Health Center’s Distance Learning Program

By Jim Stokes

University of Texas Health uses its AV Interactive Science Center at San Antonio to cover about 50,000 square miles.

AV interactive distance learning and multimedia telemedicine has expanded the integrated communications capabilities of the University of Texas Health Science Center at San Antonio (UTHSCSA) into the Texas Rio Grande Valley, along the US/Mexican border. The mission of the Health Science Center has expanded to embrace some 50,000 square miles of south Texas.

UT’s most recent Regional Academic Health Center (RAHC) is located in Harlingen TX, some 200 miles south of San Antonio and about 20 miles from Mexico. We’ll explore the use of AV interactive distance learning at Harlingen here. A similar facility has been built at Loredo, about 150 miles southwest of San Antonio, where AV equipment was being installed at press time. In addition, Edinburg, near Harlingen, will be a regional research facility in another year.

Overview

The Harlingen RAHC is housed in a 10,000-square-foot, three-story building. The facility has integrated multimedia distance-learning classrooms, conference rooms, an auditorium that divides into three multimedia classrooms and a clinical observation center. University medical students and residents will be able to continue their education with the University Health Science Center in San Antonio while at the same time providing healthcare services to residents of the border region. The emphasis is on education at the Harlingen RAHC, and the facility is next door to Valley Baptist Hospital,
which is a large municipal hospital where UT medical students are trained in medical treatment procedures. In addition, RAHC is tied via fiber to Valley Baptist and to some of the other clinics in the neighborhood.

We’ll cover the head end “nerve center” and two representative rooms: the Large Distance Learning Classroom and the Multipurpose Auditorium.

**From Traditional to Managed Classroom**

The RAHCs are an example of the transition from a traditional to a managed classroom environment, according to project manager Tom Baggs, who works for the educational research and development department at UTHSCSA and who is involved in coordinating, supervising and designing instructional facilities. “The traditional audiovisual setup requires an on-site crew with a certain amount of time,” he explained. “We’ve moved away from traditional AV elements like TV sets into the era of the computer. With that comes the philosophical concept of the classroom as a network appliance. Then management of some type becomes possible.”

Baggs noted that it takes support from upper management to implement a design change in how AV and distance-learning systems are handled. “It’s not an inexpensive discussion,” he said. “We had the support of Jerry Iork, vice president of IMS (Information Management Systems). His belief made possible the transition from traditional AV to distance learning.” (Iork’s UT office includes telephone, network, educational support services of all types and distance-learning systems.)

**Remote Control**

There’s remote support for videoconferencing at Harlingen via an on-site control room/ head end with multiple codecs as well as a head end with multiple codecs at the main facility in San Antonio. “No matter how simplified we’ve made the system, assistance is required because presenters may not be familiar with the equipment.” An on-site technician is available to assist the instructor/presenter as needed. “We’ve had Crestron control systems successfully operational in the University for 10 years,” said Baggs. With such a track record, he pointed out, “we’re not interested in having four or five different control systems managing all these different facilities and not have a way to integrate management function into a central data base that would tie into higher order functions that we have yet to roll out.”

Furthermore, he explained that “the next Crestron generation processors are currently in use. And we kept the same room code for the new e-Control. It’s amazing because we could almost singlehandedly test and sign off on nine installations that were a few hundred miles away, using e-Control.”

**Design and Integration**

According to ASC regional vice president Doug Winnek, Dallas TX-based ASC Companies and its newly acquired Sound Visions Corp. designed and integrated these facilities around Crestron’s e-Control. “Crestron interactive e-Control and its remote monitoring and control capabilities allow UTHSCSA’s network management staff to connect and control all the classroom and communication technologies from their central control room in San Antonio,” he stated.

“ASC has designed, engineered and installed more than 30 multimedia classrooms, lecture halls and conference centers for the UT Health Science Center at San Antonio. Each facility is state of the art, with interactive distance learning and telemedicine communications capability.”

The Harlingen RAHC has the capability
ASC Companies

ASC Companies (formerly Altec Service Corp.), with corporate headquarters in Dallas TX, is a multifaceted company comprised of three groups. The original company was founded in 1937 to provide installation and maintenance support for the sound and projection systems of the growing motion-picture industry. ASC Cinema Systems Group still stands as one of that industry’s major players.

ASC expanded its ability to provide, install and support audio and visual equipment to additional venues such as auditoriums, stadiums, arenas, convention centers and houses of worship. To maintain the needs of the growing corporate and educational markets, the ASC Contracting Group now integrates control systems, network communications, audio and video conferencing, presentation display devices, media retrieval and distance learning throughout boardrooms, training facilities and schools.

In 1997, ASC moved to Dallas, building their corporate complex around an historical recording studio and production facility. The studios serve as the core component for the ASC Entertainment Group as it expands into sound on film, score development and post production.

ASC recently acquired Sound Visions Corp., based in Arlington TX, with a satellite office in San Antonio. Sound Visions is a recognized innovator in high-end AV design/build projects in the corporate, retail and higher education markets. This acquisition brings additional disciplines and design/build expertise to ASC’s engineering and sales departments.

of operating the facility from the on-site Distance Learning Network Control Room/Head End via a technician. The other option is to have the facility operated from the much larger head end in San Antonio. All functions at the Harlingen Head End are controlled by a Crestron CNMSX Pro 2 integrated control processor. Ethernet connectivity between Harlingen and San Antonio is on a dedicated T1 line. There’s also the H.323 connectivity capability that allows internet control anywhere in the world.

Four Polycom VS4000 codecs can be assigned to different rooms. The Medical Library Conference Center and the Dean’s Conference Room each have a built-in Polycom VSFX H.323 connectivity codec, which allows the presenter to call directly out of each room and not have to go through the control room.

Three Ocean Matrix PIP (picture in picture) generators allow the presenter’s image and an Elmo document camera image or another input image to appear at the same time on a room monitor. Hotmatic TBC/synchronization can be assigned as well.

More Control

Any video camera in the building can be selected and controlled by a Crestron LCD panel with dual joy-sticks. For instance, if someone in the auditorium or a classroom has to change the pan/tilt/zoom functions on
one or two cameras, it can be accessed by a technician/operator at the Head End. Six JVC S-VHS VCRs provide record and playback for the rooms as well.

For AV signal routing, ASC installed a large Sierra Video Systems router equipped with a 32-channel audio input buffer and a 32x32 video crosspoint module, which can be expanded to a 64x64 video router. Each room in the building can be viewed on Sony color monitors. There are Videotek audio monitors and a Videotek waveform/vectorscope for video-signal monitoring. Equipment is mounted in six, seven-foot Middle Atlantic racks.

**Distance-Learning Classroom**

There are two large, 30-seat distance-learning classrooms. One, in the medical library, has University-provided Dell laptop integrated PCs in all the student tables for teaching different types of PC-oriented training.

We'll detail the functions and technology in the large general-purpose classroom, which is representative of a fully integrated classroom. The room is equipped with an integrated, ASC-designed, presenter’s/teacher’s console table, which is self-contained with all the hardware necessary for
instruction. In addition, the customized table has an I/O panel (in/out connections), which accommodates auxiliary AV components. Middle Atlantic rails, shelving and racks are built into the console cabinetry for aesthetic appearance and easy access to the presenter’s equipment.

**Teaching Tools**

Common to all the Harlingen rooms is the Crestron Pro 2 integrated control processor. One 12-inch TPS-4500LB (lectern black) touchpanel is dedicated to the presenter’s console. “The Crestron e-Control is the real crux of the system because it can be managed from the head end at Harlingen or from the central control room in San Antonio,” explained Winnek.

There is a lot of AV equipment at the presenter’s fingertips. All video sources run through a Sanyo XGA portable LCD projector, which projects onto a contractor-furnished Draper screen. Extron components augmenting the video signal path include a video matrix switcher, VGA-to-NTSC scan converter, and video and audio DAs. AV sources include an Elmo document camera, Sony DVD player and JVC S-VHS VCR. There’s a University-supplied Dell computer with a 17-inch screen as well.

During a presentation, the presenter’s movements are tracked on a dedicated ParkerVision camera. Another ParkerVision camera tracks the student who pushes the push-to-talk switch on the Crown microphone nearest him. There are 15 such Crown student pickup mics in the classroom. The instructor has a Sennheiser wireless lavalier mic for roving around the room, as well as a Crown low-profile podium mic.

The sound system provides program audio as well as speech reinforcement and distance audioconferencing functions. A Lectrosonics automatic mic mixer handles classroom sound reinforcement and distance learning sound. The mixer feeds a Crown power amplifier, which drives nine JBL ceiling speakers. Sony 32-inch monitor/receivers allow the presenter and students to view local classroom video sources and any incoming distance-learning video.

There may be a time when a presenter would require a technician in the room, when available. Of course, there’s also room management via the local head end or the main control room in San Antonio.

Disabilities are also accommodated in this classroom and other rooms, with a portable Williams hearing-assistance system. And there’s a provision for ADA (American with Disabilities Act) access at the presenter’s table.

**Multipurpose Auditorium**

The Multipurpose Auditorium offers a versatile use of space. When entirely open, it can seat 200 people at tables and chairs. The space can be sub-divided into three acoustically separated space configurations via Crestron presets. They include the entire main room space, two spaces by dividing the front and back of the room, and three spaces comprised of the front of room and two split back rooms. “You could have three presentations going on simultaneously,” said Winnek, “all using full multimedia capability and distance learning. And there would be no interference among the rooms.

“Our challenge in designing the room was to make it fully functional as a large room and then make it fully functional as three individual rooms, sharing all the same hardware. So the Multipurpose Auditorium is completely controlled by Crestron within the room and also through e-Control from the distant site or from upstairs at the Harlingen Head End, depending on where there would be a technician.”

The Multipurpose Auditorium has some major features that are different from other rooms. When the entire auditorium is used, a Sanyo 5200 lumens LCD projector is used for projection. For the two smaller spaces, there are two Sanyo 3500 lumens projectors. Accordingly, there’s an ASC custom presenter’s console with a Crestron TPS-4500LB, 12-inch touchscreen and two mobile multimedia consoles with Crestron CT-1600L, six-inch touchscreens to serve various room combinations.

In addition, there’s a side table next to the main presenter’s console that’s of ADA height to accommodate someone making a presentation while in a
wheelchair. And there’s a secondary Crestron input, so the presenter can control everything from that touchpanel. In another scenario, the same additional TPS-4500 touchpanel can be used by a technician sitting behind the console, out of the way of the presenter. For example, a physician not familiar with the room or equipment can come in to make a presentation with the assistance of a technician in the room.

To accommodate the multipurpose use of the auditorium, five Sony EVI-D100 audience cameras are set to presets, which are used for tracking audience members as they open Shure mics to ask questions of the presenter, or for panel discussions. There are 16 floor microphone jacks in floor pockets located conveniently throughout the room.

The Multipurpose Auditorium also incorporates a combination of Lectrosonics mic mixers and a Lectrosonics matrix mixer for classroom sound reinforce-

ment and incoming distant-site audio. The separate sound-reinforcement system for the room is comprised of the Lectrosonics mixers, a QSC four-channel, 70-volt line power amplifier and 40 JBL ceiling speakers.

On the program audio side, program-quality audio from such devices as a DVD or S-VHS videotape is fed into a Rane digital signal processor. Then, Crown power amplifiers drive a left/right pair of Renkus-Heinz speakers and a separate Renkus-Heinz subwoofer.

Summary
The Harlingen RAHC is an example of the growing managed-classroom environment. The rooms, with their dedicated AV equipment, save on staff people bringing equipment to and from a centralized storage room. Augmenting the integrated distance-learning rooms, fully equipped head ends in both Harlingen and San Antonio make remote managed classrooms a reality.

‘You could have three presentations going on simultaneously,’ said Winnek, ‘all using full multimedia capability and distance learning. And there would be no interference among the rooms.’