



University of Pennsylvania Uses Extron Fiber Optic and XTP Systems in Medical Research Center

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Kevin McGinniss
Systems Design Engineer at Advanced AV

The distinguished Perelman School of Medicine at the University of Pennsylvania needed more space for medical research and to develop innovative treatments. The solution was to build the Smilow Center for Translational Research - SCTR and use technology to connect it to the patient-care facilities at the Perelman Center for Advanced Medicine. In 2009, the university hired Advanced AV and the consulting firm of Cerami & Associates to design a high performance audiovisual switching and distribution system for the SCTR. The team chose Extron's FOX Series fiber optic products to actualize the school's "bench to bedside" mission statement in a future-proof design, and added XTP Systems® in 2012 to allow all-digital routing within select spaces.

Enterprise-wide Signal Switching and Distribution over Fiber

System reliability, signal integrity, and efficiency are of vital concern at a medical research facility for higher learning. The SCTR's high performance AV system is designed around Extron's FOX Matrix 7200 Modular Fiber Optic Matrix Switcher to enable centralized switching of pixel-perfect video, audio, and control signals. It allows expensive equipment, such as codecs, recorders, and CATV tuners, to be shared. Also, the core infrastructure remains in place during renewal cycles.

The FOX Matrix 7200 is populated with singlemode I/O boards to route high resolution signals from the master control room on the ground floor to locations throughout the 12-story building. FOX Series HDMI and VGA extenders provide connectivity to in-room AV switching systems on the various floors. To enable content sharing between SCTR researchers and clinicians at the patient care facilities, the matrix switcher is tied to the university's fiber optic backbone. This design also allows presentation of subjects of high interest in auditoriums located across campus.



Extron Electronics
INTERFACING, SWITCHING AND CONTROL

In-Room AV with Convenient Integrated Solution

Additional funding received last year allowed presentation rooms in the 531,000 square foot building to be upgraded to all-digital signal routing. Once again, Advanced AV turned to Extron and selected XTP Systems. "To allow everything to stay in the digital format and be future-proof, we went down a couple of different paths. Extron's fiber optics and XTP Systems turned out to be the right combination," says Kevin McGinniss, Systems Design Engineer at Advanced AV.

The upper stories include three divisible rooms and two executive conference rooms per floor. HDCP-compliant XTP CrossPoint® 1600 matrix switchers provide high performance signal switching and distribution within the eighth and ninth floor presentation spaces. Each XTP matrix switcher is populated with four-port input and output boards that provide signal extension up to 330 feet (100 m). HDMI input and output boards and a stereo audio output board provide local signal transmission, and XTP CP boards connected to HDCP-compliant XTP HDMI transmitters and receivers enable routing between remote endpoints. To ensure ease of operation for the end users, Advanced AV set up the XTP Systems to maintain continuous EDID communication with the connected devices. "I had previous experience with several of the Extron technologies that are part of the XTP specs. Their Key Minder® and SpeedSwitch® Technology work just as expected. The EDID and HDCP management features and setup also made installation a lot easier than with other manufacturers' solutions," says McGinniss.

Each side of the divisible rooms has a computer, at least one point of connectivity, and a Blu-ray Disc player that pulls from the university's cloud. In-room sources are installed in the credenza. For portable device connectivity, divisible rooms include four floor boxes: three on the larger side and one on the smaller side. One of the three floor boxes on the larger side provides two XTP® inputs and an XTP output under the lectern for the instructor's personal devices. Floor boxes at the front of the larger side and on the smaller side offer an XTP input for a laptop. All floor boxes also include connectors for a microphone.

Each divisible room includes two high resolution displays: a Canon® REALIS WUX10 Mark II D projector with a 116"x65" screen on the front wall and a 70" NEC® P702 flat panel display mounted on a side wall. A 24" NEC MultiSync EA243WM-BK 16:10 LED Backlit LCD confidence monitor is mounted to the lectern for the presenter. When the space is configured as a single room, the flat panel display is synced with the Canon projector to enhance visibility for the audience. Configured as two rooms, the flat panel becomes the main display for that side. Regardless of space configuration, the XTP System is used to deliver shared or independent content to all three display devices.

Rooms with the largest displays include Extron scalars. Since Apple® iPad® and other iOS devices are used extensively at the university, the scalars ensure display of content from BYOD sources that output a variety of resolutions. According to McGinniss, another reason to include scaling is to further future-proof the system.



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Bidirectional RS-232 and IR commands are inserted through the XTP System to allow control of a device over the one twisted pair cable. Endpoints also receive power over this cable.

"Initially, I planned to have local power at the endpoints, but once we staged and tested the equipment, we decided to have the XTP frame power the transmitters and receivers," says McGinniss. "Remote power to the transmitters through the single cable was especially beneficial since the units are mounted under tables."

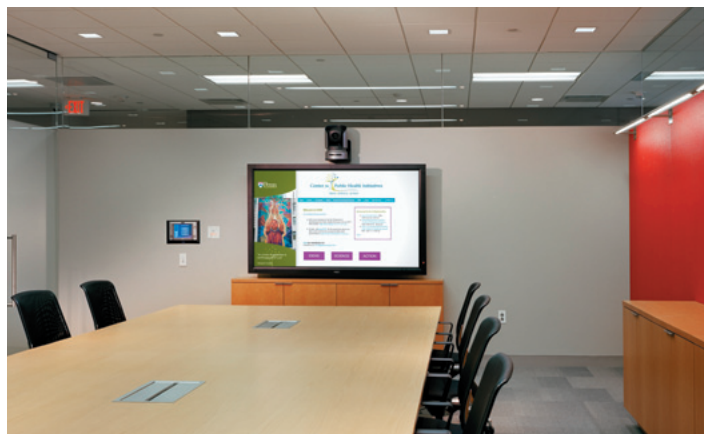
Impressions

The integrator says that upgrading each presentation space was remarkably easy to accomplish. "You're not doing complex configurations to get everything up and running; instead, it's pull up the XTP software and you're ready to go. Just 15 minutes out of the box and the XTP System is working," says McGinniss.

According to Advanced AV, the Perelman School of Medicine is quite pleased with the reliability, speed, and cost-effectiveness of the Smilow Center's AV system. It continually proves to be instrumental in facilitating the free exchange of ideas and treatment options. For the researchers and clinicians at the University of Pennsylvania, the Extron FOX Series fiber optic products and XTP Systems are assisting them to successfully take medical science from the bench to the bedside.

Partial list of installed Extron products:

- FOX Matrix 7200
Modular Fiber Optic Matrix Switcher from 8x8 to 72x72
- FOX I/O 88 SM
8x8 Fiber Optic I/O Board for FOX Matrix – Singlemode
- FOXBOX HDMI SM
Fiber Optic Extender for HDMI, Audio, and RS-232 – Singlemode
- XTP CrossPoint 1600
Modular Digital Matrix Switchers from 4x4 to 16x16 with SpeedSwitch Technology
- XTP CP I/O Boards
XTP Transmitter and Receiver Boards with RS-232 and IR Insertion
- XTP CP HDMI I/O Boards
HDMI Input and Output Boards with Analog Stereo Audio
- XTP CP 4o SA
Analog Stereo Audio Output Board for XTP Systems
- DVS 605
Five Input HDCP-Compliant Scaler with Seamless Switching



Divisible rooms can be configured as two separate spaces for presentation of distributed or local content.



High resolution video, audio, and control signals can be shared between facilities at the Perelman School of Medicine.



For large audiences, AV signals can be delivered to auditoriums across campus.

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