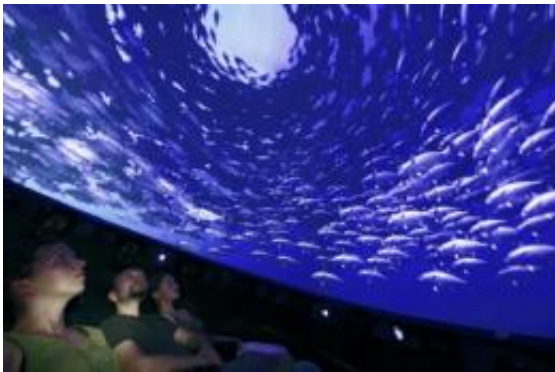


'Immersive Dome' -- don't just watch, join the action

August 14 2009



Dome projection replaces the flat movie screen -- the Credit: Matthias Heyde/
Fraunhofer FIRST

The "Immersive Dome" puts viewers at the heart of the action and lets them actively participate. Instead of the conventional surround sound, a three-dimensional aural experience awaits visitors. At IBC, the trade show for the electronics media industry in Amsterdam, The Netherlands, two institutes of the Fraunhofer-Gesellschaft debut the "Immersive Dome."

Imagine that you are sitting in the middle of a lava lamp. You are surrounded by flowing, larger-than-life-sized sculptures, and you are in complete weightlessness. As befitting these amorphous forms, spherical sounds emanate that adapt to the movements of the fluid sculptures within the space. In the dome cinema of tomorrow, visitors will embrace

entirely new visual and acoustic impressions.

This is why, at the IBC from September 11 to 15, 2009, digital dome projection from the Fraunhofer Institute for Computer Architecture and Software Technology FIRST is being combined with the »Spatial Pan« sound system from the Fraunhofer Institute for Digital Media Technology IDMT. Another show-stopper: Visitors can actively participate in the creation of content. To do so, a camera films your face and projects it live onto a dome movie screen. Using a 3D-mouse, you can shift the projection on the screen, thereby interactively changing the image and the associated sound.

On behalf of both Fraunhofer institutes, the full-dome video »Liquida« was produced by Ralph Heinsohn of »Tilt« animation studios and sound designer Sven Lütgen. The film shows how a high-resolution digital and interactive dome projection can be combined with three-dimensional sound. In the »Immersive Dome«, six projectors generate five partial images on the interior side, and one at the apex of the half-dome. »Screen Player« software from FIRST controls the projector cluster and produces a uniformly colored full image. The software lets cluster projections be displayed in real time with a resolution of 4000 x 4000 pixels. To do so, the shape of the screen must be virtually replicated first. The image from the projectors is then aimed toward it and distorted to just the right fit. At the same time, three digital cameras capture the projected images and layer them on top of one another by means of image recognition and color correction algorithms, creating pixel-perfect reproduction and color homogeneity. The »Screen Player« contains a preview function that displays the content ahead of time within the geometry of the screen. The adjustments of the original content to the screen geometry occurs directly when played in real time.

The »Screen Player« includes standard interfaces to other multimedia systems, so that additional devices can be easily integrated - including

IDMT's »Spatial Pan« sound system. In contrast to other three-dimensional audio reproduction systems, which produce a natural and spatial sound impression with the aid of multiple loudspeakers, the »Spatial Pan« sound system works using fewer loudspeakers. For the »Immersive Dome« at the IBC, eight standard loudspeakers will be used to create a realistic and spatial sound experience for visitors. A third sound dimension is developed by the dome itself becoming a sound entity - without any other loudspeakers. In addition, special electro-acoustical transformers are attached to the dome, which emit pulses, trigger oscillations and thus shower the interior space with sound.

FIRST and Carl Zeiss cooperate closely in the planetarium sector. Beside planetariums and cinemas, the "Immersive Dome" can be used at theme parks, for simulators, in multi-media installations and in the high-end segment of home cinema.

Source: Fraunhofer-Gesellschaft ([news](#) : [web](#))

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