T-Health Institute
University of Arizona College of Medicine

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Crestron Helps T-Health Spread the Wealth of Knowledge

The Institute for Advanced Telemedicine and Telehealth (T-Health) was created to address the shortage of health care professionals, and to develop facilities for next generation health care education. As part of the Arizona Telemedicine Program (ATP), which is operated by the University of Arizona College Of Medicine in Phoenix, T-Health is a state-of-the-art telehealth education center with a mission to create new innovations in health care delivery and education.

"This is a big first step toward a health care system that truly teaches its practitioners to work together across professional disciplines"

Crestron advanced control systems and touchpanels were implemented to integrate and control the distribution of complex audio, video and videoconferencing systems.

"It's literally a new method for teaching medical students. It's a novel approach," says Jim Mauger, Director of Engineering at Phoenix-based systems integrator, Audio Video Resources.

Doctors, Patients, Students…Virtually Linked with a Button Press

The main hall is an amphitheater with 17 student desks, each equipped with microphone and headset. Using Tandberg video-conferencing systems, and a massive curved video wall consisting

of 12 50-inch Toshiba DLP Video Wall displays, the virtual teleconferencing hub enables instructors, working professionals and students to participate in real-time interactive seminars, lectures and meetings.

The theater functions through very specific application modes developed to simulate medical procedures such as "Grand Rounds", a common process of medical education consisting of presenting the medical problems and treatment of a particular patient to an audience of doctors, residents, and medical students. The Crestron control system is designed to emulate this method with students, peers, and medical professionals from multiple disciplines, dramatizing real world scenarios and linking the medical community together through virtual on-screen conferences.

Attendees can participate in single meetings, be divided into small groups and be switched from group to group to enable any combination of interaction among the parties. With a few button presses, a lectern-mounted Crestron TPS-12G-QM-L touchscreen display enables facilitators to control how participants are grouped on the video wall instantaneously.

Instead of a standard video conference bridge, which is too slow for interactive addition/deletion of participants through dialing, call setup, etc., the system aggregates callers from individual codecs, who are then assembled into conferences. "Participants located anywhere in the world can be brought together on this huge video wall in the theater," AVR's Mauger says.

Phoenix-based Kore Logix worked closely with the lead team at AVR, consulting on system design and integration challenges, and provided custom programming of the control system and touchpanels. "There were no benchmarks for success on a project this unique and complex, so we had to create everything from scratch. Working with AVR, we developed highly detailed and customizable applications that can be easily modified on the fly, while maintaining a simplified GUI that anyone can navigate with little or no training," explains Kore Logix CEO, Tom Fischer.

Multiple Discussions with Multiple People from Multiple Locations, All in One Room

The room facilitates two discussion panels, each on separate 4-screen clusters. Two screens act as "hot seats", typically reserved for students, with the remaining screens used for attendees connected from remote sites. Remote participants can connect either from sites within the ATP network, or be invited guests from outside the network.

Reliable, instantaneous video switching and audio isolation between participants were key challenges solved using Crestron control technology. Now, facilitators can move participants into separate virtual groups or meetings, and switch them around as desired, with just a few presses on the touchscreen. A TPS-12 touchpanel at the headend provides streamlined control of the audio/video switching processes, and the Tandberg VC codecs allow the amphitheater to link with other remote telemedicine locations. A Crestron PRO2 Dual Bus Control System integrates and automates all related technology, providing fast, transparent control of this complex communication matrix.

Adding to this ground-breaking virtual teaching experience, an automated speaking queue allows students - 17 total, each equipped with a TPS-4L touchpanel - to request participation in a class exercise, right from the touchpanel. Student names and seat locations display on a large eControl window on the video

wall, allowing participants and observers to view the queue. A critical T-Health requirement for this application was the ability to periodically suspend several teaching modes, instantly switch to a "Q & A" session, and revert back immediately, when desired. Plus, the queue had to enable two-way interaction between the facilitator and participant through a series of intuitive touchpanel interfaces, and have "pausing" capabilities, while not adversely affecting either party's operation. Since every aspect of the implementation was meticulously mapped out in advance, the custom application performs seamlessly, exceeding T-Heath's expectations.

"The agony and ecstasy of innovation is a cycle with which I'm very well acquainted. Personally, I like the frenzy of it all," says Dr. Ronald Weinstein, Director and co-founder of ATP and an international authority on telemedicine. "The world is taking notice of T-Health, thanks to the continued partnership of UA and AVR in this collaboration."

Crestron CNX-B4 Keypads in the gallery area enable observers to select, view and listen in on one of two conferences using headphones at separate stations. A CEN-NVS100 Network Video Streamer facilitates streaming video from a dedicated camera located at the rear of the theater, allowing viewers with web access to watch the activities in real time, from the Internet, as well as select audio from one of two conferences in progress. The "stream cam" can be viewed anywhere on the UA Telemedicine network from any city with access. A second PRO2 control system seamlessly automates this entire process, integrating complex AV switching with advanced video conferencing capabilities, into a valuable and rewarding user experience.

"T-Health officials see this as a big first step toward a health care system that truly teaches its practitioners to work together across professional disciplines to deliver the best medical care possible," Mauger concludes.