

MARquette Visualization Lab (MARVL) CAVE



▲ The CAVE system at MARVL is used for various visualization applications, including computational fluid dynamics analysis.

MARVL inspires collaborative, interactive learning

The Opus College of Engineering, one of the 12 colleges and schools comprising Milwaukee Wisconsin's Marquette University, is focused on preparing its students for advanced careers in various engineering disciplines. The college fulfills this mandate in part through the use of state-of-the-art technologies that enable collaborative learning, innovative visualization capabilities and multidisciplinary data analysis.

The epicenter of this high-tech approach to learning is MARVL, a resource facility located within Engineering Hall that encompasses various spaces that inspire and nurture collaborative learning. The keystone space within MARVL is a large-scale cave automatic virtual environment (CAVE) comprising a total of ten Christie® Mirage WU7K-M 3DLP® 3D projectors and Christie Twist™ warping and blending software.

"From day one of the planning, we realized this was going to be a more of a campus

resource," says John LaDisa Ph.D., Director of the Marquette University Visualization Lab. "It needed to be able to look at volumetric data sets... we have a lot of people who use medical, geographic and geoscience imaging data and it needed to have the ability for sharing and collaboration in real time."

"There's just so much that can be done and so many people who come and are excited about the different things they can do."

John LaDisa Ph.D.,
Director, Marquette University Visualization Lab

Having designed and installed several CAVE systems at other locations, Christie was able to work directly with LaDisa and Marquette University's administration to design and implement what would become the MARVL visualization space. Christie's expertise in designing CAVE systems was especially

Customer:
Marquette University

Location:
Milwaukee, WI

Industry/Market:
• Higher education
• Visualization

Requirements:
• 3D stereoscopic CAVE
• High-resolution
• Large viewing and audience area
• Unique split-mode operation

Summary:
Working directly with Christie, members of the Opus College of Engineering specified a CAVE system as part of the MARquette Visualization Lab. With Christie's expertise in building CAVE solutions to meet the specific needs of customers, they were able to implement an advanced visualization system that is being leveraged by several university and community groups.

Products:
• Christie Mirage WU7K-M 3D (10)
• Christie Twist

Results:
Since its opening in early 2014, MARVL has welcomed more than 2,000 people through its doors and has delivered almost 800 student experiences. It has become a keystone space within the Opus College of Engineering, attracting various university, industry and community groups eager to make use of the CAVE system and the unique attributes of the lab.

valuable since the team at Marquette required certain features that would set their CAVE system apart.

“The visualization area had to be viewable by a large audience,” starts LaDisa, when speaking of the requirements, adding: “we also needed it to have a split-mode so we could divide the CAVE into two three-sided CAVES, allowing us to compare different scenarios and run two different programs simultaneously.” Guided by these requirements, the design team at Christie went about putting together a solution that would meet these needs.

What they ended up with was a CAVE system that can accommodate 6-10 people within the visualization area while also having enough room in the periphery for an audience of 30-40 to observe the space and content. The Christie Mirage WU7K-M projectors provide a total of 15.7 megapixels of resolution over the nearly 513 sq. ft. of viewable space. Integrating Christie Twist™ blending and warping software ensures all these pixels are perfectly aligned and stitched together while also enabling the split-mode option. LaDisa notes that the ability to help implement a system such as this was a significant benefit of working with Christie. “Christie’s ability to meet these needs and understand the importance of them, instead of just shoe-horning us into something they did before, was great.”

Since its opening in early 2014, MARVL has welcomed more than 2,000 people through its doors and has had nearly 800 students use the space. What’s pleased LaDisa the most, perhaps, is how MARVL has become much more than just a resource for the engineering college and more of a resource for the entire university and surrounding



▲ Undergrad students from Marquette University’s College of Nursing train in the CAVE using a combination of physical apparatus and 3D virtual visualizations.

community as well. “There’s just so much that can be done and so many people who come and are excited about the different things they can do,” shares LaDisa. “It has been amazing to watch it go from a classroom, to seeing a group of industry personnel walking through it, then having a physician come over and look through an artery. We even have immersive fitness classes in here...we have changed it into a sports studio. Beyond all the educational and research objectives that we hoped to achieve, it’s just been fun.”

Contact Christie

Contact us today to find out how your organization can benefit from Christie solutions.



▲ The Department of Media and Performing Arts in the Diederich College of Communication presented “The Bald Soprano” using the CAVE as a set.

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