

EDUCATION INSTALL

MEDICAL SCHOOL GOES THE DISTANCE

The University of Arizona College of Medicine's new Phoenix campus uses advanced AV technology for distance education and telemedicine.



INNOVATIVE IS A WORD often used in the AV industry to describe everything from products to technology to installs. But one type of true innovation occurs when established technologies combine to change the way an entire industry is taught and practiced, as in the case of telemedicine.

While the technologies that make up telemedicine — cameras, video displays and high-speed Internet lines — have existed for years, the application of telemedicine is maturing enough that the modern medical community is adopting it very quickly.

"Telemedicine is becoming more part of real-life practice," says Keven Siegert, associate director of Biomedical Communications for the University of Arizona College of Medicine's Phoenix campus. His department is responsible for any media produced for the school, including videoconferencing, posters, brochures, Web sites, videos, and still photography. The school recently renovated three former high school buildings in downtown Phoenix. Part of the renovation includes an AV installation with distance learning and telemedicine technology applications for its students.

Opened in 1996, the Phoenix campus is an extension of the only medical-degree granting college in Arizona. The University of Arizona College of Medicine began in 1967 in nearby Tucson, and has grown into a full, four-year medical education program. The Tucson

program graduates 110 new physicians per year. In August, the Phoenix program will enroll its first class of 24 students and is anticipated to grow to 150 graduates/students per year within the next five years.

The university worked with Smith Group architects of Phoenix and the Baltimore office of AV design firm Convergent Technologies Design Group, whose major focus is in higher education. "The University of Arizona is a progressive teaching and learning organization. It is more of a leader than a follower in terms of technology adoption and usage," says Paul Corraire, principal at Convergent Technologies.

T-Health

The Phoenix campus features a telehealth suite known as T-Health. Students and faculty use its AV technology to interact with other colleges around the world. According to Bill Holaday, project manager and lead designer at Convergent Technologies, the T-Health suite is in the second building on the third floor, which also houses the auditorium, mediated classrooms, and both the master and auditorium control rooms.

"It's the building with the most media, since it is centrally located and accessible to all students," says Holaday. "Distance-learning technology touches almost every room there."

Dr. Ronald Weinstein, founder of the Arizona Telemedicine Program at the University of

Arizona Health Sciences Center, had the vision to create T-Health at the Phoenix campus. The room features 17 tiered seats that are grouped for team exercises. The tiered room was designed to provide the best sight lines and camera shots for distance education and collaboration.

Each seat in T-Health features an AKG GN15E gooseneck microphone, a Panasonic GP-KS822H desktop camera, a Crestron TPS-2000 5" color touchpanel capable of video preview, an Extron MDA 3V audio amplifier, a custom Panelcrafters audio I/O plate, and pair of Sony MDR V600 headphones.

Each student can control the volume and listen to his or her own audio feed via the Crestron touchpanel's built-in speakers, and also can store a laptop in the recessed "laptop garage," a custom creation by furniture manufacturer KI.

The focal point for the room is an immersive, 12-cube video wall consisting of 50-inch Mitsubishi display cubes. Holaday says the number of displays was sized to the needs of the program, the size of the room, and based on required image quality. Two cameras in the room — a Grass Valley Cameraman 3e CPC and a Sony EVI-D100 — capture full room shots from the front and back walls. "The video wall measures 18 feet wide by five feet tall. You can fit the feeds from all 17 cameras on the video wall plus all remote sites," he says.

A Jupiter 980 processor works the video. It was chosen for its performance with real-time video as well as the quantity of inputs and outputs available. T-Health uses three Tandberg 6000 MXP codecs with multiple-site capabilities for videoconferencing.

In addition to the collaborative technologies in T-Health, the room also can run in "lecture mode," with a presenter addressing the room and controlling the AV via a Crestron TPS-12 12" color remote control panel. Two Tannoy iw62 TDC in-wall loudspeakers provide sound reinforcement for presentations.

Other room inputs include a Wolfvision Visualizer VZ-C32 ceiling-mounted document camera, a Tascam CDRW750 CD-R burner, a Philips HDRW 720/17 DVD player/recorder, a JVC SR-S365U VHS deck, and a Sharp XG-PH50X 4000 lumen LCD projector.

For those wishing to observe the activity in T-Health, a glass-paneled section at the rear of the room offers visitors a walk-up location with AV



Some of the AV technology at the University of Arizona's College of Medicine include, top, features on the rear wall of a mediated classroom; below left, a telemedicine portable videoconferencing cart; below right, a classroom control console.



interfaces. In the hallway, the university plans to install five video displays with overhead parabolic speakers and 4" Crestron touchpanels to serve as interactive kiosks to offer visitors more information about the school.

"The Tucson campus is 100 miles away. As a satellite campus, it is important that the interaction between professors in Tucson and students in Phoenix remain strong," says Siegert. "AV technology plays a large role in that interaction. Before the creation of this campus, the students had to drive to Tucson to take classes, and then drive back to do their rotations in Phoenix-area hospitals."

Flexible Auditorium

While a room such as T-Health is made for distance education and collaboration, the university's auditorium must fill that role and more. The system design for the auditorium had to accommodate many diverse uses, such as

distance education, lectures, conferences, musicals, banquets, and movies. The three renovated buildings come under historic preservation laws, so the AV team had limited options for acoustical treatments for the auditorium.

"The auditorium is a shared space for the university, as well as other groups in the Phoenix area," says Corraine. "It is a very reverberant space, but we were limited in what we could do."

Says Siegert, "The auditorium is used frequently, and all is working well. Since it was a historic preservation, we were only allowed to touch one of the six surfaces in the auditorium by covering a back wall with acoustical paneling. The room is cavernous, so speech intelligibility continues to be a challenge."

The auditorium is two and half stories tall, with a seating area measuring 94 feet wide by 50 feet deep plus the stage. To help control reverberation, Corraine used an acoustical

ceiling treatment called BASWaphon, which resembles drywall. The future addition of heavy fabric curtains is expected to help with the acoustics.

In a reverberant space, sound system components can make all the difference. The university chose two Tannoy V15 loudspeakers mounted to the left and right of the stage. Two additional Tannoy iQ10 ceiling speakers provide speech reinforcement at the rear of the seating area, and four Tannoy 110TB offer low-frequency coverage.

For movie nights or other applications that call for surround sound, a Tannoy V10 loudspeaker serves as the center channel with four Tannoy V6 loudspeakers used for surround. For distance education, students and faculty can use one of the 84 distributed floor boxes for power, data and microphones.

"Since people outside the university also use the AV systems, we took great care in the Crestron touchpanel layout and design," says Holaday. "We tried to automate and use presets as much as possible, so that the system is accessible and easy to use for virtually anyone."

The custom-built 12' tall by 32' wide rear projection screen is nonretractable and was designed for three projectors. Users have a choice of either two 4 x 3 images via two Sharp XG-PH50X 4000 lumen DLP projectors, or a single 16 x 9 image via the Sanyo PLV-WF10 wide screen projector.

Siegert says that by using AV technology to communicate, he has seen social barriers fall away. "One example is using telemedicine with Native American tribes. There are some tribal leaders who won't sit down next to each other. With telemedicine, they will interact and ask questions in the same forum," he said. "The other example is connecting communities from Northern Arizona and towns on the Mexican border. You can see the kids asking each other questions and interacting in a way they normally would not."

In the medical community, telemedicine and AV technology has broken down communication barriers among doctors, nurses and pharmacists. The university is working on a project to combine those parties into rapid-response telemedicine teams.

"Telemedicine also has made a difference in providing medical care in correctional facilities," says Siegert. "By eliminating the need to transport patients, telemedicine has made the process easier, faster and safer."