

# SUSTAINABLE BUILT ENVIRONMENT AND INFORMATICS (SBEI) INITIATIVE



Institute of Water and Environment

**SBEI** is an interdisciplinary organized research group under Institute of Water and Environment (InWE). It includes fifteen faculty from College of Communication, Architecture and the Arts, College of Engineering and Computing, and College of Arts, Sciences and Education.

Our group's research is focused on sustainable design and development of resilient environments using new advances in computer science and informatics. We use data visualization and data management technologies to develop integrated cyber-toolsets for modeling, visualizing, planning, and creating decision-support tools for interested parties.



## Visualizing Storm Surge and Flooding

The project is an immersive 3D virtual environment to help scientists and policymakers to visualize the impact of storm surge and flooding during extreme events. The project produces real time animation in response to the user input.

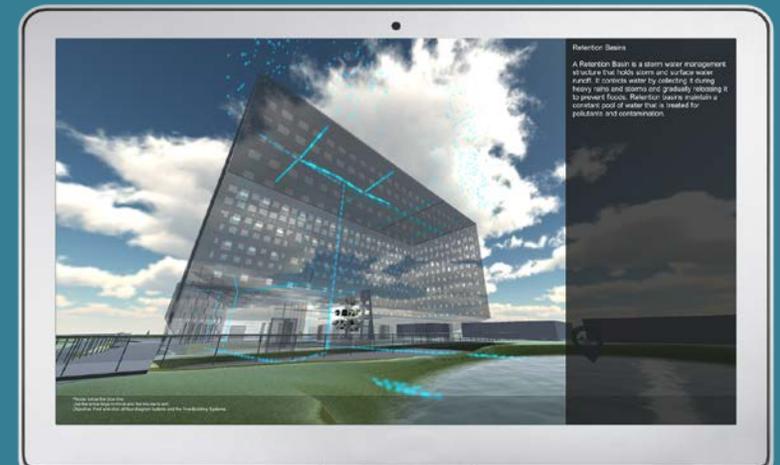
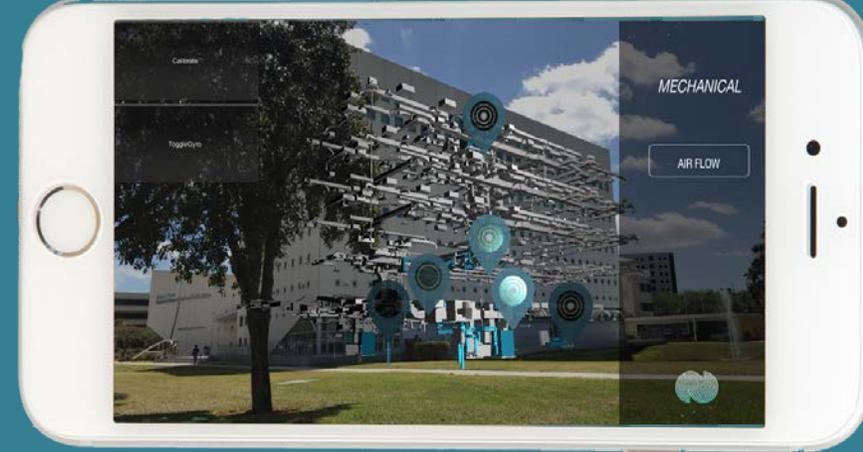
The 3D site model and the constructed urban environment is the outcome of integrating GPS data with the modeling and programming capacity of UNITY 3D game engine. The project is currently under construction for a fully immersive experience at FIU's newly established I-CAVE.



## Augmented Reality for Learning Sustainable & Resilient Design

This interdisciplinary project develops a realistic and immersive learning experience for Architecture, Construction and Engineering students to learn about various buildings systems, their resiliency and energy performance.

As if, having an x-ray vision, students can use the Augmented Reality application developed by this project to move around the building and view through the building material, and interact with various building components such as the façade system, structure, mechanical systems, and plumbing system to receive information.

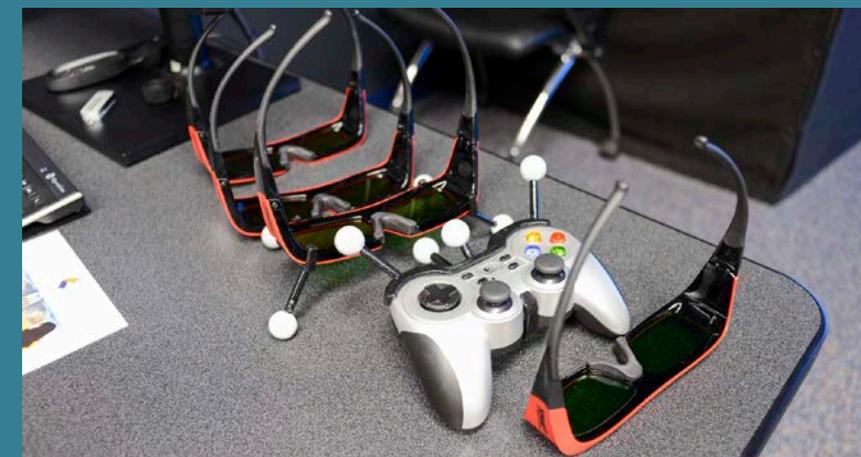
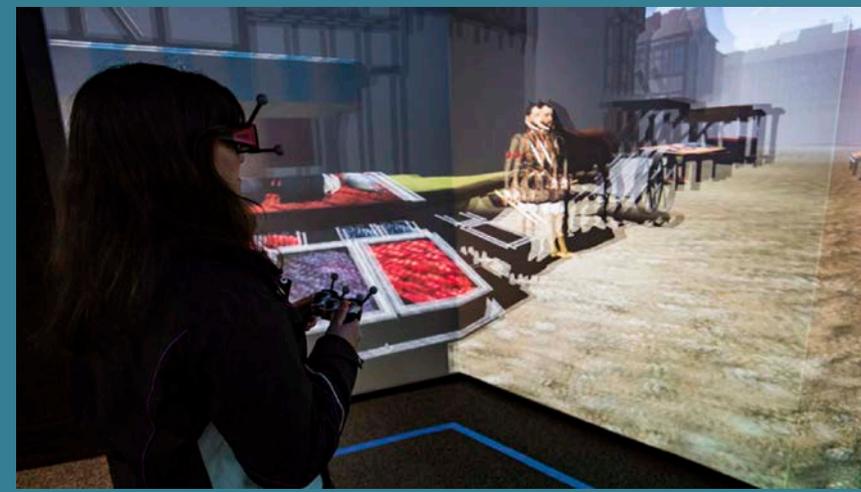


## **Visualization of the Florida Everglades**

This project aims to help scientists, policymakers and the general public to better understand the sea level rise effects on the Everglades through visualization. The project will translate numerical data of the growth and breakdown of algae mat (periphyton) due to the effect of pollutants, into an interactive and visually immersive environment.

## Integrated Computer Assisted Virtual Environment (I-CAVE) Spring 2016

The I-CAVE is a visualization facility composed of five large high-resolution screens arranged in a hexagonal pattern and a surround sound system that create an immersive virtual reality experience. Hardware and software tracking capabilities are built into the systems to track movement in the space and coordinate with displayed images for immersion of the users in the simulated environment. This facility provides new opportunities for research, teaching, and data visualization.



## Robotics and Digital Fabrication Laboratory (RDF) Fall 2017

This lab is a state of the art facility with Robotics arms, 3D scanners, laser cutters, programmable objects and 3D printers. It offers unique technology solutions for testing, prototyping, manufacturing, and fabrication.

This facility expands the I-CAVE to its full potential as it will enable easy transition between digital and analog information. It will support innovative ways of using high end visualization equipment for digital fabrication as well as advancing fabrication technologies for creation of new tools through visualization.

