

Taking 3D to the Next Level

By Jay Ankeney

3D is going to be the talk of the 2009 NAB Show. But many people realize the current stereographic 3D processes that depend on the viewer wearing special glasses are only a way station to the ultimate goal: truly multidimensional hologram images. This year, for the first time, they are going to be on display for all to see.

The "hologramic effect" that an estimated 13 million viewers saw on CNN during election night will be available for your own examination between the STATS booth and Vizrt booth right next door. It's called a "hologramic effect" because the three-dimensional images that seem to have an illusion of sculptured depth have to be viewed on a 2D high definition screen.

When seen on CNN, the depth-empowered image of people being interviewed were intentionally blurry because the network did not want viewers to be confused into thinking that the subjects were actually in the studio. But at their booths on the exhibit floor, STATS and Vizrt will be showing them in all their crisp, realistic glory.

As Brian Kopp, vice president of strategic planning for STATS LLC, a leading sports technology, data and content company, explained, "This technology began when STATS acquired SportVU technology in December 2008.

SportVU had a system that could record the location of players on a field with multiple tracking cameras that included sensors whose software algorithm translated the X, Y and Z coordinates of every object. STATS then figured out how to use that data stream to render a moving object in what looks like 3D space and place it within a virtual TV set in real time."

In order to make this work, the cameras tracking the object to be rendered and the cameras following the set have to move in exact synchronization. The results are then seen on an HD flat panel display.

"That's why we refer to it as a 'hologramic effect' or, internally, as a '3D remote interview,'" Kopp said. "We want people to know this system has the ability to create a 3D image on a 2D screen, but not as a figure that exists by itself in the real world. The great benefit is you don't need glasses to experience it."

If you can get through the inevitable crowds near the STATS and Vizrt booths, you will see a person in the STATS booth being photographed by tracking cameras against green screen and rendered into a hologramic image that will be seen standing next to a live person inside the virtual set in the Vizrt booth.

Nir Goshen is the director of usability for Vizrt, a Norwegian software company specializing in video production technology and offering end-to-end solutions from ingest to visualization and playout.

"We call the area where the person is standing in the STATS booth the 'Transporter Room,' and the receiving studio in the Vizrt booth the 'Prime Location,'" Goshen said. "We are actually synthesizing the computerized image of the person standing in the Transporter Room and compositing it into the virtual set in the Prime Location in real time. That way the subject can interact naturally with a live interviewer in the virtual studio. But the results have to be seen on a high-definition flat-panel display."

True moving holograms hanging will be seen in the NICT booth provided by Japan's National Institute of Information and Communications Technology.

By using multiple lasers shooting through an elaborate compound lens array, moving objects can be captured in RGB and turned into the appearance of free-standing solid three-dimensional holograms hanging in space.

According to Makoto Okui, group leader of the 3D Spatial Image and Sound Group, Universal Media Research Center at NICT, "Our holographic TV experimental equipment on exhibition at the 2009 NAB Show can pick up and display actual moving objects in real time that have not been computer generated. We expect this technology will be used in the future of communication and broadcasting technology," he said. "Though it is still in the initial stage of long-term research, NICT will be showing a working prototype of a holographic TV in order to demonstrate its potential capability."

Okui predicts the impact of this technology will be significant.

"The U.S. film industry has launched 3D digital cinema, and the TV industry is also considering future 3D TV service. In both cases, a stereoscopic system would be used during the early stage of development," he said. "To make the future of 3DTV broadcasting firmly established, it is necessary to develop the technology that reproduces real 3D images with a natural appearance and in high quality. Some of our 3D technologies such as multiview and integral imaging systems can apply to this. True holography can provide an ideal 3D image by reproducing the wave front of an object's light, and we are convinced that our research will contribute greatly to the future of broadcasting."