



Technology Enabling a Better World:  
**Immersive Healing**  
Virtual Reality Exposure Therapy



**CUSTOMER:**

USC Institute for Creative Technologies

**INDUSTRY:**

Medical

**AMD TECHNOLOGY AT A GLANCE:**

AMD FirePro™



Some people have tried many forms of therapy and this is the only thing that works for them.



**“MORE SMOG, MORE GUNFIRE,  
MORE BACKGROUND NOISE...”**

*For Marine Corps veteran Chris Merkle, coping with the lingering stress of his deployment in Iraq has meant embracing new technology created for combat veterans like himself.*

It's called Bravemind, and it's a virtual reality exposure therapy (VRET) simulation to help those suffering from post-traumatic stress disorder (PTSD). Utilizing an immersive and realistic virtual environment enabled by AMD graphics technologies, Bravemind recreates unique interactive scenarios to help soldiers normalize the experiences they went through. The end result? A huge leap forward in their personal therapy. According to Merkle, "it allowed me to go back in time pretty much, and put me right back in that exact place ... and I'm able to process that instead of avoiding it." By providing his own input to make the scenario more life-like for his situation, Merkle was able to repeatedly experience and process what he went through – in his own words, fast-forwarding his therapy by two to three years.

Powered by AMD FirePro™ graphics, Bravemind is the brainchild of Skip Rizzo, PhD VR Research Director at the University of Southern California, who was inspired to explore the possibilities of clinical VR in the early 1990s. But his true inspiration for Bravemind came when he saw a video clip of Full Spectrum Warrior™, a real-time tactical video game. With realistic graphics that looked like Iraq and Afghanistan, the game made him think back to his time as a clinician at the Veteran's Administration (VA), doing PTSD treatment with Vietnam vets. Concerned that U.S. soldiers currently on tour in the Middle East would soon be returning home with Vietnam-level trauma, he decided to use his VR knowledge to help.

– Skip Rizzo, PhD  
VR Research Director, University of Southern California



Image courtesy of Branimir Kvartuc, Institute for Creative Technologies, University of Southern California

### **ABOUT USC INSTITUTE FOR CREATIVE TECHNOLOGIES**

*At the University of Southern California Institute for Creative Technologies (ICT), leaders in the artificial intelligence, graphics, virtual reality and narrative communities are working to advance immersive techniques and technologies to solve problems facing service members, students and society.*

*Established in 1999, ICT is a DoD-sponsored University Affiliated Research Center (UARC) working in collaboration with the U.S. Army Research Laboratory. UARCs are aligned with prestigious institutions conducting research at the forefront of science and innovation.*

*ICT brings film and game industry artists together with computer and social scientists to study and develop immersive media for military training, health therapies, education and more.*

After receiving initial funding from the Office of Naval Research, Rizzo created his prototype with four scenarios: desert driving, mountain driving, U.S. driving, and a small Middle Eastern city. Within a few years, he received more funding to build out 14 different worlds, from an Afghan village to a remote mountain outpost, an industrial area, and more.

While VR is becoming more and more recognized in the mainstream, it still has a long way to go. With the help of AMD, Rizzo is trying to spearhead a consortium to build enough systems for every VA facility. And there's no denying the need. According to Merkle, "When we come back, we really need assistance transitioning. I think this is an amazing tool that really helps us catch up to our peers."



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