



Extron High Performance AV Switching Systems Enable Practical & Emergency Medical Training at VinUniversity

“The Extron DXP HD 4K Plus matrix switchers and audio products support VinUniversity’s modern training methods, helping the students learn to be proactive in mastering medical procedures and emergency and crisis response as a team.”

Nguyen Truong Giang
Vice Director
Hoang Minh Investment Technology JSC

Challenges

VinUniversity in Vietnam offers education, skills development, and career placement for its students. The Medical training programs at this new, non-profit university include lecture, team-based learning, and hands-on experience through simulation. Simulation spaces address the full gamut of medicine, covering diagnostics, procedures, lab work, and crisis intervention.

The recently constructed Buildings E and F on VinUniversity’s campus in the Gia Lam district of Hanoi, Vietnam, are designed specifically for medical training. They include lecture rooms and simulation spaces based on a modern hospital and home-health services.

To help the students gain diagnostic and practical skills in a wide variety of medical disciplines, VinUniversity required AV systems that would provide high-performance AV signal switching and crystal-clear sound throughout the facilities. Integration firm Hoang Minh Investment Technology Joint-stock Company – HMICO worked in conjunction with the university planners to design and build AV systems using products from Extron.



The standard operating procedure for controlling an interactive medical manikin is through a laptop or tablet. All photographs courtesy of VinUniversity and Hong Minh Investment Technology Joint-stock Company

Design Solution

Spaces include ten Objective Structured Clinical Examination, or OSCE rooms, six ICU rooms, four patient rooms, a nurses' station, two skills-training labs, an ambulance and triage response area, a teaching room for dispensing of pharmaceuticals, and a home care environment. Another specialized room provides a virtual reality – VR immersive experience that can hone a student's diagnostic abilities and improve their crisis response times.

Adult and child interactive medical manikins provide a vast array of capabilities and integrated or programmable health responses. Simulated body parts facilitate specialized training, such as an arm for practicing injections, IV placement, and blood draws. The support staff monitors the lectures and various simulation scenarios from the control room and can remotely operate an AV system or a connected manikin, if required.

Each building also provides formal and informal meeting rooms and gathering spaces. Formal meeting spaces include debriefing rooms for procedural review and dissection of the actions taken in a given procedure or emergency exercise and include an AV system.

High Performance AV Switching and Distribution

The heart of each AV system is an Extron DXP HD 4K PLUS 4K/60 HDMI matrix switcher. Available in fixed sizes from 8x4 to 16x16, the model



Medical data is sent to the station display in real-time, enabling students to practice their diagnostic skills and collaborate on the best treatment option.

used depended on the room size and functionality. Supporting 4K/60 HDMI with 4:4:4 color sampling at data rates up to 18 Gbps and HDR, the DXP PLUS Series met the high-resolution video requirements for medical imaging and the switching speed for emergency services.

AV signals from sources installed or connected within the room are sent to the matrix switcher using DTP transmitters, such as DTP T EU 4K 231 transmitters mounted in junction boxes. Where a lectern or other piece of furniture supports a local monitor, the HDMI transmitter is an Extron DTP T HD2 4K 230 that includes input loop-through. USB



The support staff can monitor the various simulation scenarios and remotely operate the DXP HD 4K PLUS 4K/60 HDMI matrix switcher or an interactive manikin from that space's control room.



Meeting spaces such as this debriefing room enable students and staff to review exercises and training scenarios captured with an Extron SMP 351 streaming media processor.

signals are transmitted using pairs of Extron USB Extender Plus Series transmitters and receivers. Also installed in furniture are Extron Flex55 USB SuperPlate modules using the Flex55 101 mounting frames. The modules provide convenient access to AC and USB power for tablets and other devices.

HMICO installed multiple decorator-style and standard wallplates around the lower points on walls and at desk level within select spaces, such as the control room. The wallplates provide various combinations of HDMI, USB, audio, and network connectivity, as well as power. One example is the Extron WPD 160 decorator-style wallplate. It supports audio, video, and data pass-through of HDMI, USB, and network signals.

For wireless connectivity, the installations include Extron ShareLink® Pro collaboration gateways. Because of the possible interference with the many medical devices used throughout the two facilities, the design team chose the network version, without WAP. Local and remote operation of the installations are over the university's network and includes centralized monitoring and control of each facility's building management system, or BMS. An Extron SMP 351 H.264 streaming media processor enables session recording and access from remote locations, such as the debriefing rooms.

Powerful Audio Mixing and Crystal Clear Sound Reinforcement with Extron

To mix the audio feeds from the microphones and the medical manikins for in-room, recording, and streaming purposes, each AV system

includes an Extron DMP 128 Plus AT 12x8 ProDSP™ audio processor. The DXP matrix switcher de-embeds audio and sends the signal to the audio processor. The AT model provides Dante® audio networking technology with connectivity for up to 48 digital audio inputs and 24 digital audio outputs. The DMP 128 Plus processor is installed in a variety of locations, from a credenza to a rack, depending on the room and building.

The sound systems are driven by the XPA U 358-100V which provides eight 35-watt channels of 100 V distributed audio. Other systems are powered by an MPA 601 60-watt amplifier. They drive pairs of Extron CS 26T Plus two-way open back ceiling speakers with a 100 V transformer, ensuring accurate and optimal sound throughout each room and space.

Standardization on these proven Extron products ensured reliable AV systems operation and allowed the support staff to stock the bare minimum of backup units for both buildings.

Results

The university's undergraduate and postgraduate medical programs are successfully combining lecture, group, and individual studies dovetailed with simulation training. The multiple rooms and stations enable the students to perform and be assessed on the specific abilities and tasks related to their discipline. VinUniversity's programs have proven to be exceptional at training future medical practitioners and helping them find positions to serve their fellow citizens of Vietnam.

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