



FULL-DOME VIDEO Re-INVENTS the PLANETARIUM

by
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It's like wearing headphones on your eyeballs! is how one visitor described his recent trip to see "Black Holes: the Other Side of Infinity," a new full-dome video program at the Oregon Museum of Science & Industry (OMSI) – hardly how most of us grownups remember childhood visits to the local planetarium. It used to be that we went just a couple of times during our lives – first as students, then perhaps as parents or grandparents. All that has changed as planetariums attract new audiences with exciting technologies borrowed from the simulation and virtual reality industries.

OMSI was an early adopter of full-dome video technology. Using the latest digital video, audio and computing tricks, full-dome immerses the viewer in a giant image projected on the inside of a dome screen, creating what virtual reality folks call a "sense of presence," i.e. the feeling of being in a real environment. Full-dome imagery puts the audience in the picture in much the same way as the popular Omnimax® (a.k.a. Imax® Dome) film format. But today's full-dome systems don't just play movies (although they can, through video playback). They are state-of-the-art astronomical simulators: the digital equivalent of the classical star projector, with image generation capabilities, and the ability to navigate 3D databases (planets, distant galaxies and more) in real-time, with the click of a mouse.

The first permanent full-dome planetarium system was an Evans & Sutherland StarRider® (the latest generation of the E&S system is now called Digistar 3), launched in 1999 at Chicago's Adler Planetarium and followed a year later by the reopening of the retooled Hayden Planetarium at the American Museum of Natural History, in New York City. Since then, nearly 300 full-dome theaters, large and small, have sprung up around the globe – quite a feat considering it took the large-format film industry more than 30 years to build a similar size network. Full-dome theater growth is robust, thanks to relatively low purchase and operating costs, an existing market of aging white-elephant planetariums waiting to be rejuvenated, ease of use and "bang for the buck."

Emerging technical standards make it possible for a visitor to a small SciDome® digital planetarium in the mountains of North Carolina to see the same high-end show that is playing in a major big-city planetarium

– unthinkable just a few years ago. More than 60 full-dome movies are already available to support the full-dome planetarium community's growing appetite for programming, with more on the way. While most favor astronomy and space science themes, there's also demand for shows about earth science, biology, chemistry, history, climate change and more.

The National Science Foundation, a traditional sponsor of Imax science and nature films, has recently funded several full-dome productions, which bodes well for the industry. The pending availability of a low-cost, high-resolution (4k x 4k) digital movie camera will jump-start a whole new genre of full-dome programming, which until now has been largely computer generated. A continual stream of quality, reasonably priced content on a variety of subjects– whether licensed or produced in-house - is critical if science museum and planetarium users are to create sustainable businesses – and full-dome video technology is capable of supporting that.

We are starting to see the medium expand into other areas: commercial uses of full-dome technology in special-venue entertainment, art installations, trade shows and elsewhere. Some examples include an immersive domed projection environment displaying eye-popping interstitials overhead at the performance lounge in the Hollywood Casino at Penn National Racecourse (an E&S Spitz project); a dome display system for New York City's Roseland Ballroom in which the video can be manipulated in real-time (the Elumenati); a temporary dome installation in Berlin for "C: the Speed of Light," a 21st century opera by Phase-7 celebrating the life of Albert Einstein; and an inspirational movie for a visitor's center at Volkswagen's Autostadt, projected on a dome within a dome.

Applications like these will continue to drive the technology forward in new and interesting directions. Look for more full-dome installations in the future as well as continuing technical improvements, ever-better image quality and higher resolution displays. Full-dome video enables the operators of dome theaters to delight visitors and to deliver their message

in a unique, memorable way. . . .



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