

# MEDICAL CONFERENCE ROOM RECOVERY

**CHALLENGE:** Transform a low-tech conference room with unusual dimensions into a user-friendly multimedia conferencing hub.

**SOLUTION:** Combine innovative conferencing equipment, cabling solutions, and strategically placed AV presentation components to overcome the room's physical handicaps.

*Even without the luxury of early design involvement, choosing the right equipment helped transform a hospital's awkwardly designed conference room into an effective AV collaboration and presentation space.*



*By using the right equipment and system design, Sacramento-based integrator MCSi was able to compensate for the triangular room's shape and small size to create a more hospitable conferencing environment.*

**AS CONFERCING** needs between its 20 hospitals in California, Oregon, Washington, and Hawaii became more frequent, not-for-profit healthcare system Adventist Health knew the existing low-tech conference room in its Roseville, CA, headquarters desperately needed updating. After years of struggling with a patchwork of standalone audio and video components bundled into a crude conferencing solution that required advance planning and tedious technical staff setup, taking Adventist's conferencing capabilities to the next level became essential as more of its facilities added videoconferencing.

"All the technology we had got in the way of function," says Dan Knepp, Adventist Health's IT manager. "It was a mess of wires, laptops, and other conferencing equipment strewn all over a table. It made for a nightmare to get things done well."

Knepp's mission was to transform the space into a user-friendly conferencing and multimedia AV presentation room that would reduce the need for technical support. For an IT manager, this was easier said than done. He turned to AV systems integrator MCSi's Sacramento, CA, office (now part of San Diego-based Anderson Audio Visual) for help. MCSi's sales and technical staff confronted several obstacles on the project, stemming from the room's triangular configuration, which measures about 30- by 30- by 18-feet.

"We needed to be able to fit all of the components into the basic shape of the room, but still get the desired functionality," says John Neal, who served as senior design engineer for the project and now manages Anderson Audio Visual's Sacramento office. "The room really doesn't fit any standards that usually apply when it comes to outfitting multimedia presentation rooms."

To combat the room's design limitations, MCSi installed a trapezoid-shaped Bretford EZ View Tru Conference Table, which measures 12 feet long, 3 feet wide on one side, and 5 feet wide on another, to provide seating for up to 10 people. The table comes pre-configured with two built-in connectivity

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pockets for power and laptop computer connections, and its orientation allows conference participants (including those seated in a small gallery area at the room's edge) to easily view a manual, wall-mounted Da-Lite Model C Manual pull-down projection screen, two magnetic whiteboards, and a 42-inch-high cabinet positioned opposite the head of the conference table. MCSi equipped the cabinet with a 27-inch Sony WEGA KV series display and a Polycom ViewStation FX set-top videoconferencing unit.

The cabinet also houses other critical conferencing components, including DVD and VCR players, a Polycom Vortex EF2280 acoustic echo canceller, an Alesis 150 power amplifier, three Extron ASA 101 audio summing adapters, and an Extron 1x3 MDA 3V video distribution amplifier.

For sound, MCSi used four low-profile Shure MX392C boundary-style microphones equipped with programmable mute switches integrated into the conference table and installed two Electro-Voice EVID C4.2 2-inch speakers in the ceiling to route the audio.

MCSi also positioned a Polycom SoundStation VTX 1000, which serves as the hub of the room's audioconferencing solution, on the conference table to provide users with quick access to a keypad dialer.

"The VTX 1000 was a key to this installation because the user wanted to use the latest in audioconferencing equipment," Neal says. "It makes use of compressed digital audio to produce a wide bandwidth capability over a speakerphone."

To supplement the videoconferencing system, Adventist Health uses the Internet-based collaboration service WebEx to share computer-based graphics applications such as PowerPoint or Excel.

Knepp says the Polycom Vortex EF2280 served as another important component of the project. In addition to providing acoustic and noise cancellation, the EF2280 provides the necessary audio mixing from multiple sources to tie the room's audio system together.

The room's lack of conduit near the conference table was another design challenge for the integrator. Without direct floor access to conduit underneath the table, MCSi had to run power, audio, and video lines from the conference table's pocket areas across the floor to conduit in the wall. The integrator used Cat5 cable to limit the size of the cable bundles, and added an SP Controls CatLinc transmitter/receiver to enable

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the transmission of VGA signals from laptops over Cat5.

"Normally we would have used 5-conductor coaxial cables and run two of them, but at almost a half-inch in diameter they would have been too bulky to run through the cable molding we installed across the floor," Neal says. "But the CatLinc allowed us to take VGA connectors to each of the table pockets and run them back to an Extron SW4 VGA Ars [audio] switcher situated under the conference table."

To simplify the system's operation, Neal used the switcher on auto switch mode to enable VGA signals, regardless of source, to be selected and transmitted to the projector. However, the computer audio and video signal from the Epson ELP-DC02 document camera also needed to be addressed. Neal used a pair of Intelix V2A2 balun devices to solve the problem.



A streamlined rack of source equipment is easily accessible at the front of the room.

"The balun device gets two video and two audio signals across a single Cat5 cable with no degradation or hum induction," he says.

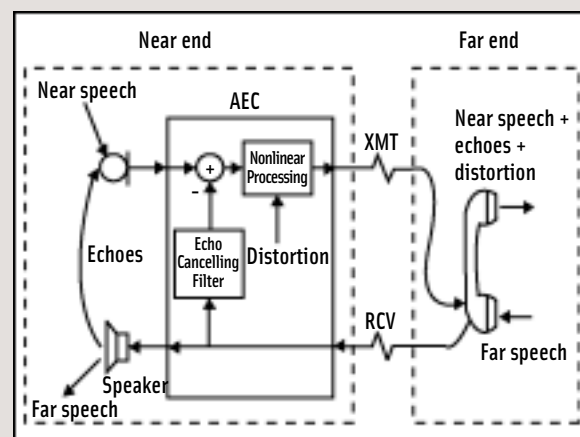
Knepp says the finished product has been a success. After the nearly \$40,000 project that spanned roughly a week earlier this year was completed, Adventist Health has ramped up its use of videoconferencing, with the ability to spend more time on the content of its collaborative meetings, rather than on technical setup.

"Between the videoconferencing, voiceconferencing, and use of WebEx, we've been able to cut down significantly on travel and the quality of our conferencing has improved," Knepp says. "The technology to be able to do this has improved and its cost has come down. More importantly, the user interface has reduced the amount of technological expertise required." **AV**

## DEALING WITH POOR ACOUSTICS

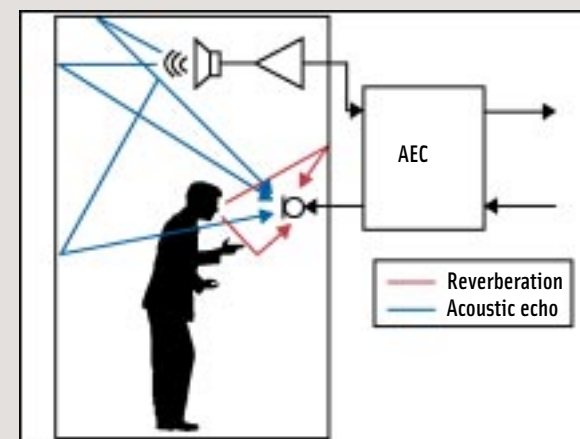
It's a reality all AV integrators face. Until AV is considered in the design phase of every project, more often than not integrators are adapting less than ideal spaces for AV systems. In fact, a major role that AV technology performs is to help us optimize rooms with poor acoustics or sightlines. As video- and voiceconferencing becomes more popular (and in some cases, essential) manufacturers such as Polycom have gone to great lengths to address environmental deficiencies through the use of technologies such as acoustic echo cancellation.

Installed at the near (or local) end, an acoustic echo canceller (AEC) prevents the echo of the remote person's voice from being returned (echoed) to them through the audio system.



How does an acoustic noise canceller work? At the near end, echoes of the far speech enter the microphone along with the near speech. The AEC filters out the echoes through an echo cancellation filter and nonlinear processing.

### Reverberation vs. acoustic echo



Reverberation and echo are not the same thing; however, they are both caused by sound reflecting from surfaces in a room. Do not confuse the residual echo of remote speech with the reverberation of local speech. Reverberation of local speech is caused when the speech signal arrives at the microphone via several paths (the direct path and multiple reflections from surfaces in the room). While reverberation can be unpleasant and can affect speech intelligibility, it's not compensated for by the AEC, which only removes reflections of remote speech. If the remote end complains that they hear echo, ensure they are referring to hearing an echo of their own voice and not room reverberation of local talkers.

You can't remove the effects of reverberation by changing the settings of an AEC, but you can minimize reverberation by moving microphones closer to talkers. A more effective solution is adding acoustical treatment to the room.

(Source: Polycom)

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