

## Installation Profile: Mission: Invisible

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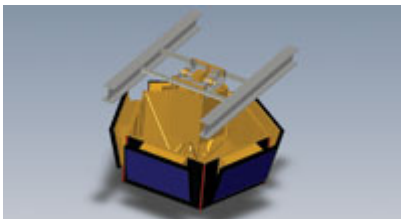
### SGA headquarters installs unobtrusive conferencing technology.



*The literal centerpiece of SGA Corporate Center's high-end conference room is its pentagonal plasma video display system, weighing nearly 1 ton. A major challenge was designing a structurally sound and maintenance-friendly lift mechanism that doesn't intrude on the room's sight lines or elegant aesthetics.*

When the Services Group of America (SGA) built its new headquarters in Scottsdale, Ariz., one of the goals was to create an infrastructure that enabled interaction and smooth cooperation among its many far-flung subsidiaries. Designed by Phoenix-based Cox James Architects, the new SGA Corporate Center is a five-story building fronted by a huge fountain with a beautiful mountain view, housing SGA and some of its subsidiaries. The executive boardroom, Room 503, (unofficially known as the War Room), is located on the top floor of the building.

Rich Wilson, president of SGA's real-estate subsidiary, Development Services of America, managed the project from the client side. "SGA believes strongly in team meetings," he says, "so this facility was designed to provide the ability to display and communicate seamlessly with any of our branch locations across the United States." All conference rooms within the corporate center provide electronic connectivity to corporate servers, allowing realtime presentation and discussion of strategies among multiple business units.



The Scottsdale office of CCS Presentation Systems was engaged to design and install the audiovisual systems. "The focal point of it all is the War Room," CCS Project Manager Flynn Kelly says. "They had done something similar up in Seattle, but they were looking to improve on that."

The room itself is huge. And round. Dominating the space is the conference table, a massive wooden structure measuring 40ft. across and seating 32. The idea was to seamlessly incorporate technology that would enable everything from local PowerPoint presentations to company-wide videoconferences. Another key requirement for the room was for the conference table to provide an uncluttered look, while still providing laptop connectivity and voice pickup of meeting participants.



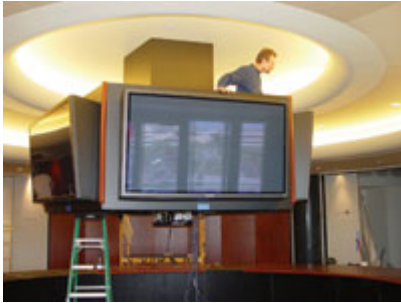
The literal centerpiece of the room is its video display system. An array of five 65in. Panasonic TH-65PF10UK high-definition plasmas hang from the ceiling, allowing comfortable viewing anywhere in the room. “The Panasonic plasmas were probably the last thing we purchased for this room,” Kelly says. “We wanted to make sure [SGA] had the latest model in there.” To meet the customer requirement of unimpeded line of sight in the room, a custom lift system was specified.

“The biggest challenge was the round room,” Wilson says. “The lift mechanism, weights of units on the building, and the geometry to make it all fit into a coffered ceiling was extreme. We also had to make sure that dimensionally we could actually make things fit, run power, tele/data connection pop ups into a round table, and still make everything look symmetrical. With table structural supports, tabletop layouts, and functional-use parameters; a whole lot of brain cells were killed thinking and making it work.”



Designed by Hanlon Engineering of Costa Mesa, Calif., the lift supports about 2000lbs. of gross weight (including the lift itself). The five plasma screens are attached via Chief Manufacturing PPH2000 mounts. In the hollow center portion, a secondary lift holds a teardrop array of five Tandberg WAVE II cameras, which drop down below the plasmas when needed. When deployed for presentations and videoconferences, the structure is a little more than 5.5ft. above the floor, allowing easy viewing of both the plasma screens and others seated at the table. When retracted, the video array is 8ft. above the floor, allowing full line of sight around the room. For serviceability, the structure can be lowered to just 3ft. above the floor.

The Panasonic plasmas, capable of 1080p resolution, accept a variety of input sources — including videoconferencing cameras; DVD, VCR, and Blu-ray players; and computer-based sources. “Flexibility is a key requirement in the room,” says CCS System Designer John Steineke. “Meetings might involve audio-conferencing only, full videoconferencing, or just local PowerPoint presentations. Our job was to make all those presentation modes equally easy to operate.”



On the conference table, a DT770 Sympodium by Smart Technologies provides an interactive presentation medium for the room. The Sympodium is connected wirelessly to a dedicated PC secreted in the equipment closet, and it features a 17in. touchscreen, allowing annotation of presentations. In addition, a pair of Smart AirLiner tablets can interact wirelessly with the room's presentation system, allowing other attendees to provide direct input. Presentations can then be annotated in realtime and saved to most MS Office applications, thanks to Ink Aware software from Smart Technologies. Keyboard input is available via a Gyration wireless keyboard-and-mouse suite.

For PC input from other participants, 16 Altinex TNP500 Tilt 'N Plug custom laptop interfaces are spaced around the table. When not in use, these pop-up panels lie flush with the tabletop. With a gentle push of a finger, however, the panels rise to expose full laptop connectivity, including RJ-45, 1-15HD, a stereo mini plug, and AC power. A Show Me button allows the user to send the signal from the laptop into the video system on command.

A Revolabs Solo Executive wireless-microphone system provides 16 channels of audio. A sleek, compact wireless boundary microphone is placed between every other seating position, ensuring full pickup of every attendee. "When SGA told us there could be no wired mics on the table, I immediately thought of Revolabs," Steineke says.

Four channels of Shure ULX-P wireless are available to accommodate mobile presenters. "I've always been a big fan of Shure wireless," Steineke says. "They sound great, they're very reliable, and they have the frequency agility you need."

Sound reinforcement is similarly low-key and effective, with a dozen Tannoy CMS801 full-range, 70V loudspeakers secreted in the ceiling outside the central soffit, directly above the chairs. To maintain the room's clean look, the loudspeakers are flush mounted, with acoustic fabric panels that blend in with the ceiling.

## **COMMAND AND CONTROL**

Of course, making it all work requires some infrastructure. For command and control of all systems, an AMX system was specified, with an NI-4100 NetLinx integrated controller. Programmed by Rod Andrewson of CCS, the AMX system handles all aspects of the boardroom environment — including audio, video, conferencing, computers, lighting, and shades.

The primary room-control interface is an AMX Modero NXT-1500 VG, a 15in. touchpanel, augmented by a pair of 8.4in. Modero MVP-8400 units for auxiliary control. All touchpanels use wireless links to communicate with the NI-4100 controller, which is located out of sight in the equipment room. "The touchpanel is extremely easy to use," Andrewson says. "It's tailored to a format we've used in a lot of boardrooms, so we know it will be very intuitive."



*Revolabs boundary mics and Altinex TNP500 Tilt 'N Plug custom pop-up laptop interfaces make for a sleek conferencing space.*

With SGA's company culture that embraces communication and collaboration, the War Room's conferencing facilities are the key to success. The system design accommodates multiple modes of operation: local video, local audio, audio-conferencing, and videoconferencing.

On the audio side, all inputs are routed among four ClearOne XAP 800 audio-conferencing mixers. "If it's an audio-only conference, it all runs through the ClearOne system," Steineke says. "The XAP 800 is a robust system, with powerful DSP. Echo cancellation, automatic gain control, gating, you name it. The ClearOne gives you a broad range of possibilities, which is great for situations where customer requirements grow or shift."

Four XAP 800 units support 25 micro-phone inputs, plus the various line inputs from video sources. The audio output is then routed to a ClearOne TH2 telephone interface, providing digital connectivity to the system's analog phone line.

When video comes into play, things get much more exciting. "It's not just talking heads anymore," Steineke says. "It's people and content." So the system specification included video coverage for the conference participants, plus the ability to transmit PC-based presentations. To add a collaborative element, the Symposium allows live annotation of presentations.

The core videoconferencing system is the Tandberg 6000 MXP, with the WAVE cameras beneath the plasmas serving as primary inputs to the system's codec. The codec includes both Tandberg's Multisite and Natural Presenter packages, allowing a choice of live-camera, PC presentation, or other video sources (DVD, cable television) to be used during a videoconference linking up to six locations. The audio output from the ClearOne system is routed to the Tandberg video system, which then marries the audio to the video for remote transmission via ISDN lines.

Another important capability of the videoconferencing system is camera selection. This is managed via audio gating of the video cameras hanging beneath the plasma screens. Five Astatic 202R boundary microphones — one cleverly hidden in the fascia beneath each plasma — trigger the system. That audio is then routed via the ClearOne XAP 800, which uses gating to track the conversation and identify the dominant presenter. This information is passed to the Tandberg codec, which activates the appropriate camera.

With so many systems in place, running in so many modes, the key to a smooth-running conferencing room is a robust, flexible switching system. For this task, CCS specified an Altinex matrix switcher, the MultiTasker. "It's really the infrastructure that allows the overall system design to work seamlessly," Steineke says.

The MultiTasker is made up of three 20-slot chassis occupying 12RU of space.

The switching system includes a 32x16 RGBHV and stereo-audio matrix, plus a 16x16 video with stereo audio matrix — all controlled by a single connection to the control system. It currently accommodates 28 laptop and other RGBHV sources, plus 10 video sources — including cameras and videoconferencing inputs that are being managed by the switch and sent to the five Panasonic plasmas, the Smart Sympodium, the AMX touchpanel, and the Tandberg videoconferencing system. This leaves a number of spare inputs and outputs for planned expansion.

On the input side, the matrix switcher receives signals from the five Tandberg WAVE conferencing cameras, the room's dedicated computer, and up to 16 laptops around the table. Conventional inputs from cable TV, a DVD/VCR combo player, and a Blu-ray player are also accommodated. Additionally, audio from the ClearOne is married to the video at the matrix switcher, ensuring proper sync.

Everything comes together in the equipment room, where a pair of 44-space Middle Atlantic Products equipment racks house the bulk of the gear. One rack contains the wireless receivers for the Revolabs and Shure systems, the AMX NetLinx controller, the ClearOne conferencing system, and Tandberg video-conferencing system. The other houses the Altinex matrix switcher, a QSC CX204V power amp for the Tannoy sound-reinforcement loudspeakers, and ancillary equipment.

For equipment requiring direct access during meetings, there's a discreet cabinet within the War Room. This holds the computer dedicated to the Sympodium; playback units for DVD, VCR, and Blu-ray; charging stations for the Revolabs microphones; a cable TV box; and cables to connect laptops to the pop-up stations at the conference table.

Asked about the biggest challenges of this project, CCS Project Manager Kelly focused on the physical aspects. "It seems like a small thing," he says, "but aligning the conference table with all the cabling running in and out of the room — that was a challenge."

To create invisible connectivity with all the cabling running to and from the control room required two core-drill locations. These had to be perfectly aligned with the table's support structure. A hidden raceway system on the underside of the table contains all audio, video, Ethernet, and control cables, routing them to the conduit running beneath the floor. Working directly with the millwork company that fabricated the table and the building's electrical contractor, CCS used multiple field verifications to ensure that SGA would receive the seamless appearance and advanced functionality it required. "It takes a team approach to get details like this exactly right," Kelly says. "You can't just rely on shop drawings."

It's that hands-on approach that ensured a successful installation. Although the visual center of the room is clearly the pentagonal Panasonic plasma display, CCS takes even greater pride in its ability to integrate high technology with minimal visual and operational impact.

"When you look at all the equipment in there, it sounds pretty complex," Kelly says. "But what really makes a conferencing system like this effective is making the whole room intuitive and easy to use, now and in the future." Thus, although the videoconferencing system is standard definition today, it is designed for easy upgrade in the future. And while the room uses single-image teleconferencing today, the Panasonic plasmas have the capability of displaying two independent video sources in the future. Similarly, the ClearOne system and matrix switcher can accept additional inputs if needed.



Designing the SGA Corporate Center proved to be a collaborative process for CCS, which fits right into the company's culture. "CCS provided many opportunities in design development based on our input," says Rich Wilson, project manager for SGA. "They would regularly provide us with working displays of the particular electronic media we were thinking of. From those meetings, we could really tune into our true wants and needs. And they worked alongside our other contractors to ensure the end result was what we were looking for."

That moment arrived on Feb. 20, 2008, when SGA held its first meeting in the new room. "With experience from our old headquarters in Seattle, we definitely came in with high expectations," Wilson says. "And I must say, the operation of this room easily surpassed that. The room performed wonderfully, providing a successful meeting environment. And that's what it's all about."

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