PROFILE

Name: Pensacola Christian College

Location: Pensacola, Florida

Students: 4,000

http://www.pcci.edu/

CHALLENGE

How to create a pregame show that rivals that seen at a professional sporting event.

SOLUTION

Leverage the staff's production know how, an existing lineup of Epson Pro Series projectors, and a minimal investment in supporting video cards.

Unexpected Excitement

Christian College uses Epson Pro G Series Projectors to Create an Amazing Electronic Floor Show for Its Athletic Programs

Have you ever wondered what it would take to put together the kind of light and video pregame show you see at professional basketball games?

Caleb Keener has. One of his responsibilities as electronics supervisor at Pensacola Christian College (PCC) in Florida is to help plan PCC's annual Eagle Mania pep rally, one of its biggest student events during the fall term.

"I called the company who produced the Cleveland Cavaliers' pregame show and asked if they could do one for us. I mean, how much could it cost for just a few minutes at just one event?"

"They said $100,000. That would cover the production, rental and setup of equipment to project video on our basketball floor. If we wanted to own the gear, that would run about $650,000."

"I choked a bit, but then I thought, 1) We have a very good production team here on campus, 2) Epson has Pro Series projectors where you can precisely align multiple images, and 3) There are video cards available that allow you to create very high-resolution, multi-screen effects on a reasonably-priced computer. We could do this ourselves."

Working with the college's video production and maintenance staffs, Keener created an amazing video system rivaling any belonging to a pro basketball team. Its cost? Roughly 1/13th of what the staging company had quoted.
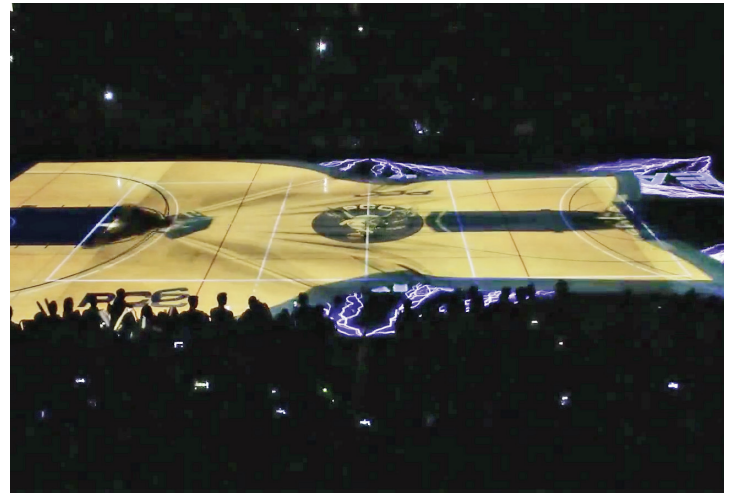
Crucial to the system was the use of 12 Epson Pro G Series Projectors, their images combining to create a super-sized full-court video with the PCC Sports Center floor as the projection screen.

Bringing the Fans to Their Feet

Eagle Mania is not just another pep rally. "The idea has always been to get the students excited about the sports teams, about the college and the opportunities that are available here," Keener explains. PCC holds Eagle Mania on a Friday night during midterms week each October, which runs from a Wednesday through the following Tuesday. "We try to change the pace a bit, get our students' minds off the pressure of

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exams." The event always draws a crowd: this year about 3,000 students, or roughly 2/3 of the student body attended.

The video itself was a collaborative effort by Nick Ryan, PCC video producer, and his staff.

Once the lights dimmed at the start of Eagle Mania, bright white and blue sparks and thunderbolts began rolling around the basketball floor. Next the court's lines and other markings began to glow and pulse in that same electric white and blue. The floor lit up, then broke apart into 50 wooden squares which spun off around the court. Next a spotlight appeared and searched the floor accompanied by the screech of an eagle. The eagle appeared...the floor lit up, he dove down to center court and snatched the PCC logo in his talons. Wait...the floor was made of fabric! He pulled it off the darkened court as if it was the cloth covering a magician's table!

It was an amazing effect and it brought the fans to their feet, cheering loudly. But how did they do it?

Designing the System

Ryan explains that his team created the video in Adobe Creative Suite, relying most heavily on Adobe After Effects and the After Effects plugin, Elements 3D. The first step was to create a precise scale map of the Sports Center floor, carefully measuring its lines and markings by hand with a tape measure. Then they began adding sparks, flashes and other effects to additional layers in the software, climaxing with the eagle animation and then ending with two full-court EagleMania logos, facing fans on either side of the stadium. "We had great sound design created by one of my editors to support the effects," Ryan adds. "That was cranked, so everyone could feel it thundering in their chests."

There were some challenges. "We had a little learning curve thinking about the surface we were projecting on," Ryan

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explains. "We had to pick textures that would obscure what was actually there." For example, when all the court lines light up, the design team projected a concrete texture on the floor boards to make them less noticeable. For the eagle effect, the team bought a stock image, composited it in After Effects, and animated the fabric floor using Blender.

Following the main floor show, the men's and women's basketball teams and the volleyball team were introduced via video, which the production staff recorded and edited on the computer. There was also a lighted run-on path projected onto the floor. An announcer called out each name, the player ran out into a pool of lights while, at the same time, his or her face was projected onto the rest of the floor.

Between the videos, the lights came up and there were live scrimmages and contests featuring the players, plus a three-point shooting contest for non-athletes with two $500 scholarships as the prizes.

To create and play back the show, Ryan used a Windows-based workstation equipped with three NVIDIA Quadro K5000 graphics cards, each of which has four outputs. "To give us enough horsepower," Keener says, "we needed a computer with dual quad-core processors and 16GB of RAM, as well as enough expansion slots to hold the video cards." Ryan says they were able to play back the show as a 4K video using the open source Media Player Classic, coupled with nVidia's Mosiac utility to spread it out over the 12 projectors.

Meanwhile, with the advice and help of Epson's Barry Sugarman, Keener had purchased 12 Epson Pro G Series Projectors from AVI-SPL in Tampa. "The hardest part was knowing precisely where the center of each projection lens had to be and positioning them there," Keener says. But the PCC maintenance staff measured the basketball court's floor carefully and marked

where the corner of each image should fall. They also marked each image's center point, and used a laser level, shining straight up, to determine where to mount the projectors.

"We had to build our own projection mounts because we wanted something heavy enough not to vibrate with the noise of the crowd or people jumping up and down," Keener explains. The maintenance staff used 3/16" thick steel plate for the mounts and welded on Unistrut rods, which they clamped to the I-beams holding up the Sports Center roof.

In addition to the projectors, mounts and video cards, Keener purchased 12 sets of KanexPro HDMI to Ethernet transmitters and receivers, so the installation team could run high-definition signals from the computer to each projector using low-cost Cat5e cable.

In choosing the projectors, Keener knew he needed very high brightness, high contrast and also vertical and horizontal lens shift, because despite the careful measurements, each was certain to be off from its ideal position by at least a few inches.

The maintenance staff mounted the projectors one by one using a scissors lift, then focused and aligned each with the marks on the floor. "We were surprised to find that Epson's 'Quick Corner' feature was even more useful than lens shift," Keener recalls. "We would use the zoom lens to overshoot a little, so that the image overlapped our marks by two or three inches, then used Quick Corner to square it up and fit it precisely onto our marks."

Once their plans were complete, Keener had to bring the details—and a $50,000 budget—to the president of the college for approval. "One of the greatest selling points was that the projectors could be taken down after Eagle Mania and be used in lecture halls and auditoriums across our campus," Keener says. The only components that have not been reused are two of the three video cards and the mounts and cabling (which were left in place in the Sports Center). Keener says the college's true cost for the event's equipment was about $5,000, or 1/130 of the quote from the staging company, "plus

a lot of elbow grease." He says that next year it will take two people about eight hours to remove the projectors from their classroom ceiling mounts, mount them again in the Sports Center, then focus and align them.

The choice of the Epson projectors was a no-brainer, Keener adds, since PCC uses Epson almost exclusively on campus. "We've tried just about every projector brand over the years, but Epson is the the most impressive. We like the color and the brightness, but mainly the fact that, at any given price point, Epson projectors deliver the greatest visual impact."

Ryan says "there was a moment or two when I wondered if we had bitten off more than we could chew. But it all came together and the students loved it."

"It really got the school excited," Keener adds. "Everyone was pumped up about the teams and the college in general—and I think the pregame show was encouraging for the students and staff during a point when everyone had been feeling a little burned out.

"I heard more than one student say, 'I've seen this in the NBA, but I didn't expect it at PCC.' Nobody would expect anything like this from a small Christian college."

You can view the Pensacola floor show on YouTube. Visit https://www.youtube.com/watch?v=cyA5pWtLLlI or search for "Eagle Mania Floor Show 2014—Pensacola Christian College."

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