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High-Tech Room Designs Offer Videoconference Capabilities

By David A. Bateman Jr.

As travel costs continue to increase, it is becoming ever more cost-effective to take advantage of current audio and videoconferencing technologies. By now, nearly everyone's participated in a meeting where a colleague at a remote site is connected via phone or video-feed, and the group is challenged by the design, technology or acoustics of the conference room. The rhythm of the meeting may get derailed until the IT/AV guru comes in to iron out those technical kinks.

Unfortunately, if the problem is inherent to the room, there is little the IT person can do to help. An impossible situation? Maybe, but there are some things that can be done during the room's design to improve the audio and video quality of communication within the room and between the host and remote sites.

In reality, there are many choices and factors to be considered at the outset to make a corporate videoconference room successful – acoustically, visually and aesthetically. There are new technologies and exciting trends emerging, such as tele-presence and high-definition video conferencing. As a start, keep in mind these are not the type of conferencing systems the IT department can purchase at a "big box" store, install by itself, and have them look and sound good. For a clean, well-integrated corporate videoconferencing room, architects and facility managers would be well served by keeping four basic design considerations in mind: acoustics, audio, video and lighting.

The goal of a well-designed conference room is to make the experience better for people on both ends of the video or audio conference. As the saying goes: location, location, location. Where is the room located? What's next door? A noisy hallway will generate intrusive noise that a microphone can pick up. This is not only distracting to people in the room, but can make it difficult for those at the remote site to hear well.

TECHNOLOGY & INNOVATION

Color and Light

Good sound isolation construction can help mitigate the location of a conference room with annoying exterior noise sources. Wall construction and choice of doors and windows can make a big difference in isolating the room from outside noise. One thick piece of window glass, for example, won't provide enough sound isolation; two panes of glass in different thicknesses, with a large airspace in-between, serves as a better sound insulator. Equally important is the background noise level. The sound of the HVAC system can have detrimental effects on the performance of the conferencing system. An experienced acoustical consultant can help determine if the HVAC design will be quiet enough for conferencing.

Controlling the sound within the room is essential, too. Eliminate particular sound-reflecting architectural elements such as glass walls, terrazzo floors and hard ceilings. Hard surfaces promote multiple sound reflections around the room, making it difficult for people to understand one another within the room. Microphones used for the conference system also hear these reflections and transmit them to the people on the far-end of the conference call, making it extremely difficult for them to understand what is being said.

Room finishes should be selected to provide optimal videoconferencing conditions. Video quality is reduced if the camera has to process busy patterns with multiple colors. Color selection is important, and designs and movement should be kept to a minimum. Solid colors such as light blues and beiges work best, while artwork in the camera's view should be kept simple.

Lighting in a videoconference room needs to meet contradictory requirements in order to be successful: cameras need bright light, while video displays look better in darkened conditions. Cameras require a higher level of illumination to produce good image quality, but direct light on the display screens needs to be minimized to achieve the best image quality with a high contrast ratio.

For participant lighting, fluorescent lights are a good choice, especially with specialized louvered lights that direct light at a 35-40 degree angle, illuminating people from the front rather than from behind or above. Indirect lighting can be another good option when used in the right condition. It provides excellent uniformity and diffuse light; it can also make the ceiling brighter.

Wall wash lighting on the sides and rear walls are also important. A diffuse light with no hot spots makes for a good background. If there are windows to the outdoors in the background, they need to be covered with light blocking shade material and lit like a solid wall. If the background is brighter than people's faces, far-end participants will only see dark outlines and no facial features. With the right balance of color and light levels, the participants will stand out and be the focal point of the videoconference.

The size of the videoconferencing room is pivotal in selecting the appropriate audio and video technology. For small to medium-sized rooms (seating two to 10 people) direct-view

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monitors such as plasma or LCD flat screen displays are an excellent choice. Medium to large conference rooms (seating 10 or more people) are best served using rear projection technology that offers better contrast ratio and works well with difficult lighting requirements. Rear projection, however, requires a projection room behind the display. Although this room takes up valuable space, the projection room also keeps the conference area clear of support equipment and racks of audiovisual gear. An added benefit: the projection room offers an ideal place to hide in-wall cameras and loudspeakers.

The best option for audio pickup is a permanently installed microphone system that provides a consistent experience for far-end participants. Microphones cannot distinguish between the sound of a person's voice and that of noise in the room, so place microphones as close as possible to participants. This allows the microphones to "hear" the person talking louder than the background noise.

Ideally, loudspeakers should be mounted on the sides of the flat panel display, located where the projection screen is, or placed in-wall in the case of rear projection. Ceiling speakers may need to be installed above a very long conference table seating 20 or more to enhance intelligibility within in the room.

Investing in video conferencing technologies is the go-to solution. Having an experienced acoustics and audiovisual systems design consultant on your team can help you protect your investment. A poorly functioning corporate videoconference room is not going to be used and will be looked upon as a poor investment. By planning ahead and designing wisely, a company's videoconference room can be a success. ■