



University of Maryland Enhances Distance Learning with Extron Annotator

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Dr. Wes Lawson
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Engineering
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Since 1980, the University of Maryland's Distance Education Technology and Services - DETS group has provided a widely-recognized distance learning program that serves students both locally and globally. To consolidate all of the distance learning programs of the A. James Clark School of Engineering into one centralized location, a new DETS facility was established on campus and is known as the Arnold E. Seigel Learning Center - SLC. The SLC consists of six technology-enhanced TV studio classrooms that seat between 17 and 122 students, and are designed to take full advantage of the current trends in online and blended learning models. DETS engineering staff wanted the SLC classrooms to include user-friendly AV systems that would enable instructors to easily annotate electronic presentation material during lectures. The AV systems would also need to support a variety of sources, including guest devices, and provide flexible AV distribution. To fulfill these AV needs, DETS staff designed systems with the Extron Annotator and TouchLink®-based control.

AV Needs and Challenges

One of the primary goals of the SLC was to provide an all-digital experience for students and deliver content using full HD capture. This includes the use of high-definition digital cameras in the classroom, plus the use of video recorders and servers for recording the instructor and annotated presentation material, and making course content available to students. Videoconferencing capabilities in each classroom are essential to facilitate remote student participation, so the AV systems need to support routing video between the conferencing equipment in a master control



Extron Electronics
INTERFACING, SWITCHING AND CONTROL



In the classroom, the Annotator provides instructors with the ability to make notations to computer-video presentations and over live video from campus cable or the DVD/VCR player.

room and the classroom. The AV systems also need to provide scaling of all video signals, including from TV cameras and guest devices, to a common high resolution.

In addition, each classroom can be used for technician-assisted lecture recording, or as a general purpose technology classroom. This requires flexible AV routing between the classroom and the adjoining control room. To suit these room uses, the control system also needs to provide technicians with the ability to control AV equipment from the control room, as well as provide instructors with intuitive, in-room controls at the teaching station. The centralized infrastructure, with a master control room at the center of the facility, would help DETS staff raise the quality of AV support and improve response time.

Enhanced Lectures with Real-Time Annotations

Classrooms at the SLC are equipped with four flat-panel displays, two of which are mounted in the rear of the room and are used predominantly in two configurations – as confidence monitors with video of the professor and the annotated presentation content, or to display video of off-campus attendees and shared content in videoconferencing sessions. The other two displays at the front of the classroom serve as the main displays for the students. This lecture format provides distance-learning students with a more interactive classroom experience. “The faculty was impressed by the level of detail in each space,” says Marty Ronning, Assistant Director, University of Maryland, DETS. “We strive to give the remote students an experience that’s virtually identical to the one the in-class students receive.”

Rooms are also equipped with an in-ceiling document camera and a PC at the teaching station. For each classroom, DETS staff installed an Extron Hideaway® HSA 400 Tilt-Up Hideaway Surface Access Enclosure in the teaching station to provide convenient access to HDMI, VGA, audio, USB, network, and AC power connections. DETS staff chose the Extron Annotator with an SDI/HD-SDI input and HD-SDI output to provide local switching, scaling and signal conversion, and annotation capabilities for the instructors. The Annotator accepts video from the PC and guest laptops, plus SDI from a dual display at the



Technicians in the control room can monitor the lecture content recording and assist instructors in operating the classroom's AV system, such as switching between content display configurations.

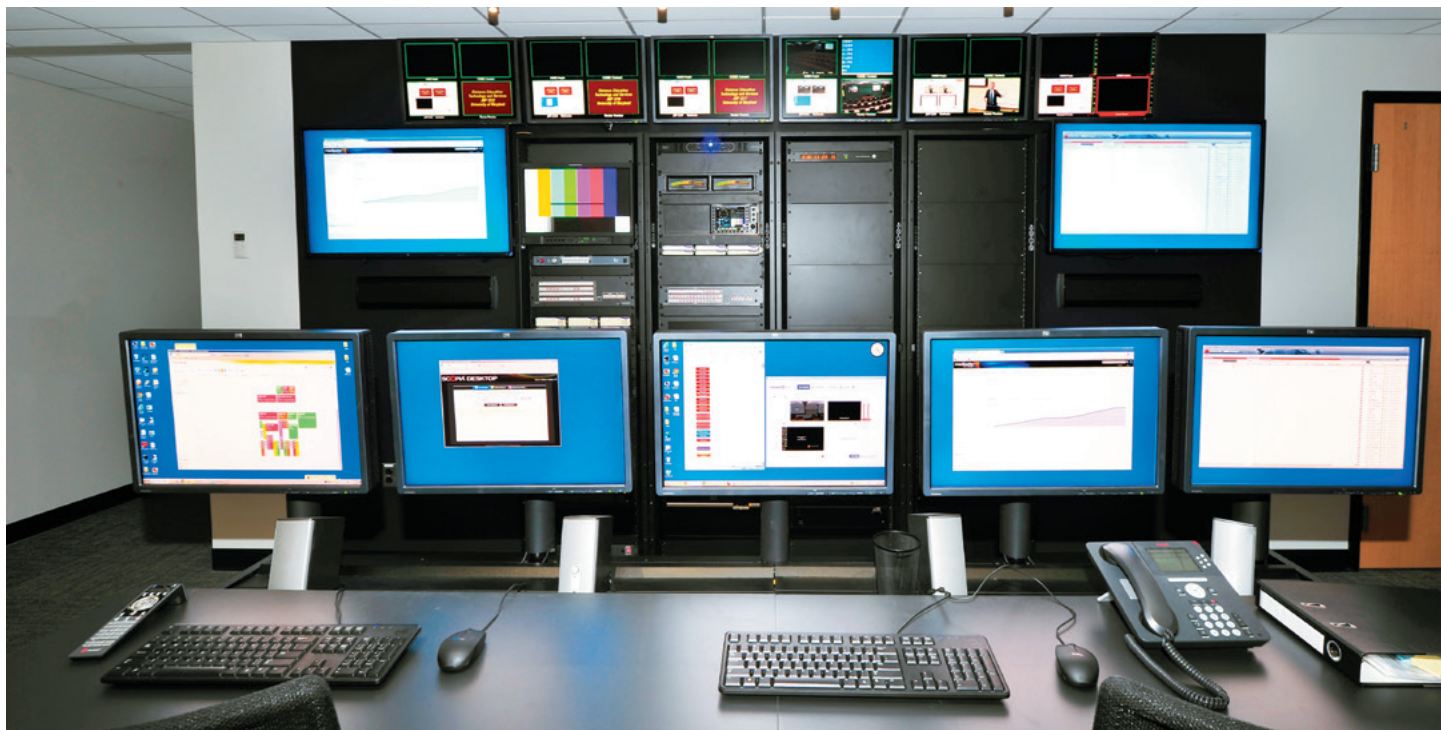
teaching station. The dual display is used by the instructor to preview a variety of media sources. An Extron DVS 605 AD HDCP-Compliant Scaler with Seamless Switching converts auxiliary inputs to HD-SDI for classroom viewing.

Using the Annotator and a connected touch display, instructors can make notations to computer-video presentations, such as on a slide or a document to clarify or emphasize particular points, and draw attention to different elements. The thought process can be illustrated step-by-step using the many on-screen annotation tools that are available, so that difficult ideas can be communicated clearly to students.

“The Annotator greatly enhances the quality of my presentation by allowing me to draw attention to key points on presentation slides to enhance, illustrate, and give examples of the fundamental course ideas and principles,” says Dr. Wes Lawson, Department of Electrical and Computer Engineering, University of Maryland. “The ability to switch the line color and appearance, and the ability to quickly partially or completely erase the annotation were highly valued capabilities.”

The Annotator's high resolution, full motion video capability enables the instructor to annotate over live video from all sources. The instructor can also preview annotations before making them live through the main output for the students. “We required a stable broadcast quality appliance that allowed us to scale and write on top of whatever video format we threw it, as well to function as a standalone ‘whiteboard.’ The Annotator fits that need, providing a scaled HD-SDI output that we route directly into our production switcher,” says Robert Pelletier, Chief Engineer, University of Maryland, DETS.

Annotated video and scaled source signals from the classroom are sent to an Extron HDXP matrix switcher in an adjoining control room. The matrix switcher provides flexible HD-SDI signal routing to the four classroom displays and the teaching station's dual display. DETS staff



The master control room at the center of the SLC facility provides a high level of AV support for the six technology-enhanced TV studio classrooms.

used an Extron DVS 605 D to scale the recorded video content for viewing on a quad split display in the control room. The master control room is also equipped with an Extron HDX Plus 3232 HD-SDI Matrix Switcher, which routes video between the control room and the master control room.

TouchLink User-Friendly Control and Convenience

For simplified operation of the classroom AV systems, DETS staff paired an Extron TLP 710TV 7" Tabletop TouchLink Touchpanel in each classroom and a TLP 1000TV 10" Tabletop TouchLink Touchpanel in the control room, with an IPCP 505 IP Link® Control Processor in the control room. An additional IPCP 505 and TLP 1000TV are used in the master control room. With the TLP 1000TV, technicians can easily switch between content display configurations for the instructor. The user-friendly control system provides convenient, in-room controls to the instructor when a technician is not needed and the room serves as a general-purpose technology classroom. The control interface on the touchpanel provides intuitive system operation, including source selection, volume control, and access to the annotation display.

Many shortcuts for Annotator functions are included on the classroom's customized touchpanel GUI. Examples include line thickness and color selection, pen and highlighter selection, as well as the ability to

clear annotations from the screen. These shortcuts allow instructors to keep up the pace of their lectures with an alternative to the Annotator on-screen menu. "Paired with a TouchLink-based control system, the Annotator instruction set allowed us to develop a very elaborate and powerful touchpanel interface customized to meet our specific customer requirements," says Pelletier.

Valuable Results

The use of Extron equipment, particularly the Annotator, is an invaluable addition to the instructional experience at the Seigel Learning Center. "I was impressed with how much more complete students' notes were from these lectures than they were with the traditional 'sage on a stage' format. In my opinion, the Annotator technology and simplicity of application were leading factors in this improvement," says Kevin Calabro, Keystone Instructor and Associate Director, University of Maryland. "I was also amazed that students found the videos with annotation to be a much more engaging format than the traditional in-person lecture."

DETS staff also chose Extron for their proven industry-leading support. "The biggest reason I continue to seek out Extron solutions is the expertise and people skills of their Technical Support team," says Pelletier.

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