

Immersive 3D Worlds as Innovation Platforms

By Jeffrey Phillips and Jena Ball

April 2011

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Overview

This paper discusses the value of using immersive 3D technologies, such as those employed in gaming and virtual worlds like Second Life, for innovation activities. It is our contention that companies of every size – from individuals and small firms to medium and large-scale enterprises - can benefit from integrating these technologies, and the techniques/approaches inherent in them, into their innovation efforts.

These technologies or platforms can speed idea generation, especially among distributed teams. Further, these solutions offer low-cost rapid prototyping and idea development options that are unparalleled in the “real” world. Finally, they offer simple customer research and ethnography that is inexpensive, quick and full of insight.

After describing the immersive technologies and the benefits we believe they can provide, we’ll report on the results of a recently completed project using Second Life to conceive innovative new store designs for a retail establishment.

What are Immersive Technologies?

There are a number of technologies or platforms that can be defined as “immersive.” In this context, we use immersive to describe a technology that allows users to “immerse” themselves in an environment or experience designed to promote and/or facilitate innovative thinking and prototyping. In these environments, participants are represented as avatars and take part in activities in real time.

There are several forms of immersive, 3D environments which are fiction-based, meaning there is an underlying story line or “plot” that serves as the basis for all roles and interactions within the environment. This is typically the case in gaming environments (World of Warcraft is a good example), though it should be noted that the “rules” of some games are much looser than others. Some force users to proceed through a rigid set of tasks, while others are virtually free-form, with little scripting imposed by the application. These different technologies allow different degrees of freedom for exploration, idea generation and other innovation activities.

Other immersive, 3D environments are “character” or “location” driven, rather than “plot” driven. Second Life is an example of a 3D environment, accessible through the internet, that supports a “virtual” world. Platforms like Second Life do not require users (also referred to as residents) to participate or engage in the environment in a prescribed way. Instead, users are encouraged to create their own experiences using a variety of tools inherent in the platform. These tools include the ability to modify the appearance of the land, water, sky and lighting; the

ability to build objects using simple 3D shapes; and the ability to change the look and feel of an individual's avatar. Individuals are represented in this virtual world by an "avatar" – a character that you define and "inhabit" while you are in the virtual world. Avatars can resemble their "live" companions exactly, or your avatar can take on any attributes, style of clothing, height, weight, coloring or other factors you prefer. When you log into Second Life, your avatar walks where you direct it, interacts with other avatars using your voice and encounters people, buildings and landscapes much like you do in the real world. Creating objects within Second Life has become quite sophisticated and complex. It is possible, for example, to recreate buildings from physical reality (the virtual models of the Louvre and the Sistine Chapel are stunning examples). However, it is also possible, and quite popular, to create spaces and places that exist only in the minds of their designers.

It is also important to note that all interactions between avatars within this virtual 3D environment are self-generated and unscripted. Individual human beings log into the world with their avatars and interact without the benefit of preset rules, plots, or agendas. Naturally it is possible for individuals to create and run a game, contest, or role play scenario within Second Life, but those activities are generated by the users themselves, not the makers of the platform.

What can Immersive Technologies Offer Innovators?

There are several advantages to making 3D immersive technologies part of your innovation toolkit. We have recognized several distinct benefits from using these technologies:

- Lower costs
- Increased creativity and playfulness
- Increased collaborative interaction and integrative thinking
- Increased depth and range of ideas
- Simplified rapid prototyping and customer research

Flexible, Easy to Modify Work Spaces

Immersive technologies force innovators into new experiences and environments. These in turn provide new and/or alternative perspectives, and have the potential to spawn new ways of thinking. It is possible, for example, to create an inspirational outdoor space in which to conduct your innovation sessions, as opposed to a stale and stuffy conference room which does not stimulate the brain. Moving people beyond their day-to-day environments, into new physical or virtual spaces that challenge the status quo can spark new ideas and new perspectives. Because virtual environments are so flexible and easy to change, almost any kind of building or space – from a general meeting area to an auditorium - can be designed, built and experienced by the team. Individuals meeting in a virtual world can change their "work space" to reflect and facilitate the challenge they are trying to address. For example, a team might

create an environment that reflects the experience customers have when using their product. Likewise, they might model what it would be like for a customer to buy or get support for a product.

Cost Effective Meeting Spaces Available 24/7

Virtual worlds offer immersive meeting spaces that combine all the benefits of physical meetings with flexible, easy-to-use technologies for documentation. In addition, meeting in a virtual space makes it possible for individuals working in different locations to interact and collaborate as avatars in real-time. Because there are no travel costs, anyone who can contribute can attend, thereby helping insure the effectiveness of the innovation sessions. The value of these sessions can be further enhanced by taking advantage of recording and documentation technologies that have been developed for and/or are inherent in the platforms. It is possible, for example, to record audio, copy text, and make videos of the live action that occurs in an event. Today, workshops and presentations, college lectures, live media events, and conferences are routinely held in-world, and recorded for later viewing.

Flexible, Rapid and Iterative Prototyping

Virtual worlds allow rapid, iterative prototyping in three dimensions with little cost. Architects, for example, can quickly and easily create mini or even full-scale models of homes to show to their clients. Likewise, it is quick and easy to make adjustments based on client feedback in real time as it is given. This kind of iterative prototyping not only speeds up the development process, but encourages idea generation and out-of-the-box thinking as well. Rapid, iterative prototyping is so natural in these spaces that you'd think the virtual worlds were designed for this purpose alone. Three dimensional, immersive platforms are also an excellent way to introduce new products and services without having to distribute the ideas or artifacts in the physical world.

The Power of the Avatar

Donning an avatar is an excellent way to encourage participation by members of your team who may be less inclined to participate in face-to-face meetings. Being represented by an avatar affords a sense of anonymity and gives team members a variety of communication tools. Many people also find that using an avatar helps them overcome their reticence and makes it easier to give and receive constructive criticism.

Ideal Arenas for Research

Immersive platforms are an excellent arena in which to conduct ethnographic and/or customer research. Imagine creating a product or service and then testing its effectiveness with customers through role play. Customers would be able to ask questions and give immediate

feedback interacting with the virtual product or service in the immersive space, rather than reading about the product or service. Based on that feedback, it would then be possible to rework the product, service or environment “on the spot,” then conduct the role play again. While immersive technologies can’t entirely replace traditional “Voice of the Customer” or ethnographic research, valuable feedback and edits or changes to ideas can be obtained very quickly using these 3D immersive tools.

How Can Story Enhance and Inform Innovation Work?

Every individual, group and organization is informed by and functions based on the principles inherent in its unique story. The more innovators are aware of and can help participants identify, understand and feel empowered to modify and improve their stories, the more dynamic and effective innovation becomes.

Using 3D narratives to take participants into their stories is an effective way to encourage self-reflection, stimulate discussion, and generate out-of-the box thinking. A perfect example is the “Uncle D Story Quest” created by Startled Cat as part of the National Library of Medicine’s HIV/AIDS education and prevention program. Participants in the Quest walk into and experience the life of someone who lived with HIV/AIDS. They read his journal, listen to his phone messages, and visit his office. In doing so, they are not only educated about HIV/AIDS, but have their assumptions and prejudices challenged as well. For more on this project, see:

<http://www.youtube.com/watch?v=NKCVLwFKxYU>

3D virtual worlds are uniquely suited to the creation of these story-driven environments, and innovation work can easily be adapted and conducted within them.

Are Immersive Technologies Better Than “Real” World Solutions?

In some instances, virtual worlds offer solutions that are easier to implement and are more powerful than their “real” world counterparts. As mentioned before, role playing and rapid prototyping are far more effective and affordable in virtual settings than in the physical world. Furthermore, meetings in an immersive environment are much easier to manage, schedule and conduct when participants are distributed. All anyone needs to participate is a PC.

Clearly, there are some limitations and hurdles to overcome. People must be willing to acquire the necessary skills and adapt to being an avatar. To some, virtual environments may seem too much like a game or a waste of time. Therefore, it is critical to select participants carefully. This process of selection and familiarization can take time. In addition, technology issues, such as slow networks, can make immersive experiences seem awkward or slow.

Are Virtual Worlds Being Used for Business Applications?

A variety of firms have been using immersive experiences for education, training, and generating new insights and perspective for years. A perfect example is the Canadian Border Patrol program developed by Loyalist College which dramatically improved the test scores of students training to be border guards using Second Life (see <http://community.secondlife.com/t5/Learning-Inworld-General/Case-Study-Loyalist-College-Massively-Improves-Test-Scores-and/bc-p/646439>). Likewise, the Mayo Clinic has experimented with Second Life as a learning platform. Palomar Pomerado Health, new hospital near San Diego was designed and tested within Second Life. The Amputee Virtual Environment Support Space (AVESS), funded by the U.S. Army, provides virtual space for amputees within Second Life. More than 600 accredited colleges and universities from around the world, including Stanford, Harvard, Case Western, Ohio State, University of the Pacific, Brown, University of Southern Queensland and Rotterdam University have complete Second Life campuses. These are examples of businesses using immersive technologies to further business goals. Increasingly, we believe firms will use immersive experiences to augment innovation capabilities.

A recent project using Second Life in an innovation setting

More recently, the authors of this paper worked with a Fortune 500 firm to design, prototype and model both the look and feel of the firm's physical retail spaces and the experiences the firm wanted customers to have in retail establishments. To accomplish this task we immersed the team – clients and consultants – in Second Life, building new retail establishments and interacting with those retail spaces using avatars. We believed that working as avatars in an infinitely malleable 3D environment would not only spark their creativity and encourage experimentation, but be quicker and more cost effective than trying to do the same work in a sterile conference room.

While there was some concern about the viability of this approach, the client agreed to the use of Second Life and our team trained the client personnel on Second Life and developed avatars for each client team member. Within 30 minutes of the introduction to Second Life, the client team members were moving their avatars, walking and talking in a virtual world. As we developed the retail spaces, their avatars moved through the spaces, recommending changes and generating ideas on the fly in a setting where rapid prototyping was exceptionally simple.

The results of that work support our theory. Working with trained innovation facilitators and a “real” world architect specializing in virtual world development the firm's participants generated more ideas, a much larger range of ideas, in far less time, at a fraction of the cost

than in previous attempts. We were also able to create a significant number and wide variety of prototypes for consideration. The immediate feedback and ability to modify the prototypes in real time while participants watched and commented significantly increased the speed and effectiveness of the prototyping as well. We easily tested dozens of ideas based on the architecture, technology, allotted space, traffic flow, the needs of customers, and the skills of the firm's retail personnel. It is important to note that all of this work was done with a team whose members were distributed all across the US and never met face to face. All interaction and prototyping was conducted in Second Life.

What are the Barriers to Using These Tools?

While we believe these immersive tools are very valuable, there are several challenges that need to be addressed. These include:

- Management Misconceptions— these tools can be perceived as games or distractions
- Technological Barriers – some firms will have to bring the technology in-house to use them effectively
- Participant Behavior – individuals must see and use the platform as a tool for testing new concepts and not as a diversion or “game.”
- Learning Hurdles - most users will have a learning curve when it comes to acquiring and practicing the skills needed to “drive” an avatar and use tools that will allow them to interact effectively in the immersive space.

Perhaps the most difficult hurdle to overcome is convincing executives that their teams need new perspectives and new platforms to generate ideas more effectively. Since many individuals who lead larger organizations today didn't grow up in an innovative culture, they often require a very strong value proposition before they'll allow their teams to experiment with radically different technologies, especially those that may appear to be gaming platforms. Many firms block social media and immersive sites, so extending the concept into a role playing exercise can be a difficult sale.

Further, the technical hurdles can be high. Given the amount of spam and invasive attacks on corporate firewalls, it can be difficult to convince IT professionals to allow their teams to access immersive experiences that are hosted externally due to the need for robust viewers and open networking ports. However, few IT professionals have the time or budget to install these applications internally, although we believe that these platforms can accelerate innovation and will become a tool of choice for internal innovation teams.

Finally, these tools are new to many in business today, but that is rapidly changing. Younger members of the workforce are tech savvy and have grown up using these platforms. Therefore,

it is our belief that as more experienced technologists move into the workforce they will see 3D immersive platforms as just another tool in their toolkit, and rapidly adopt and make extensive use of them. For the older, “boomer” generation, a thorough introduction to and training in the platforms should allow them to become enthusiastic adopters as well.

Conclusion

Innovation is rapidly becoming recognized as a key requirement for companies to survive and thrive in the 21st century. Firms that adopt innovation tools, techniques and platforms will be uniquely positioned to generate develop and launch ideas more quickly and with lower costs than their competitors.

Many firms have invested in basic, idea-generation training, and some have begun to investigate idea management platforms. We believe that for distributed teams, immersive environments can be cost effective and convenient. Moreover, immersive platforms are incredibly flexible and fertile arenas for innovation activities. Teams enjoy a rich, diverse, and infinitely modifiable work space where idea generation, rapid prototyping and customer feedback and/or ethnography easily facilitated and accelerated. There’s perhaps no better approach for prototyping and getting instant feedback, whether the ideas represent physical products, services or experiences.

The benefits of using 3D virtual platforms come with a cost. Innovators must be trained to use the tools effectively, and some information technology teams will be reluctant to allow the use of virtual worlds that are hosted outside their firewalls. Furthermore, immersive experiences have traditionally been viewed as “games” and may be seen as not serious enough for use in a business setting. To utilize these platforms you may have to overcome some pre-conceived notions about the viability and benefit of immersive experiences.

For More Information

Contact Startled Cat (www.startledcat.com) or OVO Innovation (www.ovoinnovation.com) to learn more about using Second Life and other immersive platforms as a critical part of your innovation efforts.