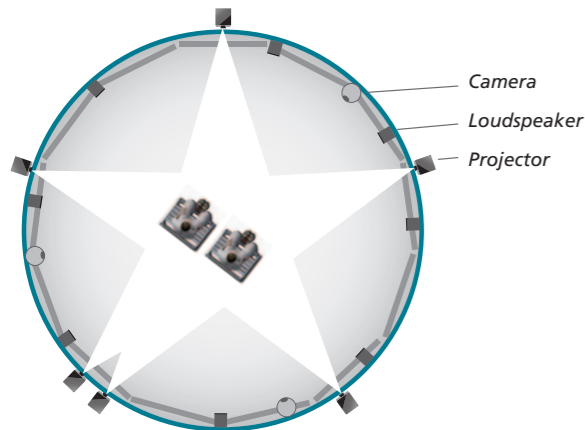




HOW YOU BENEFIT

- **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.



CONTACT

Fraunhofer Institute for Computer Architecture and Software Technology FIRST

Department Systems Architecture – STAR
Ivo Hausen, Research Manager Interaction Technologies
Kekuléstraße 7, 12489 Berlin
Germany
Phone: +49 30 63 92-1777
ivo.hausen@first.fraunhofer.de
<http://www.first.fraunhofer.de/en>

Fraunhofer Institute for Digital Media Technology IDMT

Acoustics
René Rodigast
Ehrenbergstraße 31, 98693 Ilmenau
Germany
Phone: +49 3677 467-390
rene.rodigast@idmt.fraunhofer.de
www.idmt.fraunhofer.de/index_eng.html

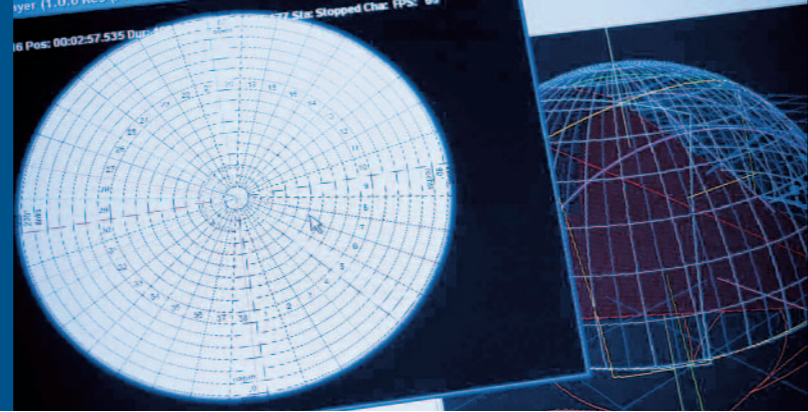
IMMERSIVE DOME



JOIN THE ACTION INSTEAD OF JUST WATCHING!

Come in and enjoy the »Immersive Dome«: the conventional flat screen has been replaced by a fully enveloping dome projection system.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.

Six projectors and eight loudspeakers guarantee a realistic visual and auditory experience. Three cameras are used for projector autocalibration and color correction



SCREEN PLAYER

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.

SPATIALSOUND WAVE

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.

AT A GLANCE

Screen Player

- Projection on surfaces of any shape and size
- Automated fine calibration of projected images
- Color correction
- Various possible combinations of projectors
- Image distortion correction and blending in real time
- Serves up to four video channels (up to full HD per channel) on one computer
- Image, audio and video preview
- Real-time play function without time-consuming rendering
- Interactivity: viewers can adjust size, orientation, position and transparency of visual objects
- Live input projectable in real time
- Dome formats with 8k x 8k resolution

SpatialSound Wave at a Glance

- Playout and production system for high class spatial reproduction of audio scenes
- Spatial sound in all seats
- Realistic movement of 3D sound sources
- Real-time live operation and automated movement of sound sources possible
- Scalable spatial sound systems also for mapping of conventional sound formats (e.g. Stereo, Dolby Surround, 5.1)
- Synchronizable to timeline-based and object oriented video sources

Application Areas

- Clubs and events
- Product presentations
- Three-dimensional audiovisual simulations
- Planetariums
- Theme parks
- Cinema