Case Study: Texas A&M University

Samsung Displays Help to Construct State-of-the-Science Learning Environment

Customer Need
Texas A&M University’s College of Architecture needed to redesign a 98-year-old campus building to serve as a dedicated facility for the study of construction science. High-quality displays were needed for a state-of-the-art BIM CAVE (Computer Aided Virtual Environment for Building Information Modeling) to create a 4D simulation of building designs. The facility also needed displays for classrooms, conference rooms, and hallways.

Samsung Solution
School officials selected Samsung and its partner, Avinext, to install more than 56 commercial displays. The new BIM CAVE includes 36 Samsung ultra-narrow bezel displays arranged in an immersive videowall for modeling construction projects. Samsung displays are also used throughout the building for remote-learning classrooms, student collaboration areas, and information boards.

Results
The new Samsung displays helped the Department of Construction Science create a BIM CAVE that is unmatched by any other U.S. university. Students are able to use the state-of-the-science BIM CAVE to simulate complex construction projects. The department has seen a marked uptick in student interest in its construction engineering program.
Texas A&M in College Station is one of the nation's premier universities. More than 50,000 students attend Texas A&M, making it the sixth-largest university in the country, with more than 370,000 alumni around the world.

The Wall Street Journal named Texas A&M second among all universities in the nation in a survey of top U.S. corporations, non-profits and government agencies for their preferences in hiring new graduates.

Texas A&M’s Civil Engineering program is the largest in the country, with 440 graduate students and 60 professors. The program is ranked in the top 10 nationally.

Texas A&M’s Department of Construction Science needed to renovate the 98-year-old Francis Hall to serve as the department’s new building. The department’s leadership wanted the building to incorporate the latest in construction science technology and stand as the only university facility in Texas dedicated to construction education.

“The A&M School of Construction Science program strives to integrate technology into students’ learning because the construction industry is moving heavily into technology,” says Department Head Dr. Joe Horlen. “We teach our students to read plans over tablets instead of paper. And we train all our students to use digital BIM plans instead of just paper and AutoCad designs.”

The renovation of the 35,000 square-foot building included an auditorium, safety laboratory, classrooms, student lounges and conference rooms. School officials needed reliable, high-definition displays from a single vendor throughout the building.

Francis Hall’s main attraction would be a giant BIM CAVE (Computer Aided Virtual Environment for Building Information Modeling), funded by A&M and outside construction companies. The BIM CAVE would incorporate a 180-degree curved wall of 36 displays – nine columns of four displays stacked together. This would create a 4D virtual world where students can walk through their building designs. The BIM CAVE would also serve as the central technology showpiece for prospective students.

“We wanted to build a BIM CAVE where students are immersed by the projects they create,” says Texas A&M Associate Professor Dr. Julian Kang. “Students in the CAVE system are surrounded by nine walls of screens to make them feel as if they are actually in the 4D computer model. It’s an experience that very few other universities can offer.”

Because of the number of displays stacked together in the small room, building designers required displays with ultra-narrow bezels for a seamless image that could be easily stacked and run quietly. The university also wanted crisp and stunning displays throughout the rest of the building for a video wall, conference rooms and workspaces that would meet requirements of the Americans with Disability Act.
The Samsung Solution: Commercial Grade Displays For a Complete Building Makeover

While planning and renovations for the new Francis Hall extended over three years, the decision on new displays was made much earlier.

“We began planning our display strategy at the very beginning of what I would call the ‘dream stage,’ before we ever really started planning the specifics of the renovations,” Dr. Horlen says. “We envisioned the BIM CAVE as the center piece long before the design started.”

Dr. Horlen and Dr. Kang had used Samsung displays for an older and much smaller BIM CAVE for many years, and were impressed with their quality and performance. The department decided to work with Samsung partner Avinext to deploy displays throughout the newly designed Francis Hall, including:

- The large BIM CAVE with 36 Samsung UD Series video wall displays in a 9x4 configuration
- Another video wall of ten 46-inch Samsung Smart Signage displays for campus news and information
- Conference and classrooms with a 75-inch Samsung commercial display connected with live-feed video conference camera and video conferencing for distance learning
- Student workspaces with 55- and 75-inch commercial displays for students to work on projects and assignments
- A 40-inch display with a touch overlay that serves as a way-finding directory for students to find information about classes and programs.

Avinext Technology Consultant Lance Richards says A&M selected Samsung for all of these settings based on their reliability, quality and ability to meet ADA requirements.

“The Department of Construction Science is on the cutting edge of technology so they really wanted something that students could sit in front of and be immersed in the design work,” says Richards. “But aesthetics had a lot to do with it too. They look and perform great right out of the box and have the thinnest profiles, which match the design and style of the new Francis Hall.”

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The Results:
A Virtual Walk Through of the Construction Site

With the addition of the new BIM CAVE featuring Samsung commercial displays, Texas A&M construction students can virtually tour a building during its design. The half-moon positioning of the displays provides a peripheral view as students move through the design. When students hover a cursor over a support beam or similar structure, the CAVE displays technical information such as how much weight the beam can support.

Using the Building Information Modeling software with applications such as Autodesk NavisWorks, students can move up and down floors and through hallways with a peripheral view of the design all around them. Dr. Kang says the A&M BIM CAVE offers far more than what other universities can do with traditional CAVEs.

“The A&M BIM CAVE enables our students to get into the integral pieces of a building before anyone puts a bolt into the ground,” he says. “It brings them inside the building and immerses them into the design, instead of just looking at it on a screen. By the time our students are juniors and seniors, they’re getting real experience in creating Building Information Models.”

Since the BIM CAVE installation and building renovation, Dr. Horlen says the A&M Department of Construction Science has seen an increase in student enrollment from 60- to 86-percent. And students who graduate from the program will be able to run major construction modeling jobs within a couple of years of entering the job market.

“The BIM CAVE and Samsung displays make a significant impression on prospective students during campus visits,” he says. “When they walk into the building and see the BIM CAVE and all other aspects of the technology, they understand the commitment of the construction companies who helped fund it all. And many of these companies are looking for our students to make an immediate and practical contribution when they graduate.”

The digital signage and displays throughout the rest of the building also demonstrate A&M’s commitment to integrating technology with construction science. From the giant video wall, large screens for remote learning classes or simple workspaces, the technology has enabled greater communication and collaboration and makes it easier for students to excel in their studies and careers.

“Our architects, Avinext and Samsung put together something that serves as a great educational feature that opens the eyes of students to what’s going on in the construction industry,” says Dr. Horlen. “It creates excitement and enthusiasm for students and faculty.”

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