BSM AUTO ALIGNMENT FOR SIMULATION

CAMERA BASED ALIGNMENT OF WARPING AND BLENDING OF PROJECTED IMAGES

PERFECTLY CALIBRATED PROJECTION SYSTEM

In projection systems with multiple projectors it is hard or sometimes even impossible to manually adjust warping and blending parameters to create a seamless looking image. Furthermore, this system has to be maintained during operation to keep the image quality good what means your customer would need technicians with very high skills and again, keeping this system aligned manually is sometimes impossible.

WARPING, BLENDING, MASKING

The BSM AUTO ALIGNMENT software takes care of all these tasks. The only additional hardware you need to install is a number of digital photo cameras that are able to "see" the screen surface. They can be located anywhere, either on top of the screen or integrated – there are no restrictions or limitations. Dependent on your image generators, you might have to add our hardware warp and blend boxes between your image generators and the projectors.

### CURVED, SPHERICAL, DOME, 360° – SCREENS OF ANY SHAPE

The projection system must be constructed in the software first. The plan includes the screen (can be of any shape), projectors and cameras. If everything would have been built the way it was planned, you would have an aligned picture already after this construction phase – but this is theory. In fact, all buildings have tolerances and that's where the camera based auto alignment starts its work: several test images are projected on each projector and the cameras take pictures of them. The software analyses the offset and wrong warping of the projected images and perfectly adjusts warping and blending to have a seamless image on the screen shape.

IMAGE GENERATOR INTEGRATION

For realtime graphics, the software can handle multiple eyepoints and calculates warping, blending and camera frustums for each of them. The blend files are output as PNG, BMP or RAW, the warping geometry and camera frustums are stored to text files, that can be loaded into the image generators. If the image generator does not supply warping and blending, you can use our hardware warp and blend solution.

RE-ALIGN BY PRESSING A BUTTON

Since all projected images and big screen structures tend to move due to thermal influences, the picture in a dome must be calibrated from time to time. Dependent on the quality needs, the calibration can be done by simply pressing a button, even every day. This assures that all projected pixels match to each other and guarantees a perfectly aligned image during all time of operation.
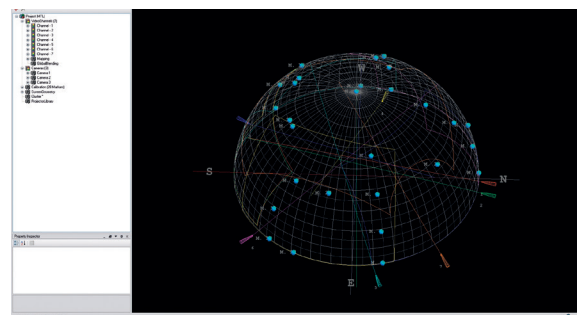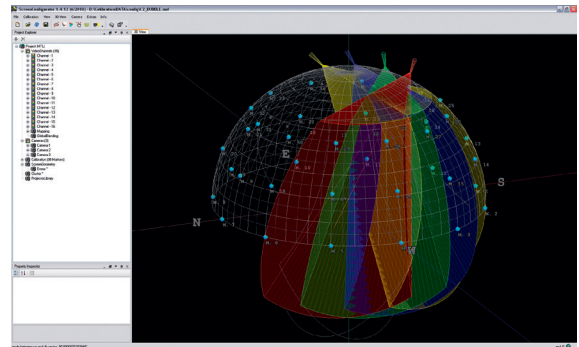
KEY FEATURES

- Generates warp geometry and blend data for integration into image generator (SDK available)
- Support for Projection Design WB2560/WB1920 image processors for display of test patterns, warping and blending
- Screen geometries: dome, cylinder. Any shape can be loaded from OBJ file.
- Unlimited number of head positions
- Pixel size based brightness correction (All projectors must be calibrated to have the same light output or the same brighness on screen)
- Screen gain correction for head position