



Extron Presentation Switching & NAV Pro AVoIP Systems Enable Law Enforcement Collaborative Learning at UWE

“The AV installation for our HAS PCDA is a shining example of what can be achieved when AV designers coordinate with architects, electrical engineers, and the contractor; a demanding undertaking at times, but the results speak for themselves.”

James Gray
Design Manager
University of the West of England

Challenges

The Frenchay Campus of the University of the West of England – UWE in Bristol recently expanded their law enforcement education offerings for the Avon, Somerset, and Police Constable Degree Apprenticeship – PCDA programs. To support this growth, UWE required additional technology-enhanced learning spaces. The project included two 60-seat collaborative classrooms, a standard classroom of equal size, six simulation police constable interview/interrogation rooms, and a series of crime scene rooms for forensic training. The various rooms range across three floors, with some spaces posing architectural challenges. Riser space between the floors was limited and the power and data requirements were considered complex.

The AV systems had to meet the university's exacting standards for performance and support the school's technology-enabled active learning – TEAL methodology yet be economical. Sources would consist of Intel® NUCs, servers, BYOD, and feeds from a myriad of PTZ cameras and lavalier, handheld, and ceiling-mount microphones. The number of cameras and microphones depended on room size and purpose. System control had to be intuitive and allow remote access. Also, the installation had to support two-way communication among all rooms. The design team specified Extron products for AV distribution, interconnectivity, and control.



In UWE's collaborative learning spaces, the projection systems are fed by an Extron IN1608 xi scaling presentation switcher. The pod displays follow the main display until a student in that pod selects a different source. Sessions held in the interview rooms are shared live with the classrooms over the NAV® Pro AVoIP system.

Design Solution

UWE selected GV AV of Exeter for this design/build project. Each classroom provides two Epson® EB-L530U projectors with whiteboard screens on the front wall. The collaborative classrooms include a wall-mounted NEC® C431 43" LED display by each of the six student pods. The pod displays are connected through floor boxes and follow the main projection system by default. A student can switch among the sources for their pod. Each classroom AV system enables the instructor to initiate an exercise and then they are free to roam, providing general guidance and answering questions. Students work together in small groups, or pods, and share the available resources. The instructor can also control the content shown on the pod displays from various sources, including wired or wirelessly connected student device.

Specific AV system components and sources are rack-mounted in an equipment closet within the room or an adjacent storage room. Signals from the rack-mounted sources and room devices within or connected to the lectern and/or pods can be sent to any combination of displays in one or more of the classrooms. An Intel® NUC5PGYH computer is installed at each pod for student collaboration. Also available are the many camera and microphone feeds from the six simulation interview rooms and the various forensics spaces, which include a kitchen, a

living room, a bedroom, a bathroom, and a space that can be set up as a shop, a bank, a post office, etc. In addition to system control within each room, operators in the central control room can manage the vast array of feeds for assignment to one or more rooms and/or displays.

GV AV installed Extron IN1608 xi Series eight-input scaling switchers for seamless presentation within the classrooms. NAV® Pro AV over IP products route the video and audio signals from simulation and forensic spaces to the displays at the student pods. Each AV system includes an Extron ProDSP™ audio processor to enable mixing and two-way communication among the rooms. Pro Series touchpanels within the various rooms and eBUS® control products at each pod complete the AV system.

Extron Empowers Active Learning

The heart of the classroom AV system is the Extron IN1608 xi IPCP SA presentation switcher that includes integrated control processing and an audio amplifier. This model also provides built-in signal extension over DTP®, reducing system complexity. The compact size of the switcher let it fit easily within the lectern. Content is also sent to UWE's Panopto® platform, making the AV system ideal for TEAL.

The support staff appreciates the easy monitoring and control of the remote devices over DTP. In addition to supporting AV signal extension



Each of the 18 student pods provides AV connectivity for a keyboard, a mouse, and mobile devices, as well as source switching plus local display control using an Extron EBP 110 MK eBUS® 10-button panel.

up to 330 feet (100 meters), devices connected to the IN1608 xi switcher's DTP twisted pair inputs and output receive inserted commands from the control system. AV and control signals are carried over one shielded CATx cable, streamlining system maintenance and troubleshooting.

Extron Audio Products Provide Optimal Sound Within and Between Rooms

For audio mixing, each classroom's sound system includes an Extron DMP 64 Plus C AT 6x4 processor and simulation rooms use the DMP 128 Plus C AT 12x8 processor. Both models support AEC and Dante®, enabling clear communication within the room and between rooms. An Extron AXI 016 audio expansion interface adds 16 channels to support the many microphones across the learning spaces.

GV AV installed ceiling-mount PTZ cameras, array microphones, and full-range speakers for the rooms with an exposed ceiling or structural pillars. As an example, the room with the exposed ceiling required a different speaker. They installed the Extron SF 3PT SoundField® 3" pendant speakers that complemented the room aesthetics while optimizing sound at each student location. The Extron-exclusive PendantConnect™ speaker cable carries the audio signal and also suspends the speaker. Students may choose to wear wireless headphones when observing simulated activities.

Intuitive System Control with Extron Touchpanels

The classroom AV system is controlled using the Extron TLP Pro 1022M 10" TouchLink® Pro touchpanel mounted at the lectern. It operates in conjunction with the IN1608 xi presentation switcher's powerful control processor. The instructors can use any of the many presets to automate a lesson to their preferred switching sequence and functionality.

An Extron EBP 110 MK 10-button eBUS® button panel installed at each collaboration pod allows the students to select among the varied sources and control their pod's LED display. CEC commands are triggered to control the displays over HDMI. The instructor can override student control of any pod display using the touchpanel. "Thanks to Extron's innovative TouchLink Pro and eBUS solutions, we were able to create one large control program for the collaboration classroom that is shared among two GUI interfaces, 12 button panels, and two switches with the control processor built into the IN1608 xi switcher," says Nicola Cutting, Commercial Director at GV AV.

NAV Pro AVoIP Enables Collaboration Between Rooms

The NAV system supports sharing of student perspectives with the other rooms. The NAV Pro encoders and decoders convert HDMI signals to Ethernet and back again. Working together with Cisco SG350X-48MP network switches installed in each lectern and the central rack, they facilitate interconnection among the learning spaces



The instructor is able to control all AV signal routing using a single screen on the Extron TLP Pro 1025M 10" TouchLink® Pro Touchpanel mounted to the lectern.



NAV Pro AVoIP encoders and decoders facilitate observation of interview room activities on the flexible classrooms' projection systems. The ProDSP audio processor and speakers facilitate two-way communication with each collaboration pod.

over the LAN. For the simulation spaces, the switch and NAV E 101 encoders allow students in the classrooms to view and converse with the participants from their respective rooms. Extron NAV SD 101 scaling decoders within the lectern and at each collaboration pod support the displays. The Cisco switch powers the NAV encoders and decoders using PoE+, reducing the number of outlets required at the remote locations. The support staff uses the Extron NAVigator System Manager installed at the central rack to monitor and manage the NAV endpoints, when necessary.

Students find that being able to watch a live interview or crime scene investigation and then discuss their impressions with other students within and beyond their pod is invaluable. The instructors concur.



Using a raceway, the lectern is stationed in the middle of the flexible classroom. This room arrangement allows the instructor to monitor activities at each student pod while easily controlling the AV system when necessary.

Results

In part, GV AV credits the many integration-friendly features and technologies built into the Extron products that allowed installation and system commissioning to be completed within a single month. UWE students find that being able to collaborate within small groups using Extron IN1608 xi seamless switchers while observing and interacting with those in the interview and forensics rooms over the NAV Pro AVoIP system provide a well-rounded experience. The new rooms and AV systems designed for the TEAL teaching methodology are instrumental in helping the students develop their law enforcement skills and techniques. The graduates instinctually apply what they learned at UWE to serve, protect, and respect the communities across the West of England.

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