Extron AV Switching, Streaming, and Control Systems Aid Higher Learning at Idaho's First Medical School

"Becoming a physician is a complex process that is mentally, physically, and emotionally challenging. ICOM is designed to help each student achieve a solid understanding of osteopathic diagnostics and techniques, and the Extron technologies used throughout the campus are instrumental in this endeavor."

Brian Atkinson
Director of Information Technology
Idaho College of Osteopathic Medicine

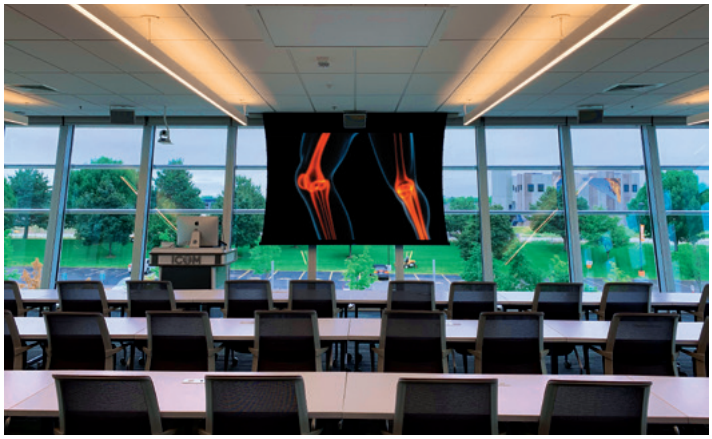
Challenges

Idaho College of Osteopathic Medicine – ICOM located in Meridian, Idaho, is the state's first medical school. ICOM required powerful yet efficient AV switching systems with proven reliability and longevity. Class sessions needed to be captured for live distribution and archival purposes. Also, system control had to be intuitive and support remote management.

As an Apple Distinguished School, the installation needed to support a huge number of Apple® devices, such as Apple TV and Mac mini computers over USB. Other resources would include Amazon® Fire TV, Blu-ray players, document cameras, PTZ cameras, and assistive learning systems, as well as provide AV connectivity and wireless communication. For display, each room would offer a combination of Epson® professional 4K projectors and Sharp® 60" to 90" 4K displays, along with Planar 22" LCD monitors with touch control. Due to construction delays, all AV systems had to be installed and commissioned in only three months.

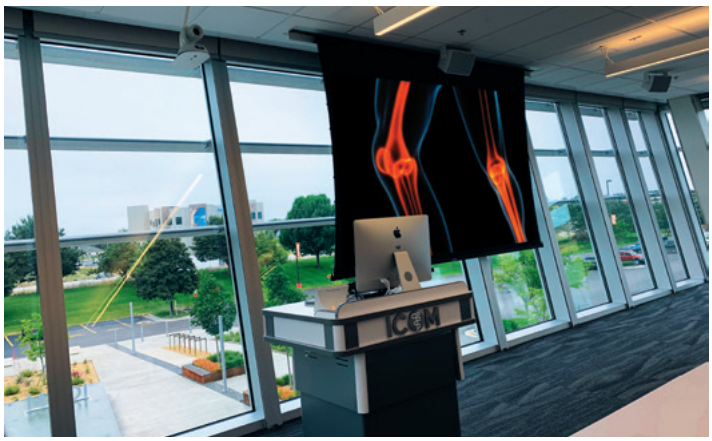
Solution

LightWerks Communication Systems worked closely with ICOM to design and deploy appropriate AV systems for each type of room in the three-story, 94,000-square foot facility. LightWerks specified Extron.



The Glassroom classroom has three all-glass walls, requiring precise AV system design and installation to allow for high-quality image display and minimize audio reflections.

The classroom credenza holds the local sources, along with various Extron audio, video, and control components such as the DTP CrossPoint 4K presentation matrix switcher.



The instructor can use personal devices to share content. A DTP T SW4 HD 4K four-input switcher at the lectern provides local source switching among connected devices and signal extension to the matrix switcher in the credenza.

Matrix Switching and Seamless 4K Scaling with One Box

The installation includes classroom, lab, lecture hall, and meeting room designs. Learning spaces incorporate an Extron DTP CrossPoint® 4K Series presentation matrix switcher that provides seamless video scaling and signal routing. For remote sources, DTP® transmitters and receivers extend AV and control signals up to 330 feet (100 meters) between the endpoints and the matrix switcher. For example, the Glassroom is a 1,325-square foot classroom with three glass walls and configurable seating for up to 67 students. Installed in the credenza on the non-glass back wall is a DTP CrossPoint 108 4K IPCP MA 70 10x8 presentation matrix switcher, along with the standardized resources.

Built-in features such as Extron Vector™ 4K scaling technology and selectable seamless transitions help the faculty and staff produce highly detailed presentations that keep students engaged during lessons on anatomy and nerve pathways. RS-232 inserted through the matrix switcher's Ethernet port enables remote device control.

At the instructor station, a DTP T SW4 HD 4K four-input switcher provides switching among connected devices. Its integrated DTP transmitter saves space within the tight instructor station compartment by extending signals over the twisted pair infrastructure to the matrix switcher. An Extron SMP 351 H.264 processor creates files for archive. The recordings allow individual students and study groups to review lessons and medical procedures for deeper understanding. The streaming media processor's internal solid-state storage drive and network storage enable lecture capture and recording for live streaming and video on demand. It also simultaneously captures AV source content of different resolutions and scales these images. Locally stored content is later transferred to the network directory for archive.

Powerful Annotation, Bridging & Scaling at the Lectern

To clarify lesson points and stimulate conversation, the instructor can make notations on a document or slide image using the Annotator 300 annotation processor. It receives AV transmissions over HDMI from the matrix switcher and KVM signals via an Extron USB Extender Plus pair. This same USB model supports the Planar touch screen.

Also sharing the compartment is the Extron MediaPort 200 HDMI and Audio to USB Scaling Bridge. It works as a soft codec interface to convert classroom AV signals to a USB source, dovetailing the videoconferencing, sound reinforcement, and video archive systems. The MediaPort® scaling bridge was selected to enhance audio and video quality because it supported professional-grade videoconferencing PTZ cameras, boundary microphones, and sound reinforcement systems. Video processing technology specifically engineered for optimized image scaling and frame rate conversion preserves detail and legibility of source content. The USB connection supports the classroom's Mac mini.

The Osteopathic Manipulative Medicine – OMM lab includes multiple PTZ cameras and displays, capturing and presenting activities taking place at any of the 40 hydraulic treatment tables.

The instructor can control all AV system operations using the TLP Pro 725T touchpanel.

In each lecture hall, a DTP CrossPoint 84 4K matrix switcher routes signals to the two projection systems, as well as to the 90" confidence monitor at the back of the room and the Planar touch screen at the instructor station.

DTP HDMI 4K 230 Rx low-profile receivers support the Planar touch screen, the ceiling-mounted projector, and the 80" confidence display on the back wall. Four relays on the DTP CrossPoint presentation matrix switcher facilitate operation of the projector lift and screen.

DTP System Scaled Up for Hands-On Instruction

The Osteopathic Manipulative Medicine – OMM lab has a similar design, using a DTP CrossPoint 108 4K MA 70 installed in the much larger instructor station. There is no credenza. The lab features 40 hydraulic treatment tables in a room flooded with natural light from the bank of floor-to-ceiling windows. The AV system includes multiple PTZ cameras and seven 60" displays mounted to the walls and suspended from the ceiling.

The application provides the same capabilities as the classroom design, but with an emphasis of hands-on instructions. Students can easily see the instructor teaching from any treatment table within the lab. Instructors often employ PIP using the SMP 351 streaming media processor to show multiple angles of a certain technique.

DMP 128 Fills Glassroom & Lab with Sound, Not Echoes

The sound systems in the Glassroom and OMM Lab are based on the DMP 128 Plus C AT, a 12x8 audio DSP processor with ProDSP™, which provides mixing and audio adjustments such as ducking, filtering, and gain. AEC reduces echoes during audio conferencing, ensuring high-quality sound and clarity at each seat and treatment table.

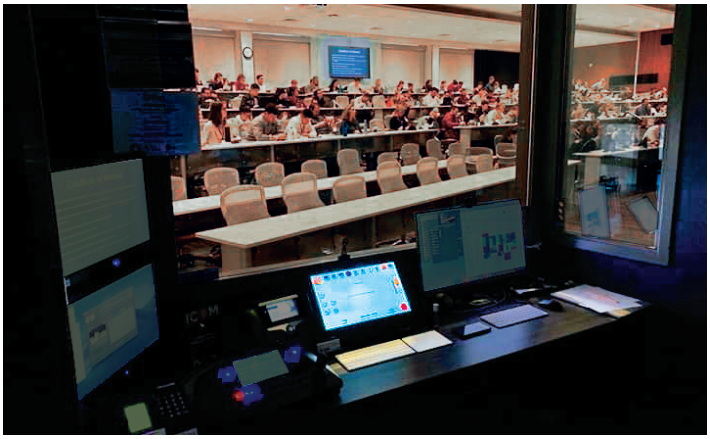
Using the AEC output reference signal from the MediaPort bridge, the DMP 128 Plus C AT provides distributed AEC processing for the fixed and wireless microphones. The bridge also scales HDMI video content, sending it and audio over USB to the local Mac mini.

For the Glassroom, the DTP CrossPoint matrix switcher's S/PDIF output supports the Extron SSP 7.1 surround sound processor. The DMP 128 model includes Dante, enabling distribution of high-quality live and programmed sound over the ICOM network.

Extron Pro Series for Versatile Control

Leveraging technology for education is a large focus for ICOM. Ease of use and consistency across learning spaces were critical, ensuring the user experience was the same or similar in every space.

Extron Pro Series control products enable local DTP system operation. The TLP Pro 725T 7" Tabletop TouchLink® Pro Touchpanel at the instructor station offers a customized interface to provide room-to-room operational familiarity. Using a standard network infrastructure, the touchpanel is connected to the IPCP Pro control processor built into the matrix switcher. This streamlined the design and saved space. The AV network runs through one of the matrix switcher's three dedicated AV LAN



When Lecture Halls A and B are combined, the two DTP systems are connected to an XTP II CrossPoint 3200 matrix. The support staff operates the XTP system from the control room using the TLP Pro 1720TG 17" tabletop touchpanel.

Students have access to the same high-performance technologies when studying in the collaboration rooms as do the faculty within meeting rooms.

The XTP II CrossPoint 3200 matrix switcher and other AV components that support the auditorium are rack-mounted within the control room.

ports, and the LAN connection provides access to the facility's network. The four relays on an Extron IPA T RLY4 are connected to the matrix switcher's four digital I/O ports, augmenting control of the Extron XPA® two-channel and four-channel audio amplifiers. Authorized iPad tablets running the free Extron Control app enable remote system monitoring and operation. Its interface conveniently matches the touchpanel screen.

Divisible Lecture Hall Combines DTP and XTP Systems for AV Switching and Distribution

The two 250-seat lecture halls provide resources and AV capabilities similar to the classroom and lab designs. System control is through a TLP Pro 725T 7" tabletop touchpanel at the instructor station or from the touchpanel in the adjacent control room. When combined into a single, large auditorium, support staff operate the system from the control room.

To tie the DTP systems together, an Extron XTP II CrossPoint 3200 matrix switcher is rack-mounted in the control room. Its modular 32x32 frame is configured as 12x26, providing local HDMI distribution and routing between remote endpoints. Extron XTP SR HD 4K scaling receivers deliver optimal quality images to the four professional projection systems and two 90" confidence monitors within Lecture Halls A and B.

Rack-mounted with the XTP II CrossPoint matrix switcher is an Extron IPCP Pro 555 control processor with LinkLicense®, which makes it possible to use a laptop or other mobile device to control AV system operations from within the auditorium as well as from a remote location. When the halls are configured as an auditorium, the support staff uses the Extron TLP Pro 1720TG 17" tabletop touchpanel at the control room workstation to monitor and operate the XTP system.

Results

From conception to operational, the project took 12 months to complete. LightWerks delivered the AV system designs to ICOM on schedule, with installation and commissioning accomplished in three months. All teaching and meeting spaces were available in time for the inaugural class of medical students.

According to Dr. Thomas Mohr, Dean and Chief Academic Officer at the Idaho College of Osteopathic Medicine, ICOM was conceived and established to attract a well-qualified faculty and student body. With its technology-driven curriculum, ICOM provides all that is required to effectively train tomorrow's Doctors of Osteopathy today.