



Alienware +
University of Washington
Virtual Reality Research Center

Alienware Ensures
SnowWorld Stays Cool



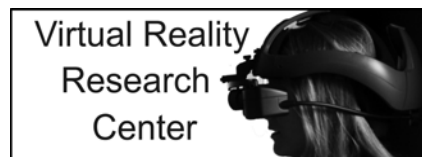
COLLECTED EVIDENCE



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Every three years, the Smithsonian's Cooper-Hewitt, National Design Museum seeks out innovative work from across the fields of product design, architecture, furniture, film, graphics, new technologies, animation, science, medicine and fashion for its National Design Triennial. Apple, Boeing, Google and Pixar are just a few of the designers with displays at the 2006-2007 exhibit. So SnowWorld, a virtual reality "game" used to reduce the amount of pain felt by burn victims during recovery, was a natural fit for this year's exhibit: Design Life Now.

SnowWorld is so powerful that viewing and interacting within it can lower a person's pain perception by half. Victims with severe burns often suffer from excruciating pain during rehabilitation, but the program immerses the patient in a virtual environment filled with snow, penguins, snowmen, igloos and woolly mammoths. Pain requires conscious attention, so by taking the user's attention away from the pain, there is less attention available for the person to process the pain signals.



The Problem: Snow in a museum? - (cont'd)

SnowWorld designer Hunter Hoffman, director of the University of Washington's Virtual Reality Research Center, and research partner Dave Patterson of UW's Harborview Burn Center, faced several challenges once their program was chosen for the Triennial. Normally, SnowWorld uses a virtual reality helmet that immerses the user in the virtual world and the museum's curator wanted patrons to be able to get that same immersive experience. However, no attendant would be present, meaning that the exhibit would consist of an unsupervised helmet on a table.



Young burn patient using SnowWorld pain distraction during physical therapy.
photo and copyright by Hunter Hoffman, UW,
www.vrpain.com



The Problem: Snow in a museum?

Hoffman opted for a table mounted display, but in order to create a similar VR experience, the program would need a superior display screen, a wide field of view and high resolution. This meant improving the resolution from 1,280x1,024 pixels to 2,650x1,600 per eye. SnowWorld needed a computer that could handle this increase without experiencing lag, which can ruin the illusion or create motion sickness. And finally, Hoffman and Patterson wanted to improve the SnowWorld software that hadn't been updated since 2003. The new program needed to be rebuilt with more updated and realistic graphics and computational animations – a tough challenge for any computer. Oh, and since it was an exhibition about design, it wouldn't hurt if the computer looked good, too.



The Solution: Aliens enjoy the snow too

SnowWorld's developers opted for the Alienware Area-51 7500 desktop.

The computer is powered by the Intel® Core 2 Extreme Quad Core processor, which has four processing cores on a single die. In addition, the

Area-51 7500 comes equipped with the NVIDIA GeForce™ 8800 GTX (the world's first DirectX 10-compliant graphics processing unit), up to 3 terabytes of storage and the latest DDR2 memory. All perfect to develop and run a detailed and immersive virtual world for patrons and patients alike, without the problems associated with lag time.



SnowWorld (2003 left) image by Stephen Dagadakis, copyright Hunter Hoffman, UW. Snowworld (2006 right) image by Ari Hollander, www.imprintit.com, copyright Hunter Hoffman, UW.



The Results: Snow, coming to a hospital near you - (cont'd)

With the processing power of the Alienware computer, Hoffman and Patterson's worldbuilder Ari Hollander was able to re-develop the program and make it even more realistic than its predecessor. More snow, more details on individual flakes, more textures on the entire landscape and smoother animations enhance the virtual experience.

In addition, the system supports the resolution needed, and the computer is capable of responding to actions in real-time. In short, museum patrons are able to have the same, if not better, experience as patients that use the VR helmet. The program even garnered recognition in a review by The New York Times. Moreover, the improvements made to the program have clinical applications. Later this year, Hoffman will begin treating American soldiers injured in Iraq with SnowWorld, using an Alienware system.



The Results: Snow, coming to a hospital near you

“I think Alienware and SnowWorld are an excellent match,” Hoffman said. “And it is fitting to use the stylish design of the Area-51 with my SnowWorld exhibit, selected for its design. Not to mention the extraordinary speed and reliability that keep it from crashing. This exhibit at the Smithsonian has been particularly challenging, to make an immersive VR exhibit that was world class, with no human attendant. If a computer crashes, it could spend some hours or even days frozen before someone from the museum came up to restart the computer. That doesn’t happen with the Alienware Area-51 7500s, which is why they’re so critical.”

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