A "floating in air" ground-floor auditorium complete with two control room operators for presentations and a large 4x4 videowall are prominent features of the AV install within the School of International and Public Affairs (SIPA) at Florida International University (FIU) in Miami FL. We highlight this and other advanced AV equipped rooms within the SIPA building.

First some background: FIU is Miami-Dade County's first public fouryear university. Opened for classes in 1972, it now has more than 42,000 students, more than 1000 fulltime faculty and more than 100,000 alumni. It ranks as one of the 25 largest universities in the nation. FIU's School of International and Public Affairs was established in 2009 to bring sharper focus to the university's highly regarded programs in politics, international relations, geography, public administration, and sociology and anthropology.

The new SIPA building garnered an AIA (American Institute of Architects) merit award for the cantilevered design of its largest auditorium, which gives the appearance that it is floating. The building's unusual design will be alluded to throughout our coverage, as well. In addition, it was the first certified LEED building on campus.

Credits

Suffolk Construction's Miami-Dade business unit was the general contractor for SIPA, and Arquitectonica in Miami was the architect. On the AV side, Scott McLain, director of Florida operations at Waveguide Consulting (www.waveguide.com) in Tampa, provided the design; AVI-SPL (www.avispl. com), Miami, was the integrator. The install team members include Project Manager Dan Fitzgerald, Senior AV Sales Engineer Zoran Visnjic and Lead Technician Ranko Arsic. (Sound and Communications thanks Public Relations Specialist Krystle Czajkowksi for helping coordinate elements for this

Sound & Communications Contributing Editor Jim Stokes has been involved in the AV industry as an AV technician and writer for more than 30 years. report under a very short deadline.)

We spoke with Visnjic and Sales Manager Alex Porter at AVI-SPL's south Florida office. On the client side, Bob Werner, chief engineer in media equipment and technology at FIU, gave us his perspective.

"Because it was a consultant-based project, the reporting facet was very important," said Porter. "Our Project Manager Dan Fitzgerald did an excellent job of keeping up with the many nuances. Many times you can get into trouble because people's expectations are challenged because they're not getting communication."

FIU's Werner pointed out, "I do a lot

of the designs myself. When it got to a large building like SIPA, we brought in Waveguide from time to time. So my participation on the building was in the form of attending meetings and giving input to Waveguide's Scott McLain for the design. I also approved the design."

"Zoran [Visnjic] has a very long standing and close relationship with Bob [Werner]. They've collaborated and done a great deal of devising of the technology. But it's very important to state that Waveguide is the designer and consultant on this job."

In an overview, Visnjic explained that the 10-story SIPA building itself was far from ordinary because it had many

SHARPER FOCUS AT FIU'S SIPA

AVI-SPL integrates AV in large educational facility. **BY JIM STOKES** sharp-angled walls and surfaces. "By the time our installer and engineers came to integration, the building infrastructure was already in place. I wanted to make sure that all the floor boxes were in the right spot and all conduits were the right size, working with Suffolk, the general contractor."

Another Challenge

Another challenge involved the walls inherent within the unique building design. "There's no straight wall in that building. Windows get smaller the higher you go. So the highest floors have the smallest windows. Within the rooms, no two walls are perpendicular, which was challenging, I'm sure, for the architect. But once the infrastructure was in place, we calculated all that in before the actual installation took place."

The scope of work called for the integration of a very large "floating in the air" auditorium, a 4x4 videowall comprised of large-screen Samsung displays, two large distance learning Interactive classrooms, one medium and three small multimedia classrooms and two conference rooms with Polycom high-definition capabilities. Most of the rooms have a multimode fiber communication between them via Gefen baluns that allow full two-way



audio and video overflow of the presentations. The entire building control and lighting systems were awarded to Crestron Electronics. Thus, all AV is Crestron touchpanel accessed.

Large Auditorium

The large, 500-seat ground floor auditorium has four Panasonic HD PTZ cameras: two in front facing the audience and two in back facing the stage. There's a 27-foot-diagonal, 16:10 format, Stewart Filmscreen screen with an acoustically transparent projection fabric that covers the JBL theater speakers.

Speaker and projector alignment presented some challenges. Regarding aiming the speakers, the integrator asked the contractor to build a concrete pad behind the screen. "So the speakers are not mounted," Visnjic related. "They are sitting on a concrete pad. If you remove the screen, you'd find an entire room behind it with speakers and wireless antennas mounted there. Aiming speakers was something we did at the very end of the project when we were acoustically calibrating the room. The speakers had a very tight coverage pattern. We had to make sure they were firing so each seat is properly covered in the auditorium without any gaps."

He continued, "High-definition Fuji lenses were mounted on the back of auditorium Panasonic cameras. We had to modify the pan, tilt heads to accommodate the larger lens," said Visnjic. The cameras have the ability to bring the image closer to the viewer and thus enhance the presentation. Varying the camera view from wide shot to close up makes the presentation compelling, thanks to operators in the control/production booth.

"The back wall cameras are some 80 feet from the podium," said Werner. "One long-range camera doesn't have a remote control function, so we leave it on a wider shot." However, a zoom on a camera can provide a favorable option. "You can zoom in and do a head and shoulder shot of someone on the podium," Werner continued. "Be-

Florida International University opened the doors to its new 58,400-square-foot School of International and Public Affairs building in January. cause the screen is quite a bit above the podium at the front of the room, you can see the presenter's facial expressions from anywhere in the room."

The stage has multiple connections for various placements of the custom wood multimedia interactive lectern, as well as numerous microphone and line level inputs and outputs that have a direct connection to the Middle Atlantic equipment racks located partially in the closet behind the screen. Additional equipment racks are located within the control room that's situated in back of the auditorium.

In front of the lectern, there's a Vaddio floor mat that allows for the automated operation of PTZ cameras once the presenter steps on it. While presenting, a Hitachi Interactive LCD display allows for complete annotation and capturing of the lecture. During the HD Polycom video or audio conferencing and distant learning sessions, a 37-inch Samsung confidence monitor mounted onto the low-rise Chief cart is used for



This multimedia classroom serves as an overflow space when the auditorium reaches full capacity. With the technology implemented, students are able to hear and view the presentation live.

the presenter's convenient viewing of the far end. Presenters use Shure wireless and all sound transmission is handled by Shure equipment, with assistive listening capabilities carried by Williams Sound components. Full control of all of the components is achieved via a 12-inch Crestron touchscreen, swivel mounted on top of the lectern.

From outside the building, the auditorium and control room area is seemingly floating in space. The con-

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trol room housed inside is located at the very tip of the cantilevered space. "It's located at the top east end in the building where it's probably 15 feet off the ground, outside," said Werner. "Its structure is built almost like a bridge. It's obviously very stable. Our projec-

FIU's Werner Views AV Conferencing

Florida International University, including its new School of International and Public Affairs, is currently set up mainly for IP videoconferencing. "We have a Polycom bridge that gives us access here on campus," said Bob Werner, chief engineer in media equipment and technology. "We don't have an ISDN line attached, although we have a module for it. Eastern Europe is still big on ISDN. We haven't had a call for that, so we haven't actually had the lines installed. If we do, we'll proceed in that direction and tie the bridge in. All of our conferencing right now, and in the last few years, has been Polycom high-definition using the HDX codec. So, on campus, from place to place, they normally go 720p. And they get a nice clean signal."

Although conferencing has been used on the main campus between buildings, Werner noted that students have a choice of taking part in classes on other FIU campuses via distance learning. "For instance, the Biscayne Bay campus in North Miami is about 34 miles from here. Students who don't want to drive all that way to the main campus can participate via Polycom. We have a lot of graduate students who do that because it's kind of a burden to get through traffic, get here and park. On this campus we have 46,000 students, so parking is a real challenge."

There is, indeed, an international connection at FIU. "From what I understand, our hospitality management school is getting ready to start having asynchronous classes via teleconferencing between the FIU campus and its sister facility, Tianjin Center, located in the People's Republic of China," said Werner. "China graduates more students than our campus here does." Specifically, FIU has a branch of its School of Hospitality and Tourism Management over there, which was constructed as a cooperative venture with the local municipal government and Tianjin University of Commerce (TUC). tors are up there, and we don't feel any movement."

"It's not just a lecture, it's also a production": As to what happens in the control room, the auditorium lectures and presentations regularly require two operators manning the AV. Part of it is attributed to the international aspect of the new building. Within the booth are four translation booths that allow for simultaneous translation and direct broadcast in multilingual formats via a Williams Sound system. Each booth is equipped with its own monitor and microphone with headset. Yamaha DSP equipment in conjunction with a Yamaha 96-channel digital mixing console provide audio control. Crown amplifiers drive the JBLs in the control room and in the auditorium.

A large Marco Consoles console located inside the control room houses a 12-inch Crestron touchscreen, a Panasonic video switcher and a Panasonic PTZ camera controller along with a Denon Blu-ray player and Samsung multi-



Equipment

VIDEOWALL

- 1 APC SUA1500RM2U 1500VA 120V UPS
- 16 Chief LSMU + FCK016 FUSION fixed wall mounts (w/FUSION 16" connector kit)
- 1 Crown CTs 1200 2-channel audio amp
- 1 Extron DVI DA4 PLUS, 1:4 DVI distribution amp
- 1 Gefen EXT-DVI-FM500 DVI fiberoptic extender transmitter
- 2 JBL CBT 100LA line array column speakers
- 1 Kramer FC-50 UTP RS232 receiver
- 1 Kramer FC-50 UTP RS232 transmitter
- 1 Kramer VP-728 seamless switch (HDMI, HDCP compliant)
- 16 Samsung LH46MRPLBF/ZA 460UX-2 LCD flatscreens (46", 1920x1080, videowall, 24/7)
- 1 TV One 1T-C2-511 HD/SD-SDI to DVI/RGBHV/YPBPR format converter
- 1 Yamaha DME4io C 4x4 I/O CobraNet satellite processor

AUDITORIUM 125

- 1 AJA FS1 HD/SD frame sync/cross converter
- 4 APC SUA1500RM2U 1500VA 120V UPS
- 1 Blonder Tongue OCA-8B active antenna combiner
- 2 Canon YJ 20x8.5B KTS pro video lenses
- 1 Chief MFQ6000S + MSB6241 mobile flat-panel display cart w/display mount (LN37B550)
- 1 Chief PRO2000U flat panel tilt mount
- 4 Comprotec 200-F sonic shock plasma, flat-panel display anti-theft devices
- 2 Crestron C2COM-3 3-Com port control cards
- 1 Crestron C2ENET-1 Ethernet control card
- 2 Crestron C2ENET-2 dual Ethernet control card
- 1 Crestron CNX-B8 8-button wall-mounted button panel
- 3 Crestron PRO2 control system processor
- 1 Crestron SMK-12 swivel mount for 12" touchpanel
- 1 Crestron ST-PC dual power control module w/rackmount
- 2 Crestron TPS-12G-QM 12" QuickMedia tilt touchpanels
- 1 Crown CTs 1200 2-channel audio amp
- 1 Crown CTs 3000 2-channel audio amp
- 1 Crown CTs 600 2-channel audio amp
- 2 Denon DN-V500BD Blu-ray DVD players
- 2 Extron DA2 RGBHV, 1:2 RGBHV distribution amps
- 1 Extron DA4 RGBHV, 1:4 RGBHV distribution amp
- 1 Extron DVI DA4 PLUS, 1:4 DVI distribution amp
- 1 Extron MDA 3A, 1:3 stereo audio distribution amp
- 1 Extron MDA 5V, 1:5 video distribution amp
- 1 Extron MSW 4V rs, 4x1 composite video switcher
- 1 Extron rackmount for MSW 4V RS, DVI DA4
- 1 Extron RGB 192V, computer interface
- 1 Extron universal rack shelf for Dual DVI DA2
- 7 Gefen EXT-DVI-FM500 DVI fiberoptic extender transmitters
- 1 Graham-Patten VRG-1 and PSU-1 word clock generator, power supply
- 1 Hitachi StarBoard T-19WX LCD monitor w/integrated digitizer
- 1 HP J9279A#ABA/J4858C Procurve switch 2510G-24 W/GIG mini-GBIC SX-LC
- 2 JBL LSR2325P 5 bi-amplified powered studio monitors
- 2 JBL LSR2325P 5 bi-amplified powered studio monitors
- 2 JBL PD5322/64 high-output 3-way speakers
- 1 Kramer FC-50 UTP RS232 receiver

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- 1 Kramer FC-50 UTP RS232 transmitter
- 1 Kramer TP-45 component video UTP transmitter
- 1 Kramer TP-46 component video UTP receiver

- 2 Kramer VM-2HDCPxI 1:2 DVI distribution amps
- 3 Kramer VP-728 HDMI, HDCP compliant seamless switches
- 2 Kramer VS-66HDCP 6x6 HDCP compliant DVI routers
- 1 Marco Consoles VC3724-04 AV control console
- 1 Middle Atlantic 5-29-26 29RU portable equipment rack w/accessories
- 2 Middle Atlantic WRK-44-32 44RU gangable equipment rack enclosures
- 1 Panasonic AV-HS04M4 YPbPr (x2) output card for AV-HS400
- Panasonic AV-HS400 multi-format digital production switcher (4 option slots)
- 2 Panasonic AW-HE100 3-CCD PTZ cameras
- 2 Panasonic AW-HE870 2/3" 3-CCD HD convertible cameras
- 2 Panasonic AW-HHD100 HD/SD-SDI cards for AW-HE100 PTZ camera
- 2 Panasonic AW-HHD870 HD-SDI card for AW-HE870 HD convertible cameras
- 2 Panasonic AW-PH360 camera pan/tilt heads
- 1 Panasonic AW-RP400 camera controller
- 2 Panasonic ET-D75LE3 2.8 to 4.6:1 lenses for PT-DZ12000U projector
- Panasonic PT-DZ12000U DLP projectors (1920x1200, 12k lumens, 3-chip)
- 1 Polycom C12 12x12 DSP w/per-channel echo cancelation
- 1 Polycom HDX 9004 HD codec
- Premier Mounts PCS-5000 stackable staging cage for Panasonic PT-DZ12000U
- 1 Quicktron/Cables To Go RS1-QTR (1)/AP3-QTR-QL (2)fiber patch bay frame w/modules
- 1 RDL FP-UBC2 2-channel unbalanced to balanced audio transformer
- 2 RDL PS-24SA power supplies
- RDL STA-1 balanced to unbalanced audio transformer
- 1 RGB Spectrum RGB 250-2/0 window processor
- Sabine SWA6SS-U-M1 antenna distribution system
- 3 Samsung LN32B550 32"1920x1080 LCD flat-panel displays
- 3 Samsung LN37B550 37" 1920x1080 LCD flat-panel displays
- 1 Samsung UF-130DX document camera w/embedded computer
- 1 Shure MX418D/C cardioid gooseneck condenser mic
- 2 Shure UA830WB in-line antenna amps
- 3 Shure ULXS14/83 ULX standard wireless lavaliere systems
- 3 Shure ULXS24/BETA58 ULX standard wireless handheld systems 1 Stewart Filmscreen ATM2M317DUM13C auditorium
- projection screen
- 3 SurgeX SX2120 SEQ surge protector w/power conditioning, sequencing
- 1 TV One 1T-C2-511 HD/SD-SDI to DVI/RGBHV/YPBPR format converter
- 2 TV One 1T-PCDVI-PCDVI DVI scalers
- 1 TV One C2-2350A video scaler cross-converter
- 1 TV One S2-106AD stereo audio switcher
- 1 Vaddio 999-1512-000 StepVIEW mat exposed-large mat
- 1 Williams Sound ANT 024 ALS remote dipole antenna
- 7 Williams Sound IC-2 audio control center interpretation consoles

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- 7 Williams Sound MIC 079 dual muff headsets, mic
- 48 Williams Sound PPA R35-8N 8-channel WB 3V receivers w/belt clip
- 8 Williams Sound PPA T35 ALS RF transmitters w/rack kit, power supply
- 3 Yamaha AD8HR AD converters w/remote preamp
- 1 Yamaha DME64N digital mixing engine

viewer display. All of the video signal distribution and amplification is handled by Extron equipment, while signal scaling and up, down and cross conversion tasks are provided by TV One.

Backup Projector

Located above the control console are two Panasonic HD projectors (12,000 lumens each) with long throw lenses in double-stack formation. The projectors are suspended from the ceiling via Premier heavy duty dual projector mounts. Werner declared, "We were not able to accurately overlay the two projectors enough for high-definition, so we use one for backup. In the Crestron system, you can switch over to the other unit. During a presentation, you can leave the lamps on in both projectors, so there would be no warm up time for the switchover."

So far, we've detailed the equipment. Here's a glimpse into the two-person control room operation during a presentation. "One set of hands is manning the Yamaha board, which is capable of controlling stage mics and all kinds of sources from the presenter's lectern, as well as sources outside the auditorium," said Visnjic. "There's audio monitoring, recording, broadcast and streaming, if they choose to do so. If they have four cameras and 96 channels of audio, one person simply can't cut it. So, another set of hands is constantly on the cameras, and monitoring and operating the switcher." Werner added that FIU's broadcast group has been tasked to go into the auditorium control room and patch in for a high-definition recording of guest speakers.

Video Display

In front of the auditorium by the entrance, there's the largest videowall on campus, comprised of 16 Samsung commercial-grade displays in a 4x4 formation. The system allows for a single image stretching, as well as multiple image combinations, across all 16 displays. The feed to the videowall comes from the control room. Any video or audio source being used inside the auditorium can be broadcast on the vidOutside the auditorium, students and staff can lounge in the lobby space while viewing the live feed of the presentation on the giant video wall comprised of 16 50-inch displays.







The building's two-story auditorium cantilevers 40 feet outward and 17 feet off the ground. With seating capacity for 484, the auditorium is the largest space of its kind on campus.

eowall as well, including the live feed from all of the HD PTZ cameras.

Videowall speakers are hidden behind the custom millwork and stretched fabric cloth frame that allows adequate cooling of the displays while delivering the eye-catching visual effect of floating on the 10 degree angled wall. However, if it *looks* tricky, you can bet there's a big trick to the install. Such was the case here. According to Visnjic, the slanted angle presented a mounting challenge: "The less expensive mount specified really doesn't allow displays to be pulled to any given point easily. We tried to convince the university to go with more sophisticated mounts, but that was turned down for cost reasons."

Aside from that, he asserted that the videowall is most impressive. "We're able to control this videowall with a single RS232 feed. The displays were comprised of Samsung 520DX 52-inch LCD suspended workhorses. The vid-

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- 2 Yamaha MY16AE digital I/O cards
- 1 Yamaha MY16-CII digital I/O card
- 1 Yamaha MY16-CII digital I/O card
- 1 Yamaha MY8ADDA96 digital I/O card
- 1 Yamaha 01V96-V2 digital audio mixing console
- 1 Yamaha SP2060 digital speaker processor AFL LC Connectors, single mode fiber Belden cables
 - Cables To Go cables
 - Comprehensive cables
 - Kramer cables
 - Liberty AV DVI lectern plates floor box plates pass through wall plates
 - Polycom cables

CLASSROOMS 100, 103

- 4 APC SUA1500RM2U 1500VA 120V UPS
- 2 Chief PRO2000U flat panel tilt mounts
- 2 Comprotec 100-F projector anti-theft devices
- 2 Comprotec 200-F flat panel display anti-theft devices
- 2 Crestron C2COM-3 3-com port control cards
- 2 Crestron C2ENET-1 Ethernet control cards
- 2 Crestron C2ENET-2 dual Ethernet control cards
- 4 Crestron PRO2 control system processors
- 2 Crestron SMK-12 swivel mounts for 12" touchpanel
- 2 Crestron ST-PC dual power control modules w/ rack mount
- 2 Crestron TPS-12G-QM 12" QuickMedia tilt touchpanels
- 2 Crown CTs 4200 4-channel audio amps
- 2 Crown CTs 600 2-channel audio amps
- 2 Denon DN-V500BD Blu-ray players
- 4 Extron DA2 RGBHV, 1:2 RGBHV distribution amps
- 2 Extron DVI DA2, 1:2 DVI distribution amps

- 8 Gefen DVI fiberoptic extender transmitters
 2 Hitachi StarBoard T-19WX LCD monitors with integrated digitizer
 4 Kramer FC-50 UTP RS232 receivers
 4 Kramer FC-50 UTP RS232 transmitters
- 4 Kramer VP-728 HDMI, HDCP compliant seamless switches
- 2 Kramer VS-66HDCP 6x6 HDCP compliant DVI routers
- 2 Middle Atlentic MDK 44 22 44DU generable equipme
- 2 Middle Atlantic WRK-44-32 44RU gangable equipment rack enclosures
- 2 Panasonic PT-DZ6700U 1920x1200, 6k lumens DLP projectors
- 2 Polycom C12 12x12 DSPs w/per-channel echo cancelation
- 2 Polycom HDX 8002 XL codecs
- 2 Polycom primary HDX ceiling mics

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- 2 Polycom secondary HDX mics
- 2 RDL FP-UBC2 2-channel unbalanced to balanced audio transformers
- 2 Samsung LH52BPPLBC/ZA 52", 1920x1080 520DX LCD flat screens
- 2 Samsung UF-130DX document cameras w/embedded computer
- 2 Shure MX418D/C cardioid gooseneck condenser mics
- 2 Shure ULXS14/83 ULX standard wireless lavaliere systems
- 2 SurgeX SX2120 SEQ surge protectors w/power conditioning
- 22 Tannoy CVS4 ceiling speakers
- 4 Tannoy IW6 TDC full-bandwidth in-wall speakers
- 2 TV One 1T-PCDVI-PCDVI DVI scalers
- 2 Vaddio StepVIEW Mat exposed-large
- 4 Vaddio WallView HD-18 cameras w/quick-connect SR
- 2 Williams ANT 024 ALS remote dipole antennas
- 8 Williams PPA R35 single-channel ALS receivers (includes EAR-013)
- 2 Williams PPA T35 ALS RF transmitters w/rack kit, power supply
- 1 Yamaha DME4io C 4x4 I/O CobraNet satellite processor
- List is edited from information supplied by AVI-SPL.

eowall is basically sitting in the cavity that was built for it, so it looks like it's levitating within that wall. Surrounding the wall is high-quality, high-priced exotic wood."

As for the other components that make the videowall happen, power conditioning, rack sequencing and surge protection are secured by SurgeX gear. Kramer baluns assure reliable delivery of the long distance audio and video signals via Cat6 shielded cable.

Other AV Equipped Rooms

Next door to the ground floor auditorium are two large, 100-seat classrooms, similarly equipped to the main auditorium. "You could call them 'mini' auditoriums, if you will," said Visnjic. "They both have PTZ cameras, high-definition projection and a mat in front of the lectern to operate the cameras. The only difference between these rooms and the large auditorium is that these rooms aren't manned by control room operators. The instructor is the one running

The faculty's fifth floor conference room features **HD** video and audio conferencing. with content sharing and multipoint capabilities along with local HD projection multimedia presentation.



the show. However, the rooms have full blown AV conferencing, distance learning and the ability to annotate on the screen. There's a full two-way overflow linkage between these two classrooms and the main auditorium, so students can participate via videoconferencing through bridging." Videoconferencing extends onto the upper floors where there are three smaller classrooms, one medium classroom and one small conference room, and one large conference room. These areas are done in a similar manner, with similar equipment to the ground-floor auditorium.



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