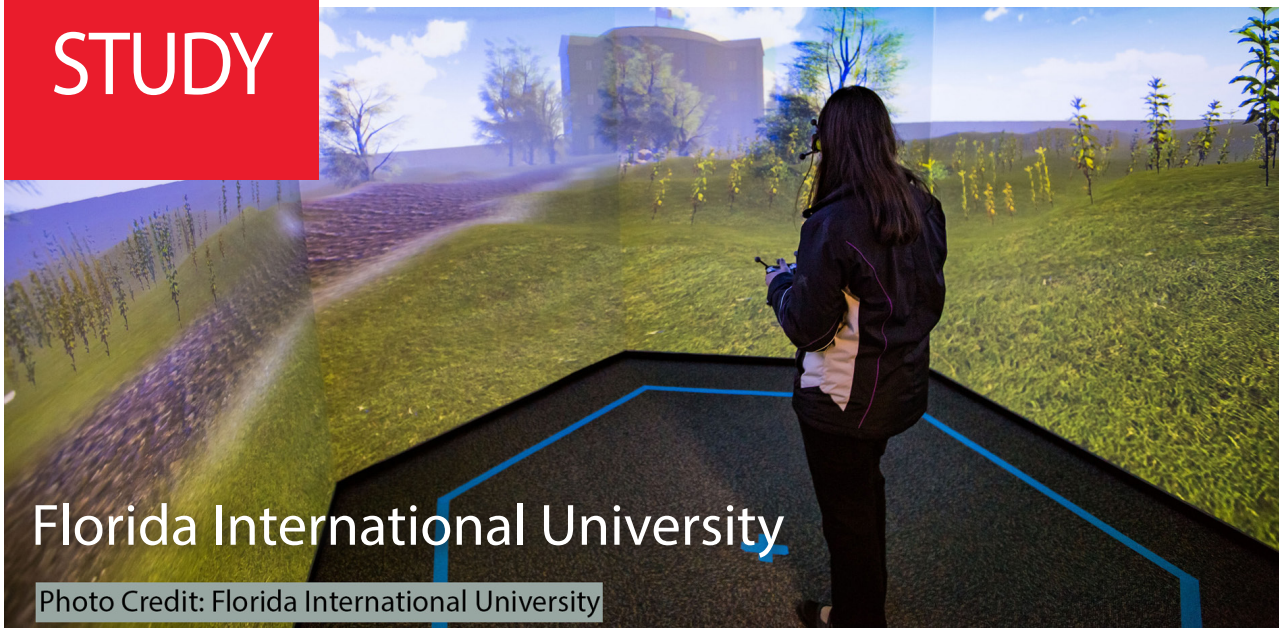
CASE STUDY



Florida International University

Photo Credit: Florida International University

Launching a Successful Visualization Solution

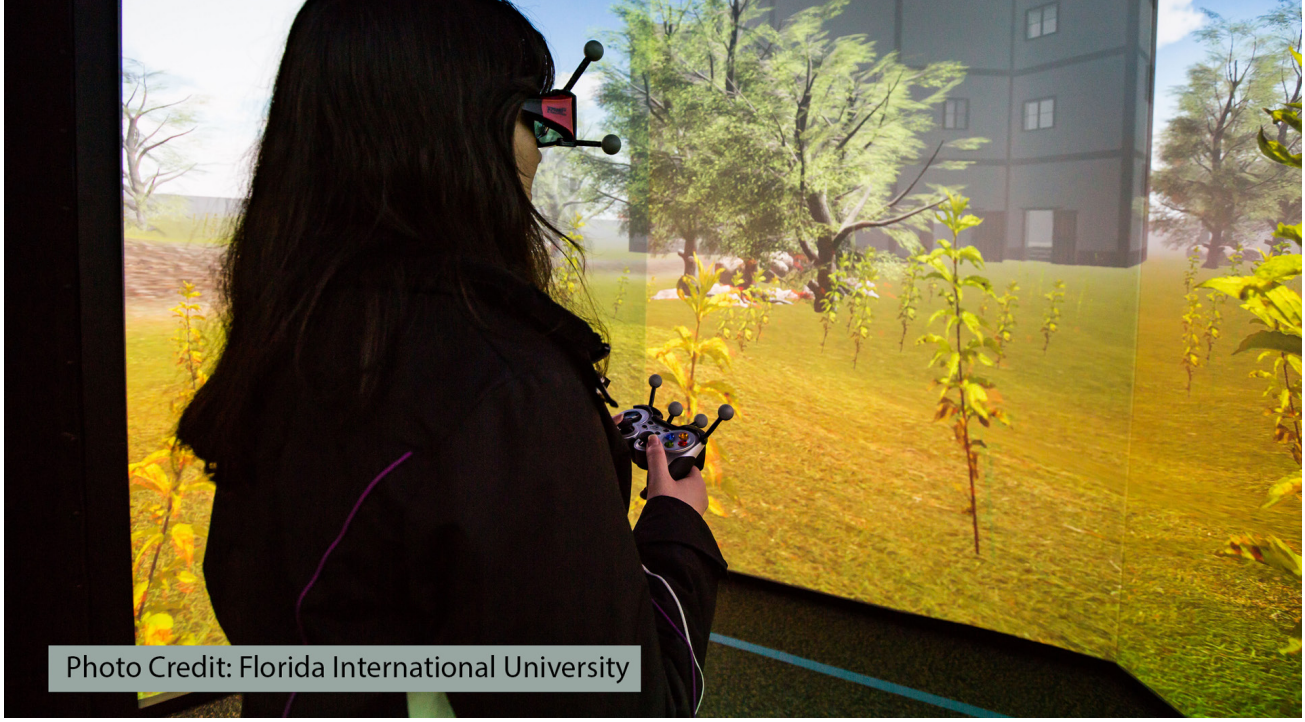
Miami, FL

Many universities prove the value in immersive visualization solutions, but few do it as quickly and as well as Florida International University (FIU). The FIU team received a grant through the university's Tech Fee program to create an immersive environment. FIU wanted to encourage and increase students' use of VR technology throughout the University by leveraging collaboration between the College of Engineering and Computing and the College of Communications, Architecture, and the Arts. They partnered with Mechdyne to deliver the I-CAVE (Integrated - Computer Augmented Virtual Environment), a customized virtual reality solution that would impact the way students learn and research. In a very short timeframe, faculty, students, and staff created a work group to build the university's first I-CAVE experience.

- From November 2015 through January 2016, Mechdyne installed the visual and audio aspects of the I-CAVE, while I-CAVE staff conducted operations testing and developed benchmarks.
- During this time, a multidisciplinary group, led by students, completed a virtual reality (VR) experience called the "Globe Theatre Experience" - a 15th century recreation of the city London, the Globe Theatre, and its people as part of a Shakespeare First Folio celebration.
- In late January 2016, the I-CAVE held its inauguration where FIU's president, university officials, and college deans were exposed to VR experiences, including the Globe Theatre Experience.
- In February 2016, the Globe Theatre Experience was presented to more than 1,000 local middle and high school students visiting FIU.

Objectives

- Reach as many students as possible with the I-CAVE
- Ensure uptime and solution utilization
- Develop a long-term strategy for continued growth and success



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Encouraging Collaboration

While the I-CAVE is housed at the School of Computing and Information Sciences, it is intended to be used by all departments at the university. "We want to get as many people exposed to VR technology as possible and evaluate how it can be used in classes and research activities, and then help them accomplish that," said Steven Luis, Director of Technology/Business Relations for the School of Computing and Information Sciences.

Luis credits the successful launch of the I-CAVE to three main activities:

- The principle investigators–Drs. Shu-Ching Chen and Shahin Vassigh–and the I-CAVE staff, coordinated with the university president and other leading administration to make sure they would be present for the inauguration.
- Media outreach and their invaluable exposure played a large role in the I-CAVE, gaining attention both on and off campus.
- The team worked with the office of research to secure I-CAVE features in the monthly newsletter that is sent to all researchers at the university.

Achieving ROI

With the I-CAVE up and running, it began to quickly fulfill its purpose. Each week, students take advantage of open hours to see a demonstration or get more information about developing projects. Students also request meetings with faculty to discuss projects they are interested in launching. A website set up for the I-CAVE allows students and faculty to see open hours, events, and schedule project time.

Along with the faculty, there are two part-time students who dedicate their time to the I-CAVE. They teach workshops, give demonstrations, and provide troubleshooting feedback to developers. The team developed internal methods to make sure the system is always functional by using two different modes - production and developer modes. This way, team members can be working on development, yet they can easily switch to production mode for a demonstration. Being able to work in the two different modes has minimized downtime and helped create a seamless collaboration experience for students and faculty.

Content can sometimes be a challenge for immersive systems. FIU tackled this challenge head-on, and in the process, brought cross-functional departments together. Computer

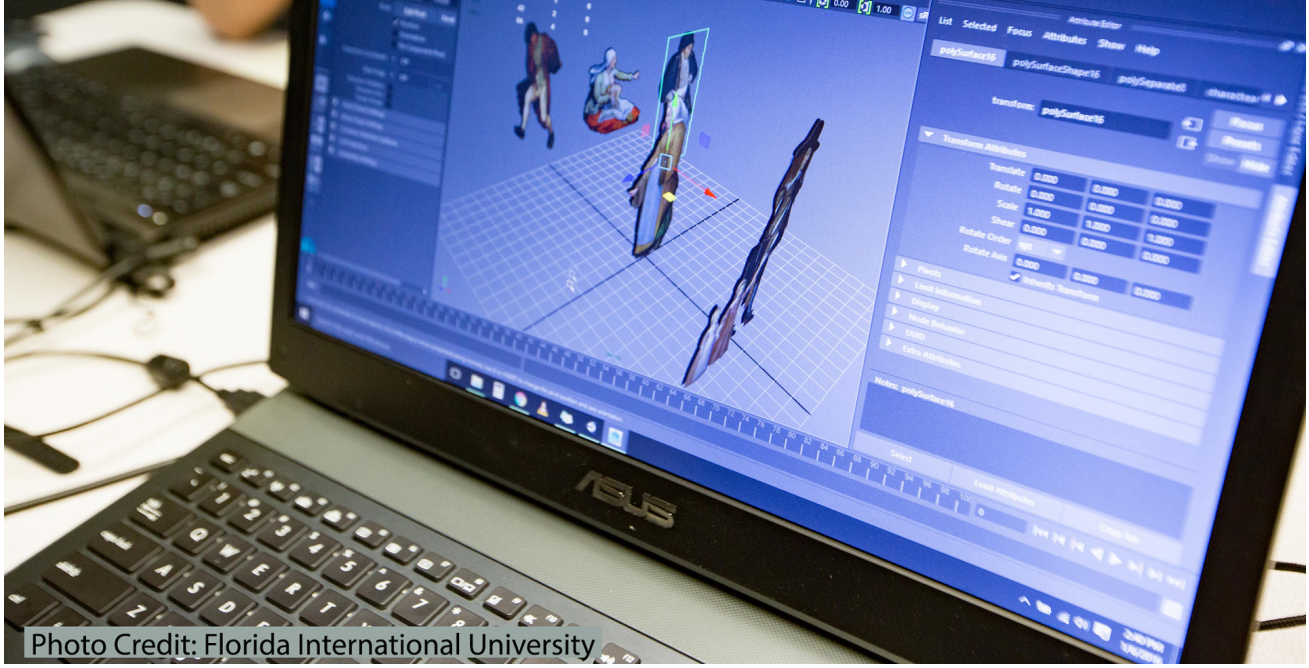

Photo Credit: Florida International University

science seniors work together to create content for their capstone projects, architecture students develop models for the I-CAVE, and a computer graphics class explores demonstrations on different techniques they are learning in class. Depending on the semester, different content is always being created, developed, or enhanced for the I-CAVE.

FIU's Business Model

While the FIU grant money will carry them through November of 2018, they are already planning for the future and making sure they have a strong and feasible business model in place. Although internal instruction and research projects are not currently charged, there is a fee model for external organizations to use the I-CAVE.

Keeping Busy in the I-CAVE

Many departments and projects find their way into the I-CAVE. Meteorology researchers are working on hurricane intensification. They use the I-CAVE to evaluate different hurricane data sets as a means to better understand factors that influence hurricane behavior.

The Academy for International Disaster Management is developing a training environment for real-life tactical scenarios experienced by firefighters. By early 2018, they will have eight or nine different tactical and command training scenarios completed and will be offered to the county Fire Training Academy.

"This could be the largest pipeline of firefighters trained in this type of technology," said Luis. "I suspect we'll see a lot of other training simulation evolve."

Reaching Beyond the University

The I-CAVE is doing more than educating students at FIU. It is reaching into the community and giving everyone the opportunity to experience virtual reality.

“People who have never seen true VR are amazed," says Luis. "Even people who have been exposed to head mounted displays (HMDs) are amazed. They are realizing how important peripheral vision is in your experience, one of the drawbacks of an HMD."

FIU has invited local K-12 students to experience the technology so they can understand the benefits of VR. More than 500 students from different summer camps and other programs participated in demonstrations in the I-CAVE. And, more than 1,000 middle school students virtually experienced the Globe Theatre in London during the time of Shakespeare. There is also a local high school that has an academy focused on technology and design. In fact, a

Photo Credit: Florida International University

group of seniors are working on a rendition of the FIU campus in Minecraft as part of their senior project.

"The I-CAVE brought VR to FIU," says Luis. "Prior to this, there hasn't been a single place you can go on campus to explore VR, talk to experts about how VR is used, and leverage it for research and instruction. This is an area of competency that is emerging, and we are very fortunate to have received the grant to start this process."

A Customized Technology Solution

FIU worked closely with Mechdyne to develop a custom solution that would fit all their requirements including a limited budget, minimal space, and the desire for a creative solution. Mechdyne designed the I-CAVE to be a five-sided visualization solution stretching nearly ten feet tall, with each screen angled in a tight hexagon shape. Mechdyne's proprietary software getReal3D for Unity allows FIU to develop their content in the Unity game engine before displaying it in the I-CAVE.

Continued Growth

The I-CAVE is just the beginning. A sister-lab, a design and manufacturing lab, is next on FIU's list. "Imagine being able to go in the I-CAVE and work on a design model, maybe a wrench you are creating, and you want to change the grip on the wrench," says Luis. "You can go in the I-CAVE and make the grip longer and now you'll be able to print it in the sister lab." Students will be able to 3D print out of a variety of materials. FIU will have a complete virtual design and manufacturing lab to continue bringing students together across the campus to create a unified, technology-driven, forward-thinking workforce.

About Mechdyne

Mechdyne is one of the world's leading providers of innovative visual information technologies. Mechdyne bends technology to our will in ways that transform complex data into insights and ideas. To ensure our clients succeed, Mechdyne provides comprehensive, customized solutions that include consulting, software, technical services, and hardware integration.