reality is here in a big way. In fact, 2016 was considered “The year of virtual reality” when VR technology – which has been around for some time – went from outlandish to accepted. Technology has caught up with sci-fi vision, and VR is going mainstream (if not mass market quite yet). Last year’s consumer launches brought VR to more people than ever before, from full-featured high-tech systems like the HTC Vive, Facebook’s Oculus Rift, and Playstation VR to mobile headsets that strap a smartphone to your face for an inexpensive tether-free 360° virtual experience. Combine new VR technologies with advances in the parallel field of Augmented Reality (AR) – i.e., the digital augmentation of a real-world environment – and we have an entirely new way of looking at, and interacting with, real and imagined spaces.

Even content creation is becoming more accessible. Kids are already using VR to walk around their creations in the ever-popular and creative building game *Minecraft*. *SketchUp* and other 3D modelling creations can be converted to VR allowing users to tour their creations immersively at a 1:1 scale. And with the parallel rise of 360° video cameras, we can create live action, VR compatible videos capable of transporting users anywhere in the world. Combined with aerial drone technology, content producers can now immerse users in an unprecedented 360° bird’s-eye view. Meanwhile, workflows in Esri’s *CityEngine* and 3D GIS modelling allow content creators – from planners to Hollywood producers – to render highly-detailed, realistic models of entire cities, both real and imagined, for VR.

Industry forecasters continue revising their projections upward for the VR sector. Some analysts predict that the worldwide VR and AR market will grow to more than \$162 billion by 2020, up from around \$5 billion in 2015. Though some may dispute how quickly the VR market will actually grow, the consensus is that we stand poised at the brink of significant innovation in this space, with more powerful technologies on the horizon creating even more amazing experiences.

Although gaming and game engine technology has driven much of VR’s evolution to this point, new VR applications beyond gaming and entertainment are constantly emerging. And these applications are well positioned to have a substantial impact on several industries. For city builders, VR and AR are emerging as valuable design aids and powerful communication tools. ■

review tool. Compelling advancements are being made in processing technology, networks and the quality of visualizations that allow immersion and interactivity in a 3D spatial model by multiple users in multiple locations. Although these solutions are still in their infancy, collaborative VR platforms could allow planners to analyze, experiment with, and review proposals interactively and efficiently, accelerating the design cycle and providing for more informed decision-making. Opening up this collaborative space to the public will also allow more people to visualize, imagine, ask informed questions and contribute in the midst of design.

■ THE PROBLEMS AND THE PROMISE

Despite VR’s rapid advancements in recent years, the technology still faces various technical, aesthetic and practical challenges. Cost and technical complexity still hamper its widespread use (although both of these issues will diminish over time). And while we have seen enormous strides made in the quality of graphics rendering and display technology, the process of creating a true sense of immersion or what VR developers call “presence,” is beyond the budgets of many. With head-mounted displays from various technology providers now widely available, and the VR sector in acceleration mode, it is uncertain where planners should invest their resources and what VR solution might best fit their existing workflows. Ultimately, cost of entry and the amount of effort required to activate VR technology for use in a planning context must be balanced with results.

More fundamentally, the current single-user headsets preclude the real person-to-person communication needed for meaningful collaboration and engagement on projects (although shared experience possibilities are opening up). And, not insignificantly, some users experience eyestrain from extended use while others find the immersive nature of the technology disorienting or even nausea inducing.

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There are countless other questions one might ask pertaining to VR's role in the planning profession, such as: What will be the impact of more immersive and experiential participation in the planning and design process? What happens when we use powerful, interactive visualizations to open up the design and design review process to more and more non-technical participants? What does this mean for the role of planners and urban design professionals in the future?

With the recent exponential growth of VR computing technology, and the corresponding arrival of consumer accessible devices, we are now starting to realize the transformative potential of VR as an engagement, planning and collaborative design tool. The technology has the power to elevate stakeholder engagement, promote imagination and creativity, and improve overall access to the planning process. How planners choose to harness this potential could have a profound and fundamental impact on the profession.

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