

Cornell University

New York, New York

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Cornell created this new classroom within an existing research facility, during a larger renovation project for the CEE (School of Civil and Environmental Engineering) Civil Infrastructure Complex. Installed by Audio Video Corporation of Albany, New York, the classroom has one full wall of storefront glazing to underscore its unique proximity to an extensive research lab. This view and location affords a comfortable presentation and collaboration space while maintaining a front row seat to large-scale experiments of soils and materials. The NEES project (Network for Earthquake Engineering Simulation) at Cornell was made possible by a \$2.1 million NSF (National Science Foundation) award, under the direction of CEE Associate Professor Harry Stewart. Audio Video Corporation had several directives and goals to meet:

The owners of the space were looking for a high-tech approach to the AV that would compliment the other major advancements in earthquake research that would be occurring with the NEES project.

They are as follows:

- ▶ Display high-resolution 1366x768 images in native 16:9 aspect ratio
- ▶ Display multiple video and high-resolution images simultaneously in scalable windows
- ▶ Support various conventional means of instructional media playback (PC, DVD, VHS, document camera) for typical in-room presentations
- ▶ Enable the classroom to route and view four PTZ (pan-tilt-zoom) cameras that feed a stand-alone proprietary telepresence system called NEESGrid
- ▶ Allow for instructor and student collaboration using movable tables and wireless technologies
- ▶ Provide integrated H.323 videoconferencing, using two additional classroom PTZ cameras
- ▶ Allow H.323 videoconferences to dynamically include any of the available media or research lab camera sources.



The owners of the space were looking for a high-tech approach to the AV that would complement the other major advancements in earthquake research that would be taking place with the NEES project. The Cornell University's Classroom Technologies group had been evaluating and experimenting with a new presentation approach, based on a video system that uses a 16:9 native display.

Utilizing a Crestron external image processor and a WXGA data/video projector, the system can project a standard 1024x768 PC desktop image onto the 16:9 display, as well as dynamically display several live camera shots. The image processor enables multiple video signals to be shown on individually scalable windows that are also selectable for full-screen viewing. Using a Crestron touchpanel, room modes are switched by the end user. These modes include videoconferencing that has split-screen video (local and off-site video), and collaboration mode, which displays a large, left-justified, PC image with smaller local and off-site video windows tiled on the right. Another image display mode shows all research camera angles, with one primary image larger than the other three.

The touchpanel is used to cycle through camera images and to select a primary image for viewing. These transitions allow for the display space to be mapped in the most efficient manner for

a specific activity, whether it's a single computer source projected center screen for a lecture, or multiple camera views simultaneously displaying an experiment in the high bay. This approach eliminates the need for a second display, and allows all media to go through a single lens.

The infrastructure was planned and installed by Cornell University staff, primarily from its Planning, Design and Construction and Cornell Information Technologies groups. System demonstration, operational training and technical overview were provided to the end users by Audio Video Corporation and CU Classroom Technologies staff. Final adjustments to the Crestron touchpanel and image processor were made by the AVC programmer after the Cornell IT staff and faculty implemented and tested the new system.

