

Party Pad Goes Professional with AV over IP

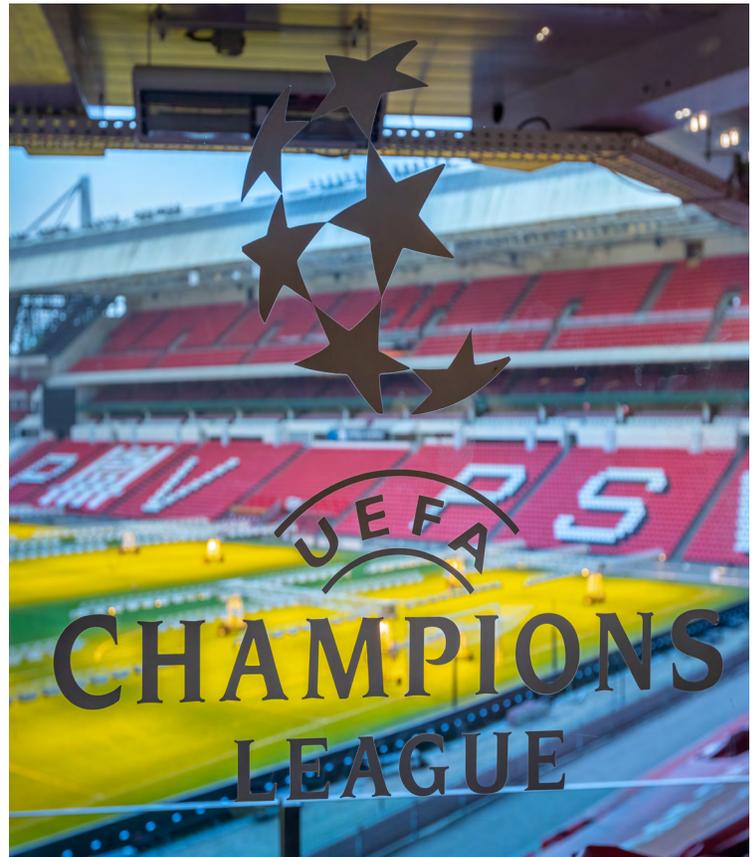


Inside the impressive conversion of an arena skybox into a multi-purpose meeting space

The Jan Heintze Kick Box in Philips Stadion, a modern sports and live events venue in Eindhoven, Netherlands, is a prime example of the re-imagining a space used solely for entertainment into a fully equipped presentation space. What was once solely a comfortable environment to take in a football (soccer) match, this luxury skybox has now been converted into a modern meeting space with dynamic AV and lighting technologies. The complete solution includes technologies from Atlona, Signify and PPDS, all supported by a robust Panduit Layer 1 network infrastructure.

Panduit isn't just a supplier in this case, they also have a direct relationship with the owner, Jan Heintze, a retired Dutch football player. The skybox is located on a private floor inside the 35,000-seat stadium. With live events on hold, Panduit executives saw an opportunity to create something unique to the venue: A meeting space that could be leveraged for their own business purposes and those of others in the region to meet and collaborate.

"This was really a networking space with very limited AV capabilities that we used to socialize and enjoy a match with colleagues, partners and customers," said Rob Sanders, Sr. Business Manager Benelux and DACH for Panduit, which holds four of the skybox's 22 seats. "We felt that this space was viable as a more professional business environment that could be useful for trainings, presentations and meetings. That led to the idea of building a collaborative environment that our partners and other regional businesses could



use. As Mr. Heintze was receptive to the idea, we took advantage of redesigning the space while events were on hold."

As the way people work and interact has changed in recent times, the concept included technologies that would support in-person and virtual attendees. That means incorporating wireless BYOD and casting technologies that would limit direct contact with AV equipment, and also ensure that remote attendees felt a part of the action.

Now completed, the skybox doubles as a corporate meeting space during the business week. "Many businesses no longer have office space, and this was built for companies that need a flexible space for a special event or collaborative meeting," said Sanders. "It's also now a viable source of income for the owner, as he can rent the space all week long. We have converted this from a cost center into a profit center for Mr. Heintze."

Infrastructure: Taking the Pitch

Representatives from Atlona, Panduit and "LiFi" specialist Signify all worked closely on a systems design

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to reimagine this space, with Panduit partner Intelectric handling most of the systems integration. While there are some legacy components in the mix – specifically, an Atlona Omega™ AT-OME-RX11 HDBaseT™ receiver to feed select video signals from a wireless switcher into a dual-channel networked encoder – AV over IP was the favored architecture to unify all components in the room.

As Sanders explains it, the limited AV infrastructure meant that the project wasn't so much a reimagination – it was an opportunity to start from scratch.

“There were some screens to watch the match, and some speakers for audio,” said Sanders. “The venue has a robust IT infrastructure and wireless network, but the few AV components in there were traditionally wired. There was no way to do videoconferencing for hybrid meetings. We wanted to bring the video and audio systems onto the network, and control and manage everything over IP!” While AV over IP would open the doors to these and other operational goals, there was no foundation for the technology beyond the venue's existing network. As luck would have it, beyond Panduit's relationship with the owner, the company just happens to be one of the industry's leading Layer 1 network infrastructure experts. “Layer 1 is the key foundation of a sound physical infrastructure that end users rely on for AV over IP systems, without really knowing it exists,” said Karel Verplaetsen, Technical Systems Engineer, Panduit.

Verplaetsen explains that the Panduit design for this space is more of a “classic network,” with concealed aggregation enclosures mounted inside a cupboard,

that bring together the patching and active equipment. The structured cabling is run from cupboard enclosures to all in-room devices. A Cisco SG3500X-48MP stackable network switch manages all network traffic. It is a multicast-capable switch with redundant 48-port configurations and PoE capabilities.

“AV over IP means bringing more applications onto the network, and that includes remote device powering,” said Verplaetsen. “With PoE and this switch, we can put 71 watts of power through the cables with redundancy.”

The cables Verplaetsen references are Panduit's Vari-MaTriX Cat6A copper cables, only four of which were required at the foundation. These cables carry signals up to 100 meters and are built with rugged HDPE (high-density polyethylene) insulation for high-performance in straight-line signal transport.

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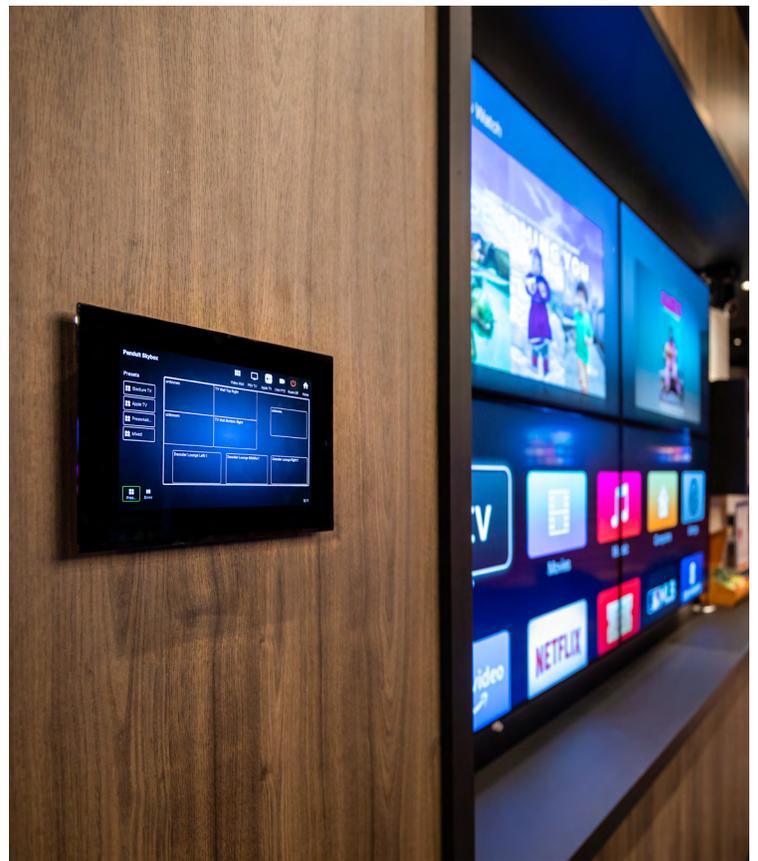
- Reto Spoerri, Senior Sales Engineer, Networked AV for Atlona

The cabling infrastructure adds 156 Panduit UTP28X1MBL Cat6A UTP patch cords for backbone aggregation of AV devices and parallel processing through the network infrastructure, with three flush-mounted CPP48HDWBLY Mini-Com high-density modular patch panels for cable management inside the cupboard. Panduit CJ6X88TGBL jack modules support reliable termination for each of the 156 patch cords; each jack is individually serialized for traceability to simplify Layer 1 maintenance.

Verplaetsen says that the VariMaTrix bring several advantages, including heat dissipation and interference management. "There are almost always concerns with crosstalk in AV over IP systems, which is caused by interference between cables," he said. "We developed the VariMaTrix series to solve those problems. There is foil around the cable to block interference from adjacent cables and equipment, plus there are random intervals of interruption to eliminate any interference that does seep in. The design characteristics also keep the entire system cooler, as the cables can breathe and efficiently disperse heat. The airflow is very important in the skybox since the core infrastructure is inside a cupboard. It can get very hot in there."

The latter point will be especially important for PoE+ and PoE++ capable systems in the future, which Verplaetsen says will carry up to 25.5 watts of power in PoE+ and 71 watts of power in PoE++. Higher wattages result in a temperature increase through the infrastructure, and the VariMaTrix series can withstand temperatures of about 10 degrees higher than a classic CAT6A system.

Panduit added 24 FPUD6X88MTG Field-Terminal RJ-45 plugs, which Verplaetsen says are ideal for connections to



AV equipment, lighting and network access points." The field terminable plug allows us to finish the cable with the plug based on a check module," he said. "It also means we don't need to use a consolidation point or a surface mount box along the path."

Panduit PZICEAE in-ceiling and PZAEWM3 wall-mount PanZone enclosures are installed where consolidation is needed. These are cross-connect points where much of the patching and network switching for the active equipment takes place. "Since everything is patched through this system, we never have to touch the network switch," said Verplaetsen. "We replicate the switchboards inside the cupboard, and we have a sound physical foundation for the AV equipment."

End-to-End System

The AV design inside the room is architecturally friendly to create a pleasing atmosphere, and most of the gear is rarely touched. As is typical, the core processing and distribution gear remains out of sight, racked inside storage cupboards.

Other products, like the Atlona AT-HDVS-CAM PTZ camera, an Atlona Velocity™ control panel, and PPDS displays add to the collaborative experience inside the room. A total

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of eight Q-Line and P-Line displays ranging from 23 to 50 inches are positioned around the room, including two 2x2 video walls.

Atlona's OmniStream™ AV over IP system provides the core video distribution over the network, and supports USB transport between the camera and Omega™ receiver. Three OmniStream AT-OMNI-112 dual-channel encoders carry signals from the Omega OME-RX11 receiver and an AT-UHD-SW-510W five-input presentation switcher over the network, with nine OmniStream AT-OMNI-121 single channel decoders that receive and process the signals for the PPDS displays.

All OmniStream signals, as well as Atlona Velocity control signals, pass through the Layer 1 infrastructure en route to the Cisco switch. While the switch was essential to the AV over IP operation, the skybox needed to separately leverage the venue's wireless network for another important purpose.

"One of the key developments around contactless AV is the ability to use your own device for meetings and presentations," said Verplaetsen. "We specified a solution that could accommodate wireless casting and otherwise stream AV content wirelessly without limits or challenges."

Reto Spoerri, Senior Sales Engineer, Networked AV for Atlona, said that the intersection of the Atlona / Panduit AV over IP ecosystem and the internet access provided by the stadium is what makes the overall system so powerful. OmniStream and Velocity live on the VLAN dedicated to the meeting space, while the SW-510W has a presence on the VLAN and the stadium Wi-Fi network.

"We needed a wireless access point in the room to support the wireless presentation capabilities that our SW-510W switcher provides," said Spoerri. "A presenter

can go straight to the media room table and share a presentation from their mobile device on the switcher, or connect their laptop to our OmniStream 111-WP wallplate encoder. The output goes direct to an OmniStream encoder, and the signal is on its way to display."

Spoerri notes that two video walls are positioned at the front of the meeting space, along with three displays to one side and one in the back area by the bar. "These other screens can replicate the content from the video walls, or show other content like a slideshow that supports the main presentation," he said, adding with humor that "of course, if the meeting happens to take place during an event, one can slip away to check the score on the back display."

Two NVIDIA Shield media players stream content such as corporate videos, photos and slideshows, while an Apple TV supports auxiliary streamed content from YouTube or OTT channels. A presenter can also connect to the AT-HDVS-CAM over USB – an OmniStream AT-OMNI-311 USB to IP Adapter is at the host side, with a corresponding OmniStream AT-OMNI-324 IP to USB adapter at the camera – and capture professional visualization for remote meeting attendees.

Spoerri emphasizes that the core benefit of OmniStream for businesses is its low-latency performance. "We implemented fast switching in this configuration, which is extremely important for the video walls given the varied layout scenarios," he said. "If we want to present four different visuals on a 2x2 video wall, we can seamlessly bring content from wireless devices, laptops, the Apple TV and the two media players if we want, and without any noticeable delay."

Controlling the Box

Integration partner Inteltronic opted to keep the existing ceiling speakers, but chose to add the Atlona AT-GAIN-120 networked amplifiers to power the 70-volt speaker system. To take advantage of the networked AV distribution, AT-GAIN-NET AES67 / Dante networked audio interface cards were optioned for the GAIN-120 amps.

“The amps take the streams straight off the network, which can come from any of the media players, a presenter’s mobile device, or even the stadium TV channel through the wireless access point,” said Spoerri. “We can then feed that audio to the house speakers, which are two large speakers that serve the meeting area; and four additional wall-mounted speakers in the bar and lounge area.”

Spoerri calls the audio routing “very simple,” hence the lack of a Dante networking architecture and a DSP. “The beauty about AV over IP is its scalability as a system,” he said. “If there is a greater desire to add ceiling and handheld microphones for presentations, a DSP can easily be added to the AV over IP network, and there is plenty of rack space available in the cupboard.”

Atlona’s Velocity™ IP-based AV control platform brings everything together, including a cutting-edge “LiFi” system from Signify. The Velocity configuration includes an AT-VGW-HW-3 control processor to and an 8-inch AT-VTP-00-BL touch panel for in-room control. The touch panel is wall-mounted next to the video wall and controls all room AV functions including on/off powering of all displays, video wall presets and audio settings.

“The goal was to provide a simple interface that requires no explanation whatsoever for the user,” said Spoerri. “If you switch on the room system, Velocity takes you directly

to the preset screen. If the audio is too loud, the user can see exactly where to change the levels for different speaker zones. Much like the wireless BYOD switcher, we want people who rent the room to be able to walk right in and use the system.”

The Signify LiFi system represents a final yet highly important networked element in the room. LiFi – Light Fidelity – is essentially analogous to Wi-Fi but with lighting. These systems bring data through the lights, upstream and downstream.

This is normally achieved through radio waves,” explained Verplaetsen. “The challenge with radio waves is people in the next room over can tap into the system if they so desired. With LiFi, the user needs to be directly under the light beam to get the network connection. It’s a secure system that is very difficult to get onto the network unless you are in the room, and the speeds are about 100 times faster than traditional Wi-Fi. It’s an important component for virtual attendees as well.”

In the mean time Axis cameras were added to the network, which also hook into the AV over IP and control systems. Spoerri also expects to unlock the power of Velocity’s analytics to provide important feedback on system usage.

“If we want to provide information on what systems are being used and what aren’t, Velocity can capture all of that information,” said Spoerri. “It offers excellent guidance should the owner want to add or replace systems. And since we are leveraging AV over IP, we can add and replace systems as required. There is a lot of opportunity for AV even within this single space.”



SELECT FEATURED PRODUCTS

MODEL	DESCRIPTION	
<u>AT-OME-SW-510</u>	The Atlona AT-UHD-SW-510W is a 5x2, multi-format matrix switcher with wireless presentation capability. It provides universal BYOD (bring your own device) compatibility with HDMI, DisplayPort, and USB-C® inputs, plus wireless connectivity for mobile devices.	
<u>AT-OME-RX11</u>	The Atlona AT-OME-RX11 is an HDBaseT receiver for video up to 4K/60 4:2:2, plus embedded audio, control, and Ethernet over distances up to 330 feet (100 meters).	
<u>AT-VTPG-1000VL</u>	The Atlona AT-VTPG-1000VL is a Velocity™ 10" touch panel with integrated Velocity gateway. This all-in-one touch panel solution simplifies configuration and deployment for installations that only require control of a single room or AV system.	
<u>AT-HDVS-CAM</u>	The Atlona AT-HDVS-CAM is an enterprise-grade PTZ camera designed for use in video conferencing and other applications such as lecture capture and distance learning. The HDVS-CAM delivers high performance, professional-quality imaging with video resolutions up to 1080p @ 30 Hz, as well as fast and accurate auto-focusing, and a fast yet quiet pan and tilt mechanism.	
<u>AT-OMNI-112</u>	The Atlona OmniStream™ 112 (AT-OMNI-112) is a networked AV encoder with two independent channels of encoding for two HDMI sources up to UHD @ 60 Hz and HDR (High Dynamic Range), plus embedded audio and RS-232 or IR control pass-through.	
<u>AT-OMNI-121</u>	The Atlona OmniStream™ 121 (AT-OMNI-121) is a single-channel networked AV decoder for HDMI / HDCP 2.2 output supporting resolutions up to UHD @ 60 Hz and HDR (High Dynamic Range), plus audio embedding and de-embedding, and RS-232 or IR control pass-through.	
<u>AT-OMNI-311</u>	The Atlona OmniStream™ 311 (AT-OMNI-311) works in tandem with the OmniStream 324 (AT-OMNI-324) for extending USB from peripheral devices to a PC over Gigabit Ethernet. The OmniStream 311 interfaces with a PC or other host device, while the OmniStream 324 features a four-port USB hub for peripherals.	

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MODEL	DESCRIPTION	
PUZAV04WH-EG	The TX6A™ Vari-MaTriX Cat 6A U/UTP LSZH copper cable is constructed of 23 AWG copper conductors with HDPE insulation. The copper conductors shall be twisted in pairs, separated by a cross divider. All four pairs shall be surrounded by a metallic Vari-MaTriX tape cut into segments of varying length and covered by a HDPE flame retardant (LSZH), White jacket. Packaged 1000 ft./305m on a reel.	
CJ6X88TGBL	The Mini-Com® Cat 6A UTP RJ45 TG Jack Module is designed to terminate 4-pair, 22-26 AWG twisted pair cable. Each module is 100% factory tested to exceed industry standard performance requirements. TG style termination eliminates the need for a termination tool. Each jack is individually serialized for traceability and is compatible with Mini-Com Modular Patch Panels and Faceplates. The jack module is black.	
CPP48HDWBLY	The Mini-Com® High Density Modular Patch Panel accepts up to 48 Mini-Com Modules for unshielded applications in 1 RU and mounts to 19 inch and 23 inch racks and cabinets. The panel is black.	
FPUD6X88MTG	Angled TX6A, Category 6A UTP Field Term RJ45 Plug	
PZICEAE	Standard PanZone® Active In-Ceiling Enclosure; Accepts up to 2 RU of active equipment and 6 RU of standard 19in patch panels, includes mounting brackets and integrated horizontal slack manager, AC power provisions and fan assembly.	
WME3BL	TheTrueEdge™ Vertical Wall Mount Enclosure provides a comprehensive architecture that allows up to 36" of active equipment depth to be mounted in a low-profile application. The TrueEdge™ has adjustable rails to allow for optimal configuration. This enclosure houses 3RU of passive equipment and 3RU active equipment. 9.5" Depth, 42" Height, Black	