Come in and enjoy the «Immersive Dome»: the conventional flat screen has been replaced by a fully enveloping dome projection system. Instead of conventional surround sound a three-dimensional listening experience awaits you. To achieve this effect, Fraunhofer FIRST’s digital dome projection system is combined with Fraunhofer IDMT’s SpatialSound Wave System.

Within the «Immersive Dome» you can experience fully innovative visual and acoustic impressions. Moreover you can influence content, for example pictures or games, interactively with a joystick or through gestures.

**HOW YOU BENEFIT**

- **High video quality:** The projector cluster produces a seamless image with a resolution of 8k x 8k in real time.
- **3-D Sound:** Authentic spatial sound impressions with extended sweet spot and movable sound sources.
- **Compactness:** Compact video and audio hardware and automatic fine calibration of video content reduce set-up effort, making the system suitable for mobile solutions as well.
- **Flexibility:** You choose screen shape, image size and projector type. The Screen Player quickly adjusts the image accordingly.

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**JOIN THE ACTION INSTEAD OF JUST WATCHING!**

Six projectors and eight loudspeakers guarantee a realistic visual and auditory experience. Three cameras are used for projector autocalibration and color correction.
Three-dimensional audio reproduction systems based on Wave Field Synthesis technology use a large number of loudspeakers to create a natural, spatial sound experience. SpatialSound Wave by Fraunhofer IDMT is a sound system for the reproduction of spatial sound creating perfect immersive acoustic illusions. To achieve this, the system needs distinctively fewer loudspeakers. In addition, they can be positioned nearly arbitrarily around the audience. SpatialSound Wave is an economic, compact and efficient solution to reproduce spatial audio scenes. It opens up a lot of opportunities to creatively design spatial sound. SpatialSound Wave provides an extended sweet spot and the opportunity to place and move 3D sound sources in real-time. Due to the free handling of sound objects, the system can be used for individual sound arrangements in live and playback operation as well as for the production of massively entertaining shows.

Curved screens pose a challenge in terms of projector control. Since the curvature is irregular, the required image distortion correction cannot simply be described mathematically. To ensure a distortion-free, uniformly sharp and high-resolution image across the entire screen, it should also be distributed over multiple projectors. These must be synchronized to ensure that a seamless overall image is generated. Fraunhofer FIRST has developed software that controls the projector cluster and creates a seamless, uniformly colored, high-resolution overall image. First, a virtual model of the screen shape is generated. Then, the projected image is adjusted accordingly and suitably distorted. At the same time, the projected images are captured by digital cameras and blended fully automatically and pixel-precisely using image recognition algorithms. The Screen Player has a preview function that shows the content adapted to the geometry of the screen. Adjustment of the original content to the screen geometry is done directly during playback, making a time-consuming rendering process unnecessary. The technology enables cluster projections with a resolution of 8k x 8k pixels to be shown in real time. Fraunhofer FIRST and Carl Zeiss cooperate closely in the Planetarium sector.

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