Fraunhofer
FIRST

INTERACTIVE DOME GAMING

AT A GLANCE

– 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 six video channels (up to full HD per channel) on one computer
– Image, audio and video preview
– Real time playout function without time-consuming pre-rendering
– Interactivity: Easy integration of game controllers (game pads, joysticks etc.)
– Live input projectable in real time
– Dome formats with 4K x 4K (and higher) resolution

APPLICATION AREAS

– Movie theaters, Home cinema
– Theme parks
– Product presentations
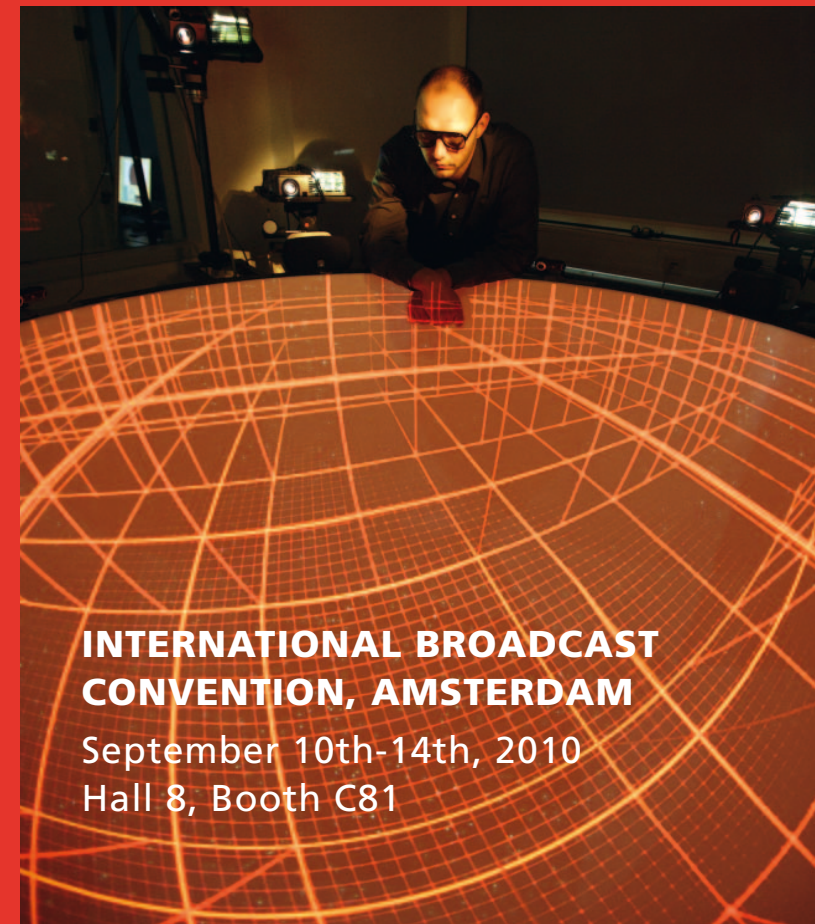– Simulators
– Events
– Planetariums

CONTACT

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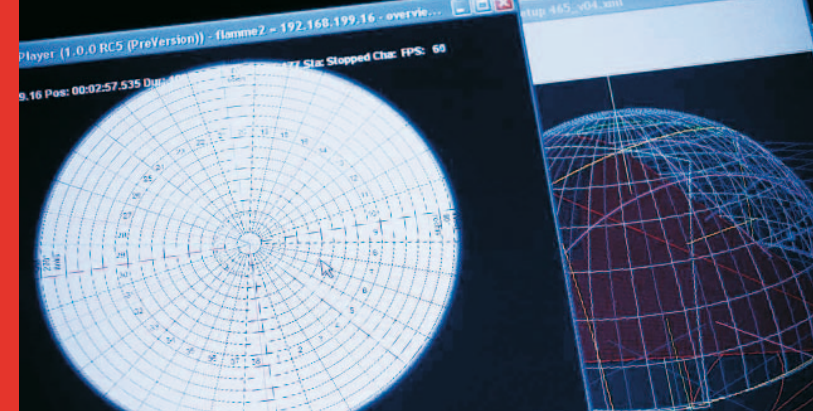ivo.haulsen@first.fraunhofer.de

INTERNATIONAL BROADCAST CONVENTION, AMSTERDAM

September 10th-14th, 2010
Hall 8, Booth C81

360° PROJECTION TECHNOLOGY …

… puts the player in the center of the action. At IBC 2010 Fraunhofer FIRST combines its dome projection technology with a computer game and provides an entirely immersive gaming experience. The system uses a projector cluster of six standard projectors. Fine calibration, image distortion correction, blending, and color correction are automatically done in real time by Fraunhofer Software. The software allows for projections of any size and shape with a resolution of 4K x 4K (and higher). Different media can be combined in real time. Thus live input can be integrated easily. To demonstrate the possibilities for immersive gaming within the dome Fraunhofer FIRST integrated the game OSMOS (Hemisphere Games). It can be controlled via the usual game controllers like game pads, joysticks etc. and puts the player right in the center of the action. Apart from immersive gaming dome projection technology can be used for digital cinema, simulators or training environments as well as product presentations and exhibitions. It is already widely applied in the planetarium sector where Fraunhofer FIRST closely cooperates with Carl Zeiss.

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 a 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 already adapted to the geometry of the screen.

FRAUNHOFER FIRST

The Fraunhofer Institute for Computer Architecture and Software Technology FIRST in Berlin-Adlershof develops innovative software technology for IT-based systems and processes. The aim is to produce high-quality, easy-to-use and intelligent technologies that offer users optimal support and can be adapted to suit their needs. The Institute's work focuses on industrial applications in the following areas: automotive and traffic sectors, medical technology, media and software development. Fraunhofer FIRST was founded in 1983 as an Institute of the German National Research Center for Information Technology (GMD) and has, since 2001, been part of the Fraunhofer-Gesellschaft. The Institute's Director is Prof. Dr.-Ing. Stefan Jähnichen. FIRST has a total workforce of around 120, employed in the three research departments— Embedded Systems, Interactive Systems and Intelligent Data Analysis – as well as an administrative department.