[SAVE THIS](#) | [EMAIL THIS](#) | [Close](#)

Focus on Games & Simulations: Virtual Vision

October 05, 2007

By Holly Dolezalek

Imagine you're a jut-jawed, black-haired doctor learning to specialize in emergency room techniques. You have a lot of knowledge about disease and injury, but you need some practical experience so you can deal with emergency situations.

So you go into an emergency room for a shift, and a patient arrives by ambulance. He's vomiting, running a fever, and complaining of pain in the right side of his abdomen, which suggests to you that he has appendicitis. His appendix may even have ruptured. So he's rushed into surgery, and you tell the nurse to give the patient a dose of antibiotics to help deal with any infection after the appendectomy.

Suddenly, the patient's blood pressure crashes and everything goes wrong. Before you know it, he's dead. Why? Because, although the hospital has his medical records, you didn't think to check and see if he's allergic to any medications—and he was allergic to penicillin. Now what?

Fortunately for you, you haven't really killed the patient. The patient isn't real, any more than your black-haired doctor. The doctor looks real enough, and he's performed an awful lot of life-saving measures in his time. But he is only an avatar, a carefully rendered digital person. Trainee nurses and residents use him and other avatars to participate in a detailed, 3-D simulation of a combat support hospital that treats wounded soldiers in a battle area.

This simulation, developed by simulation company Virtual Heroes in Research Triangle Park, NC, is similar to other video games such as *World of Warcraft*, which is played online by thousands of gamers all over the world. The nurse or intern who is going through this simulation essentially is playing a game on a computer screen, where the chosen avatar makes certain decisions about a patient's care based on the symptoms the patient displays. Because the simulation is intended to improve trainees' teamwork and communication, more than one person is involved in care decisions and execution, and the two avatars talk to each other by way of instant messaging or voice-over-Internet-protocol (VoIP). Because the whole thing is conducted online, participants can be in different buildings, different cities, or even different countries.

These imitations of reality solve several problems that those in charge of training everywhere have faced for a long time. How do you put trainees in a situation they'll have to deal with regularly and let them learn, without allowing them to do harm? How do you get them to try and fail so they learn without feeling their mistakes are observed by their colleagues and superiors? Especially when the training is complex and difficult, how do you give participants that real-life feeling but still get the training done for everyone?

"We used to use health-care simulators in the form of plastic mannequins, which are computer-controlled to display certain symptoms so health-care workers can practice on them," says Jeffrey Taekman, assistant dean for educational technology and the director of the Human Simulation and Patient Safety Center at Duke University Medical Center in Durham, NC. "But when you need to train many people, your personnel and infrastructure costs go up—these mannequins can run from \$30,000 to \$300,000."

The simulation project described at the beginning of this article is a joint effort among Virtual Heroes, Duke University Medical Center, and the Army. The Telemedicine and Advanced Technologies Research Center, a division of the United States Army Medical Research & Materiel Command, funded the development of a prototype simulation to study whether gaming environments are effective places to train health-care workers, especially first responders. The simulation is scheduled to go live as this issue goes to press; the prototype is the first stage of a research project that will compare the results of training medical personnel with the game and by traditional means.

A Second Life?

The Duke Medical Center/Virtual Heroes project is typical of efforts to use virtual reality for training. Many companies and nonprofits are just starting to dip their toes in the virtual pool, trying out prototypes or pilot projects to see whether virtual reality might be an effective training tool. The health-care industry has been a solid pioneer in virtual reality, and many hospitals and first responder organizations (such as Duke Medical Center) have been exploring its possibilities. Given the need to protect real patients from the learning process of health-care workers, virtual worlds have made sense in that arena for a long time.

For the record, this isn't the holodeck on Star Trek: Next Generation. We're not talking about an employee who puts on a helmet and experiences the total-immersion virtual reality environment. The virtual worlds these companies and agencies are using are 3-D representations of particular realities, but for now participants only experience these worlds on a computer screen. But the increasing sophistication of computer-simulated realities makes these worlds seem pretty darn real.

But don't take our word for it. One way to experience exactly what we're talking about is to create an account at Second Life. Second Life is a virtual world maintained by San Francisco-based Linden Lab. Anyone can create an account for free at www.secondlife.com, and download the virtual world of Second Life. After that, you have complete freedom to wander around that world and see for yourself what this virtual reality thing is all about (see sidebar on p. 44).

I'm known in Second Life as HollyM Littlething. Although you can create your own first name out of just about anything, there are a limited number of last names available. After you decide what your name will be in-world and create your account, you can launch the Second Life world, where you appear (naked, of course) at Orientation Island.

Once you're in-world, you choose your avatar and its appearance, including clothing, hair, and even accessories. This avatar will be you in Second Life, and it can do many things you can. It walks; it talks; it looks at things; it picks things up. Unlike you, it can even fly and teleport to designated locations in the world. You see what it sees.

You can even buy land in Second Life, using the in-world currency called Linden dollars. (Just like changing currency in other countries, you can buy Linden dollars with U.S. dollars or other currencies.) Once you own land, you can build anything: a lecture hall, an outdoor pavilion, anything your (or a developer's) imagination can come up with. Technology company Cisco has a complex in Second Life, as do other companies such as Sun Microsystems, Apple, NETg, and Wells Fargo. There are churches, roads, bookstores, and many other kinds of gathering places, all rendered in beautiful landscapes of rolling green hills and nearby oceans.

IBM has been a big user of Second Life practically since its inception. The company has 26 islands in-world and is experimenting with different types of training: orientation, onboarding, collaboration, mentoring, communities of practice, and other endeavors.

"Virtual learning and collaboration makes a lot of sense, especially to a technology company such as IBM, but really for any company that wants employee learning to be real without being risky to patients or customers," says Tony O'Driscoll, who led design and performance architecture analysis at IBM before he left the company this summer to do research on virtual reality at North Carolina State University. "It's a fantastic way to try things behind the firewall and build competence before you open the door and release the employee on the real world."

O'Driscoll hopes that, as companies experiment with this type of learning, they'll avoid the mistake many made when online learning was introduced. "It's common with innovation to just recreate the past rather than understanding how to use the features of the innovation to improve upon the past. But if you just use this to recreate the classroom, the possibilities of virtual worlds are wasted," O'Driscoll says. "This isn't about using virtual worlds to show PowerPoint presentations or deliver lectures."

For example, he says, it would be a mistake to create a virtual world for health-care employees or postal workers and then make employees' avatars sit in a virtual classroom to learn. Instead, it makes more sense to use the flexibility and endless possibility of virtual reality to help learners conceptually re-engineer their thinking.

"Rather than do a presentation on blood movement, for example, you can make the learner's avatar be a white blood cell that gets stuck going through the aorta," O'Driscoll says. "Rather than a presentation on customer service, you can put a learner's avatar in a realistic role play where he or she is dealing with an irate customer. You can make a learner be anything and experience anything in virtual reality; you can show them what happens by letting them experience it firsthand."

You also can save some serious money while skipping over the boundaries of the real world. Consider Norwegian oil company Stapoil, which built a facility in Second Life that allowed trainees to walk around an oil platform and see what it was like. The oil platform then catches fire, and employees have to find lifeboats and get off the platform safely. "Imagine the costs of doing something like that in real life," says Eilif Trondsen, director of the Virtual Worlds Consortium for Innovation and Learning, a division of SRI Consulting-Business Intelligence in Menlo Park, CA. "This can be used in facilities such as cleanroom plants and nuclear plants, too. In the real world, when you make a mistake, something terrible happens. The consequences aren't there in the virtual world, but it still makes an impression."

Other Worlds

Second Life isn't the only virtual world out there; it's only the most popular freely available world. Other companies have built their own virtual worlds, which they either host for clients or allow them to install behind their company firewall. Unlike Second Life, these worlds are built specifically for training purposes.

Protosphere

The creation of Lansdale, PA-based Proton Media, a provider of training, courseware, and simulations, ProtoSphere has detailed but

more professional-looking avatars than Second Life. The world was created as an enterprise platform that runs behind a company's firewall, and CEO Ron Burns says the virtual learning environment (VLE) is putting the people back in training. "Custom e-learning development has become a commodity that often gets outsourced, and I think many instructors have felt disenfranchised by that," says Burns. "That was part of their resistance to e-learning, but in virtual reality, the instructor is part of the equation again."

ProtoSphere is a SCORM-compliant VLE, built as an enterprise-oriented learning tool that can integrate with a company's existing learning management system (LMS). My avatar, a generic professional-looking woman, met Burns' avatar (customized to actually look like him), and I followed him around ProtoSphere while he pointed out its features. (In the real world, Burns was in his car, and he got a speeding ticket as he talked to me over the phone about the virtual one. Sorry, Ron!)

Our avatars teleported to a Wheel of Fortune-type of game, which can be customized to fit different training needs. Since much of ProtoSphere's client base is in health-care, we also teleported to the simulated doctor's office where avatars talk to each other and simulate doctor-patient interactions. "The idea is to put people in the problem, instead of telling them about the problem," says Burns.

Burns is enthusiastic, even giddy, about the possibilities of virtual worlds and learning. These worlds are a subset of what is called "serious games," or games that are intended to teach rather than just entertain. To Burns, the connection between fun and learning is one that can't be explored enough. "The lead architect on video game Civilization always said game developers design games to be addictive," Burns says. "If you could make learning addictive by using games? That's a going-from-guns-to-butter kind of thing."

Forterra

Another provider of serious games is software company Forterra, whose virtual platform called OLIVE (Online Learning Interactive Virtual Environment) either can be hosted or installed behind a firewall. Like Proton Media, the company's clients include the federal government (such as the military and the Department of Homeland Security) and health care. But the same virtual worlds that teach nurses how to respond to and treat patient conditions also are used to teach language. For example, Paideia, a technology company that provides ESL training in Palo Alto, CA, uses OLIVE to teach customers English as a second language. "It takes what used to be e-learning and creates one-on-one modules that let people practice what they learn in a context-specific environment," says Chris Badger, vice president of marketing for Forterra.

So rather than going to a classroom and reciting verb tenses or repeating phrases heard in a language lab over audiotapes, Paideia's customers create avatars and then go into OLIVE to practice their language skills in (nearly) real situations. "The student and teacher's avatars interact, and the student learns certain context-specific phrases," says Larry Preiser, co-founder of Paideia. "Then the student is dropped into a virtual environment that tests their ability to use those phrases. So they might be talking to a cab driver in a cab or ordering food at a restaurant, and there's an environment for each of those situations."

Paideia co-founder Matt Fuchs says virtual language training takes advantage of the fact that the best way to learn a language is by total immersion. "This is the next best thing to being there," Fuchs says.

Preiser notes that students who explore the world via their avatars learn more at a much lower cost than otherwise, and the platform also allows the monitoring of instructors. Paideia partners with local instructors in other countries, and without the common ground of OLIVE, it would be difficult to make sure instructors' skills and knowledge were up to date.

Besides the patient simulation project discussed at the beginning of this article, Virtual Heroes is designing serious games for the U.S. military. America's Army, the official game of the U.S. Army, has 43 missions that test players with military challenges, which teach them teamwork and strategy. For example, Special Forces soldiers learn about the challenges they'll face in the virtual environment of America's Army before going into the live environment of war. "They might learn how IEDs [improvised explosive devices] are being deployed in theater, and how to avoid unsafe situations such as giving out candy to children, which is a perfect scenario for a suicide bomber," says Virtual Heroes CEO Jerry Heneghan. "They're also learning cultural mores and realities—such as the differences and similarities between Kurds, Sunnis, and Shiites—on the ground before going to Iraq or Afghanistan." Other missions teach about specific situations, such as what to do in combat against an insurgent camp or how to fight when on a bridge.

The collaborative aspect of virtual worlds can be both easier and more effective in virtual worlds than in uncomfortable icebreakers or role plays, because avatars allow learners to keep the social and interactive aspects while relieving them of the real-world embarrassment or social awkwardness that often get in the way of good training.

Heneghan is encouraged by what he sees in the marketplace, which is more sophisticated customers who know the possibilities and limitations of virtual worlds. "As with any technology, you have to think through what your learning objectives are," he says, "then think about whether the technology can support those objectives and whether you need that specific technology to meet them. Virtual reality is not a silver bullet, and nothing truly replaces the human factor."

In fact, the common note among many of these virtual worlds is collaboration, whether among colleagues who learn from each other by getting together in Second Life, or among coworkers who work simulations together to figure out how to solve a common problem or learn a skill. In some ways, virtual worlds lower the natural barriers to collaboration by connecting people in a realistic, experiential

way. And while it's a breakthrough technology that's only going to be used more, Proton Media's Burns says that in many ways it's getting back to what we already know. "When you think about it, 3-D is really much more natural to us—it's what we live every day."

Sidebar: First Time in Second Life

By Kris Stokes

When it came to video games, I thought I was a hip guy. I'm 28, born just one year after the Atari 2600 made Pong a household word in America. I grew up with Tetris, Super Mario Bros., and SimCity (among others). Now I own, and play, on a Nintendo Wii, spending about two to six hours a week gaming.

So when I was tasked with exploring training opportunities in Second Life, I thought, "No problem." But there are a few differences between Second Life and Tetris (or Super Mario Bros., for that matter). The first is, with more than 7 million residents and millions of real dollars spent every day, Second Life isn't a game. But the second difference is that Second Life is filled with people—real people. The result is an element of the unexpected—summed up by my first-ever conversation in Second Life.

I was in the castle on Orientation Island (the first place all new residents go to learn about Second Life). I was working on editing my avatar's appearance, when a blue-skinned, long-haired, elfin-eared guy named Alfredoe Barbossa walked up to me. He didn't say anything, but walked right into my avatar, pushing me backward across the screen, into a wall.

I was irritated by the interruption, as I was trying to style my virtual hair, but I figured the best thing to do was something I can't do much in my first life—I lifted into the air and landed on a different part of Orientation Island, far away.

There, alone, I continued editing my appearance, when, a minute or two later, Alfredoe Barbossa appeared. This time he chatted: "Hey, baldy," he typed.

Editing my hair, I had left a bald spot. I thought, "OK, this is my first Second Life interaction. I'll just try to be nice." So I typed, "Ha! Yeah, I'm trying to fix that. First time here."

"You know, me and you are the only ones here," he said. Alfredoe was right, my map showed no other green dots on Orientation Island. Was he hitting on me?

"Huh," I said. "So you're, like, stalking me now?"

"No! I'll leave if you want me to," he said.

I didn't say anything, just kept editing; trying to get my big head and forehead right.

Then he said, "I'm famous in Second Life. I'm the only one who stays on this island, helping newcomers."

"Right," I said. For some reason, I doubted I'd met a famous avatar in my first hour in Second Life. Then a message popped up: "Alfredoe Barbossa has invited you to be his friend. You'll know when the other is online. Accept? Decline?"

"If you ever need any help, just Message me," he said.

I clicked "Decline" on the friend pop-up window.

"Get lost!" he said.

"Yeah, I'm kind of a jerk. In my first and second lives," I said.

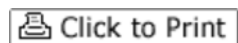
Alfredoe flew away.

Kris Stokes is conference program manager for Training magazine Events.

Links referenced within this article

Find this article at:

http://www.trainingmag.com/msg/search/article_display.jsp?vnu_content_id=1003649017



[SAVE THIS](#) | [EMAIL THIS](#) | [Close](#)

Uncheck the box to remove the list of links referenced in the article.

◆ 2008 VNU eMedia Inc. All rights reserved.