Advances in Deployable Systems

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ABSTRACT

There is an increasing demand for cost effective fast deployable high quality training systems. This paper introduces a new screen technology for compact display systems that allows fast and easy setup anywhere in the world.

In the past, deployable systems typically used basic flat or cylindrical screens, limiting the realism and immersion of the training.

A spherical screen provides the most optimal immersive training environment improving the immersion of typical flat or other type of curved screens. It is crucial for the quality of the projected image to have a smooth and bulge-free surface in order to provide a high image quality.

Common rigid screens are implemented by dividing them into smaller segments, in order to facilitate logistics. At the installation site, the screen is mounted by putting the segments together. A visible seam between the screen segments would disturb the projected image, therefore these seams are concealed with additional fill up and painting. To assemble and finish the screen surface on-site requires a substantial amount of labor and equipment. The final coatings or paints should also be applied by specially trained people.

Recent developments in support structures and screen technology now enable the use of high quality seamless spherical screens and still maintain a compact size for transportation.

By using a monolithic foldable curved screen, a large field of view screen that is compact to ship can be made without seams. The correct choice of material is essential in order to find the right balance between rigidity and maneuverability. When folding the screen the material remains within the material elastic limit to avoid permanent deformation of the material.

A pre-coated screen avoids the need for an on-site screen finishing which drastically reduces implementation time on site.

Combined with an easy and quick to assemble support structure, these new type of screens can be installed in a variety of environments, even when space is limited.

In order to simplify the calibration of such a system, an automatic alignment is used in conjunction with fast to set-up reference points.

By using easy to position magnetic reference points integrated in the screen and automatic alignment, a quick and accurate alignment in the field can be guaranteed.

BIO

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Gaëtan Nonque (1979) has a Master's degree in Industrial design engineering from the High School of Kortrijk, Belgium. He joined Barco in 2001 and started his career in the R&D department of Barco designing Systems & Solutions. He headed BARCO's demonstration and event department for projector products, large simulation displays and network centric collaboration products. Now he is managing the Esterline product management department. He is key in Esterline's development of visualization products and systems for Simulation & Training markets worldwide. He is based in Belgium.