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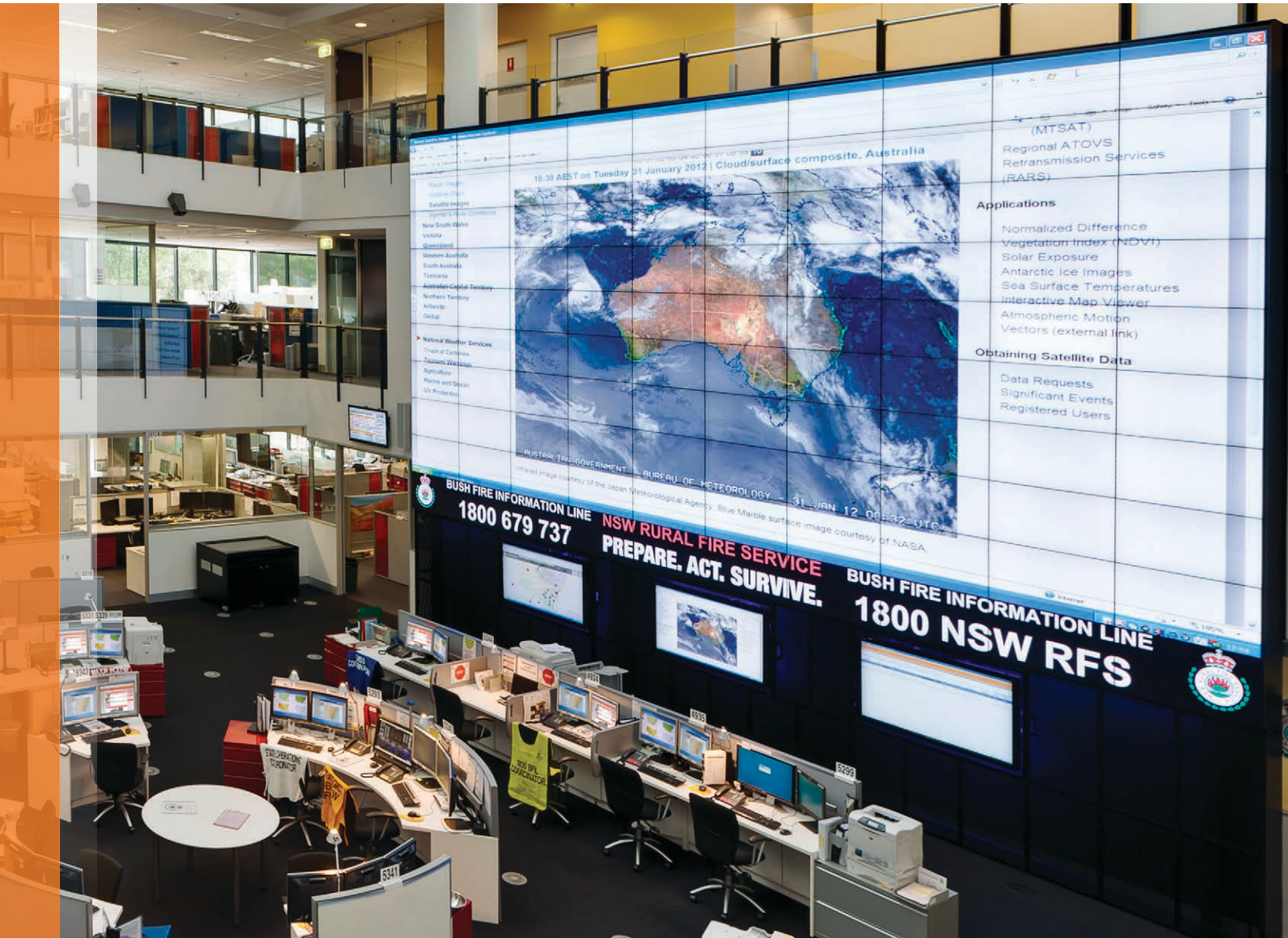

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Dan Ferrisi

All of us who are of a certain age—heck, even those of us who *aren't* of a certain age—are probably familiar with Stanley Kubrick's legendary film "2001: A Space Odyssey." Regardless of whether the abstract sci-fi mind-bender is your cup of tea, I'll bet you know about HAL—the shipboard artificial intelligence (AI) computer that says, "I'm sorry, Dave. I'm afraid I can't do that," when Dr. David Bowman commands HAL to "Open the pod bay doors." Fifty years after the film's release, we've entered a time when AI has increasingly become part of our lives, and when it might become part of our professional practices, as well.

Not everyone cheerleads this trend, and perhaps part of the reason involves memories of HAL—a creeping fear that, one day, AI will cease to bend to our commands and, instead, make decisions on its own. Such musings might seem unrealistic…even silly. But some people, such as the late Dr. Stephen Hawking, the most eminent physicist of our time, argue that AI has the potential not only to do tremendous good, but also to do great harm. Elon Musk's warnings about AI are even more dire. Trying to determine the probability of any ultimate outcome is well beyond the scope of *IT/AV Report,* but AI's place in our world—and in our industry—is a fascinating topic of conversation.

The most common example of AI in today's world centers on virtual assistants, namely Siri, Cortana, Alexa and Bixby, among others, in consumer devices. All of us are familiar with asking Siri to call a restaurant, text a friend or look up an address. In "Industry Outlook on Emerging Technologies," on page 8, Todd Thibodeaux states that familiarity with AI is reflected in a relatively high awareness among businesses. He cites research that forecasts that worldwide spending on cognitive and AI systems will grow to $52.2 billion by 2021. This invites the question of whether those who use commercial spaces might soon expect to open shades, dim lights, unfurl projection screens and start meetings by making a simple voice command—no need for buttons or any physical interface.

Sound & Communications and its properties, including *IT/AV Report,* take care to focus on the commercial space exclusively, eschewing discussions of categories such as "smart homes," which are outside the coverage area for which you, our readers, know us. However, technologies used in the home often encroach into our space as they become ubiquitous and as people acclimate themselves.

Will Alexa eventually come to oversee your meetings? Time will tell. Enjoy the issue.

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Cover photo: Laurie Harrigan

VANGUARD
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Ultra Fine Pitch Comparison Vanguard vs. Leyard vs. SCI

FEATURE	Vanguard Axion	Leyard TWS	Silicon Core Lavender
Pixel Pitch	1.26	1.25	1.25
Warranty	4 Year Standard	2Year Standard	2Year Standard
Access	Full Front	Rear Only	Front + Rear
Refresh Rate	3840	1920	1920
Grey Level	18 Bit	16 Bit	16 Bit
Video Processing	24 Bit	16 Bit	16 Bit
USA Service Facility	Yes	Yes	No
Fully Front Serviceable	Yes	No	No
Zero Latency Processing	Yes	No	No
Macroblock IC Drivers	Yes	No	No
Heat Dissapation	Yes	Yes	No
Moiré Reduction Mask	Yes	No	No
Half Size Cabinet	Yes	No	No

UPCOMING DEVELOPMENTS

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- Touch Screen Integration for all Axion Series - ETA Q2 2018
- DC - DC Remote Power Supply - ETA Q2 2018
- HDR 10/12 Bit Support - ETA Q2 2018
- Vanguard VCOB technology with resin to protect modules
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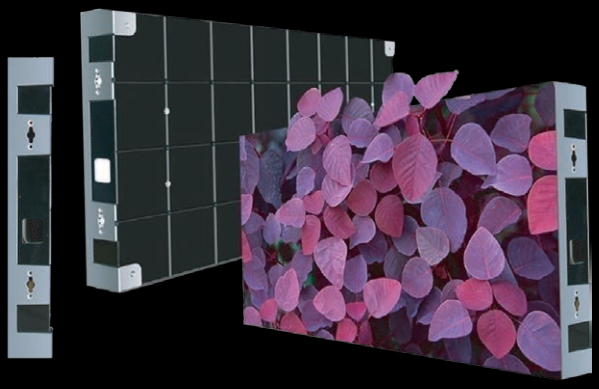

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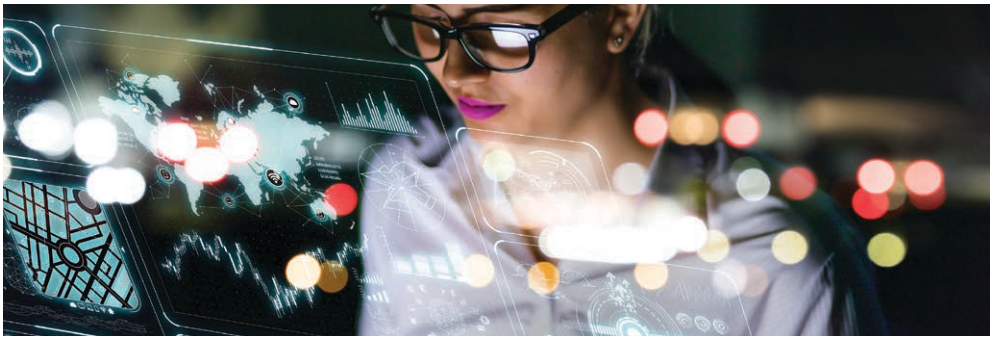

Personalization And The Human Factor

By Shonan Noronha, EdD

We've all experienced it—being addressed by our first names in promotional emails or in a prompt from Amazon to buy related products. Digital marketers refer to it as "personalization at scale." But what does that really *mean,* and can it be integrated into commercial AV environments to deliver better user experiences?

"Personalization at scale" generally refers to the ability to deliver individualized marketing to millions of customers, using artificial intelligence (AI), machine learning and other advanced tools. Is it also possible to deliver truly personalized experiences to end users within commercial AV/IT communication environments? So far, we've seen personalization primarily in retail, hospitality, sports and financial services—areas in which the customer is willing to provide some personal data in exchange for a reward or greater convenience.

How much can you personalize a meeting room or collaborative workspace? Well, the answer depends on how far your client is willing to break from tradition and move forward. Today's digital assistants can do more than just capture what's written on an interactive whiteboard. The latest apps use speech-recognition technology to capture meeting minutes and action items, as well as to provide updates to action items. How fast will voice recognition and AI spread in corporate AV/IT? You can read the responses of several key stakeholders in David Danto's Viewpoint article, starting on page 32.

Among the issues cited are security and privacy; this brings us to the "fine art of personalization." Yes, it is an art, because not only does the usability of the technology have to be factored in, but, so, too, must the human spirit—namely, the comfort level of the experience—be considered. In the words of the American poet and civil rights activist Maya Angelou, "I've learned that people will forget what you said, people will forget what you did, but people will never forget how you made them feel." A multisite interactive meeting in which the technology works so smoothly that all of the participants are comfortable and productive makes everyone involved feel good. Think "emotional intelligence"—*that's* the next frontier of AI.

But what will it take for AV/IT solutions providers to use participant data effectively to customize system performance, while

(continued on page 42)

Shonan Noronha, EdD, is a training and communications consultant. She is Editor of IT/AV Report *and the "Sign Age" columnist for* Sound & Communications. *Send comments, questions and suggestions to her at snoronha@testa.com.*

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CompTIA

Industry Outlook On Emerging Technologies

Business applications of VR/AR and AI are on the rise.

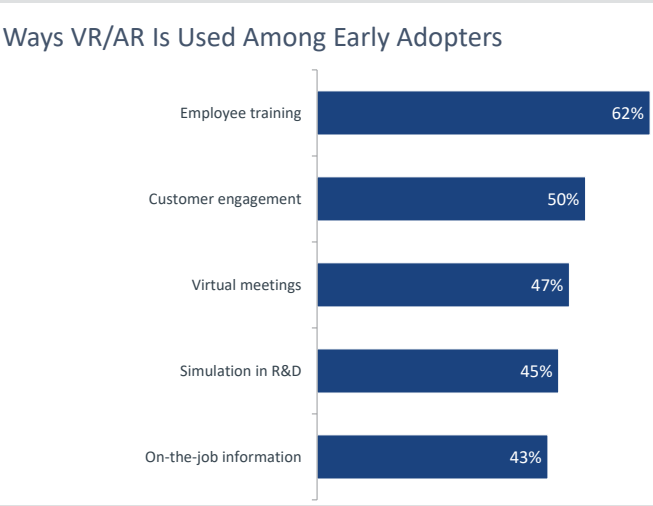
By Todd Thibodeaux

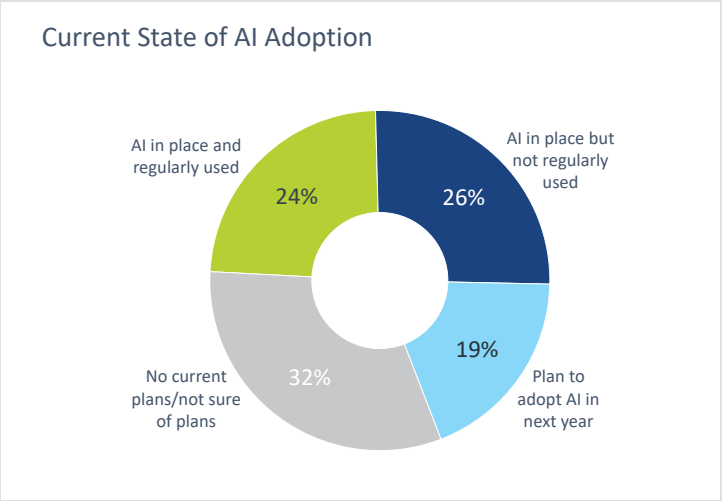
Amid a wave of hype around emerging technologies, four specific trends are showing the potential to help businesses transform the way they operate. To varying degrees, virtual reality (VR) and augmented reality (AR), artificial intelligence (AI), blockchain and automation are staking out a more prominent role in the digital operations of organizations.

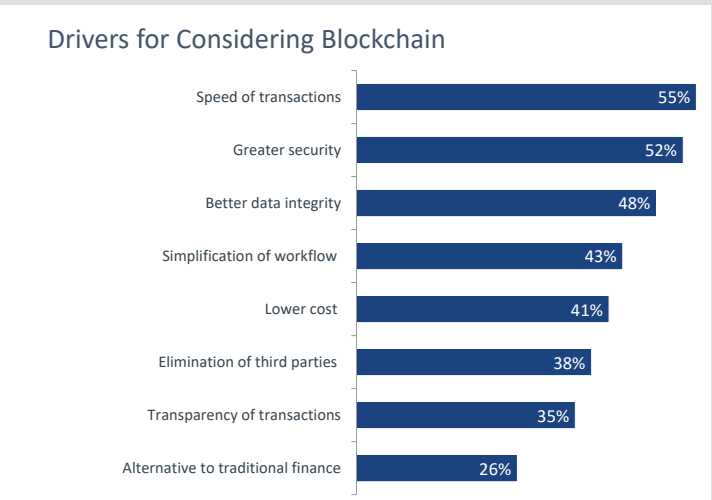
CompTIA recently surveyed some 700 business professionals at US companies to gauge their awareness and usage of VR/AR, AI, blockchain and automation. Although the survey found most businesses remain on the sidelines, use cases for each of these solutions are beginning to emerge, illustrating their potential. And, to varying degrees, these four emerging technologies are making inroads into the audiovisual market.

Early Adopters Of VR/AR

As both VR and AR mature, the two will likely merge in applications that fall under the label of "mixed reality." One in five companies has a VR/AR initiative underway, whereas a slightly higher percentage (23 percent) is experimenting with VR/AR pilots.







Todd Thibodeaux is the President and CEO of the Computing Technology Industry Association (CompTIA), a trade association representing the business interests of the global information technology industry. He is responsible for leading strategy, development and growth efforts for the association. For details, visit www.comptia.org.

The global market for VR/AR is projected to grow from $9.9 billion in 2016 to $296.5 billion by 2023, according to Energias Market Research.[1] Increased investments in research and development (R&D), increasing demands of handheld and mobile devices, and growing demand in the healthcare and commercial sectors are expected to drive the growth.

The most common current use is in employee training, which 62 percent of early adopters cited. Interestingly, half of early adopters are using VR/AR in customer engagements. Other early uses include virtual meetings (47 percent), R&D simulations (45 percent) and on-the-job information—delivering information to an employee while he or she is engaged with a task (43 percent).

Employee training and meetings are activities that are already highly visual, so it's natural to think about creating virtual environments in which these activities can take place. Similarly, computer-aided simulations already take place in many R&D shops, so extending this with VR/AR technology makes sense. As they gain experience with VR/AR, some businesses will expand their use to include customer engagement. Retailers Lowe's and The North Face are two examples of companies that have taken this step, rolling VR solutions that place customers into virtual environments, such as a renovated home or a desert.

As with many new technology projects, cost is a major inhibitor. VR is likely to drive more upfront costs than AR, because entirely new systems must be purchased and built out for VR.

Additionally, increased demand for technology leads to increased support needs. With a strong, real-time component, VR/AR will create unique support demands to fulfill user expectations. Integration will also present unique challenges. Rather than simply presenting a new visual experience, organizations will want to capture new types of data to understand how the tools are being used and where they might create new business value.

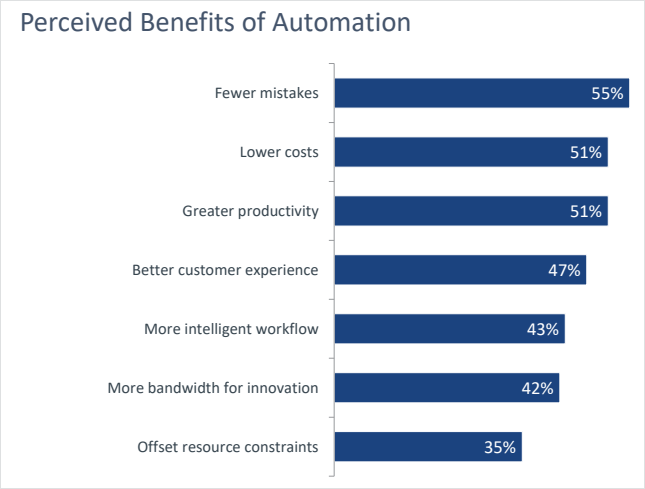
Artificial Intelligence

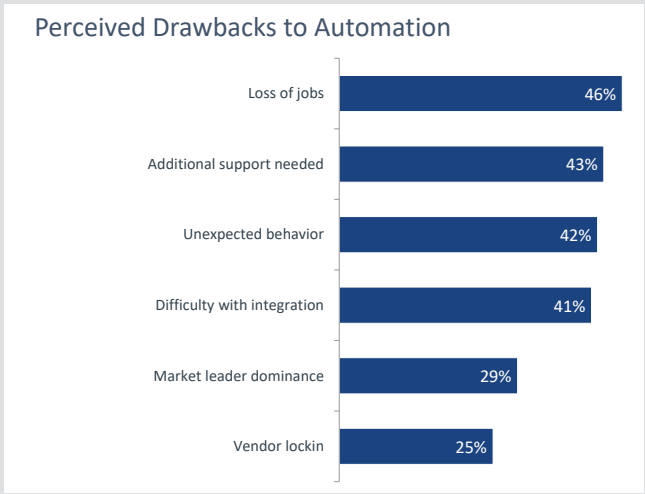
Of the many new technologies on the horizon, perhaps none has as much history as AI. Its academic origins trace back to the 1950s, but appearances in science fiction throughout the past century have helped to embed AI in mainstream consciousness.

This familiarity is reflected in relatively high awareness among businesses—63 percent in the CompTIA survey are aware of AI, and three in 10 organizations say it's having an impact today.

Research firm IDC projects that worldwide spending on cognitive and AI systems will reach $19.1 billion this year, representing an increase of 54.2 percent over the amount spent in 2017; it will grow to $52.2 billion by 2021, for a compound annual growth rate (CAGR) of 46.2 percent over the 2016 to 2021 forecast period.[2]

It's no great surprise to see that, in many cases, AI is tied to another emerging technology—namely, the





Internet of Things (IoT). Among early adopters, 53 percent are using AI in machine learning within an IoT implementation. The complexity of IoT systems practically demands some form of automation and network learning. Although certain benefits of IoT can be gained from simple implementations, large-scale systems will likely include AI as part of the solution.

AI is also finding its way into standard parts of technology architecture. Infrastructure components, such as firewalls and routers, are now enhanced with AI functionality. Some end-user applications are using AI to provide suggestions to improve quality and usability.

Regardless of whether companies have started to explore AI, there are concerns and challenges associated with implementing the technology. Topping the list is a fear that harks back to sci-fi depictions of AI: a lack of insight into AI decision-making. The fear is more prevalent among non-technical workers—40 percent of executives and 44 percent of employees, as compared to just 36 percent of technical staff members.

Roles are reversed when it comes to the second challenge in implementing AI. Consumer experiences with technology have created a perception that new products have minimal support requirements. That might be why just one-third of executives surveyed are worried about supporting new AI capabilities; however, among technical staff members, 43 percent feel this will be a significant challenge.

Understanding Blockchain

The rise of Bitcoin has rapidly led to interest in blockchain—the underlying technology behind emerging cryptocurrencies. However, that interest hasn't necessarily translated to *knowledge,* as just one in five executives surveyed by CompTIA is aware of what blockchain is. Still, a technology with the capability to redefine the concept of currency—and disrupt the financial system—must have other business applications.

Blockchain functions more as a building block, rather than as a tangible product. At a high level, it is a method for recording transactional information. Rather than keeping a record of all transactions in a central location, blockchain utilizes a distributed ledger. For a given activity, a copy of the full ledger, with all transactions, is kept on each node in the network. This method provides certain benefits over centralized forms of record keeping, including transparency of data and no single point of failure.

However, the distributed nature of blockchain also highlights one of its primary adoption challenges: Blockchain implementations utilize a broad network; and replacement of a centralized record-keeping system requires the participation of everyone in that system. A large organization with an internal system could take on its own blockchain project. A system with multiple parties and an independent central agency requires coordination and cooperation.

This highlights the potential disconnect for blockchain: Although it might become highly valuable as a foundational mechanism for transactions for some, it might not be a tool that most businesses use directly.

As is often the case with early-stage technologies, there is a tight clustering of potential use cases for blockchain.

Security is experiencing disruption as organizations reevaluate their approach. So, it's no surprise that firms are exploring blockchain as a way to confirm digital identity or keep an audit trail for compliance purposes.

Common business practices, such as asset management and contract agreements, might also benefit from blockchain. The potential is there to remove unneeded layers from processes, making them more streamlined. Companies are also exploring the use of blockchain for distributed data storage.

Automation

A study by McKinsey & Co.[3] posits that 60 percent of all occupations have some duties that, to some degree, could be automated. Automating a subset of duties does not directly correlate to job elimination, but there is no doubt that some occupations are at risk. Most experts, though, believe that the digital economy will feature new roles for humans, working in concert with intelligent systems.

The number of companies that are pursuing automation in some way is evidence that automation is more broadly applicable than most emerging technologies currently are. Overall, 81 percent

of companies in CompTIA's survey have automation on their radar screens. There are some interesting differences, though, when looking at different segments of the population.

Small businesses—companies with fewer than 100 employees—are the likeliest not to be exploring automation. This is perhaps not surprising, as small businesses are often resource-constrained, and they lag in their use of technology (unless they are startups).

One might expect large companies (500-plus employees) to lead the pack in aggressively pursuing automation. The reality, so far, is that they are looking to automate certain processes selectively. This might be because they've already automated simple tasks, and they're moving out to more complex processes. Or, because of the greater emphasis on realizing return on investment (ROI) for new technology implementations, they are carefully evaluating processes as candidates for automation.

Cost cutting is typically the top benefit that companies hope to realize when new technologies are deployed. So, it is noteworthy that companies highlight a desire to reduce mistakes as the top benefit they hope to achieve through automation. Human errors can throw a wrench into the operations of a digital business; therefore, the desire to eliminate missteps in processes that should have predictable results is understandable. Lower costs and greater productivity, respectively, are the second and third most often mentioned perceived benefits of automation.

Automation suffers from the same problem faced by most emerging technologies: As capabilities get closer to something once only imagined by science fiction, concerns get closer to the worst that people have imagined. With automation, as with artificial intelligence, the primary fear is that the machines will take over, leaving humans with no jobs.

However, the net result of technology on jobs is uncertain. Just as, in the past, technology has eliminated some roles, it also has created others. Even now, as loss of jobs is the top potential drawback to automation, the second biggest challenge is expected to be additional support needed for infrastructure, optimizing the behavior of automated processes and integrating the different pieces of the system.

Interest in emerging technologies, such as the four discussed, has risen dramatically as companies seek competitive advantages. At the same time, the benefits of these technologies must go beyond improvements to standard operations and drive corporate goals. ITAV

Endnotes

[1] "Global Augmented Reality and Virtual Reality (ARVR) Market Outlook, Trend and Opportunity Analysis, Competitive Insights, Actionable Segmentation & Forecast 2023," Energias Market Research, January 2018.

[2] "International Data Corp. (IDC) Worldwide Semiannual Cognitive Artificial Intelligence Systems Spending Guide," International Data Corp., March 2018.

[3] "A future that works: Automation, employment, and productivity," McKinsey & Co., January 2017.

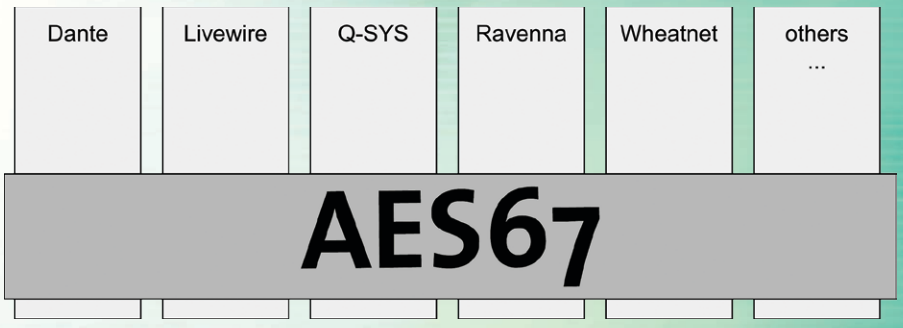
AES67 Standard For Network Interoperability

High-performance streaming of audio-over-IP.

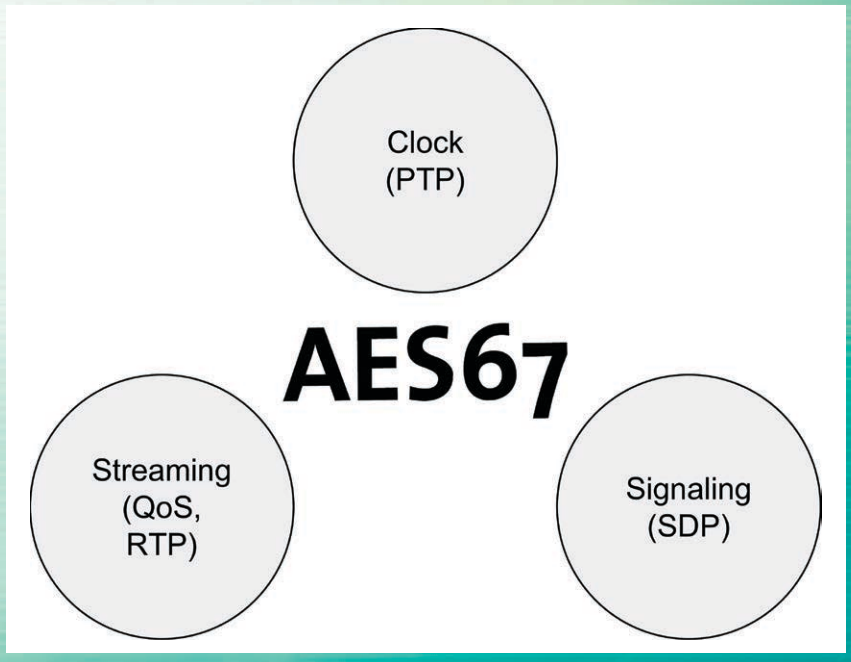
By Nicolas Sturmel, PhD

Since the early 2000s, the audio industry has used Cat5 and Ethernet networks for audio transport (beginning with, among others, EtherSound and CobraNet). The convenience of using the network to transport digital audio was compelling, with lower costs due to the use of commercial off-the-shelf (COTS) switches and very-low-cost cabling. Many users had adopted audio-over-IP (AoIP) transport between or within the studio/venues. But, at some point in the early 2010s, many different, non-interoperable ecosystems had imposed themselves in their own market. The industry needed a standard to allow easy communication between those ecosystems, while maintaining high performance.

The key word here is "interoperability," because the network is an open system by nature, where standardization and interoperability are paramount. Now, everyone is used to plugging in devices on a network, and we expect these devices to work with one another, at least on a basic communication level. This is the motivation behind the development of the AES67 standard. AES67 does not seek to replace existing ecosystems, but, rather, to enable



AES67 is the interoperability mode between all major AoIP ecosystems.



Three factors enable high-performance networking.

Nicolas Sturmel, PhD, is Senior Technologist at Merging Technologies (www.merging.com). He has led the AES67 technical evaluation at the Plugfests in London and Houston. He can be reached at nsturmel@merging.com.

smooth audio exchange between them, with as little performance penalty as possible.

In 2010, manufacturers of networked audio equipment and some of their users met to form the AES SC-02-12 standards working group. Through diligent effort, the AES67 standard was published in September 2013. It was revised in 2015, and a new revision has just been published for comment.

What Is AES67 Made Of?

AES67 leverages several existing technology standards (called request for comments [RFCs] in the internet world) to allow low-latency and sample-accurate transport on the network. Four of these standards are critical to obtaining interoperability and high network performance.

- RTP: The Real-time Transport Protocol was designed to transport data as quickly as possible on a network, while also conveying time and sequence information, enabling the receiving device to detect out-of-order or missing packets.
- PTPv2 (IEEE-1588 2008): The Precision Time Protocol is used to share a common clock on the network. Therefore, with PTP, samples are referenced not only by sequence number and a sampling rate, but also by absolute time, allowing transport delay correction and phase alignment.
- QoS: Differentiated services and quality of service (QoS) give the highest priority on the network to clock and media packets. QoS guarantees delivery of critical traffic, even if the network is congested by other traffic. In AES67, clock traffic will always have the highest priority, ensuring the highest clock accuracy.
- SDP: The Session Description Protocol is used to share the stream information (destination address, payload format, etc.) between the sending and receiving devices.

AES67 can handle both multicast (one sender talking to multiple receivers) and unicast (one sender to one receiver) streams. Multicast is typically used on small or managed networks, and it allows for maximum bandwidth efficiency. When using unicast, AES67 mandates a specific connection protocol, Session Initiation Protocol (SIP), which is widely used in telephony and remote contribution.

Although AES67 can accommodate multiple sampling rates, channel numbers, resolutions and packet sizes (see Table 1), the main exchange format (aka pivot format) is 48kHz, two channels, 24-bit resolution in streams of 1ms packets (48 samples). If a device claims to be AES67 compliant, it must be able to receive pivot streams.

AES67 only cares about audio transport on the network. That means transporting audio from the sender to the receiver with the best performance and making sure they can both talk to each other. It does not address the problems of standardized device control or connection management. These are the purview of AES70 or NMOS, both of which natively handle AES67 connection management.

Parameters	Default Value	Recommended values
Sampling rate	48kHz	48kHz, 96kHz
Channels per stream	2	1, 2, 3, 4, 5, 6, 7, 8
Sample resolution	24bits	16bits, 24bits
Stream packet size	1ms	0.125, 0.250, 0.333, 1 and 4ms

Table 1: AES67 stream parameters.

Measuring Interoperability

How do you actually measure interoperability? The Audio Engineering Society uses interoperability events (aka Plugfests) to assess the validity and adoption of the AES67 standard. Four of these Plugfests have been held to date (2014 at IRT, Munich, Germany; 2015 at NPR, Washington DC; 2017 at BBC, London, England; and 2018 at FOX, The Woodlands TX). Interoperability requires cooperation and openness, so the events are conducted at the engineering level, with a prohibition on reporting individual results. Attendance and participation have increased with each event, and interoperability steadily improved as participants corrected implementation bugs and gained experience with the standard. Plugfests are also the perfect place to experiment and improve the standard so that new companies implementing it do not have to encounter the same issues. The AES releases a report after each Plugfest so that interested parties can learn what issues were discovered at each one, and the solutions developed.

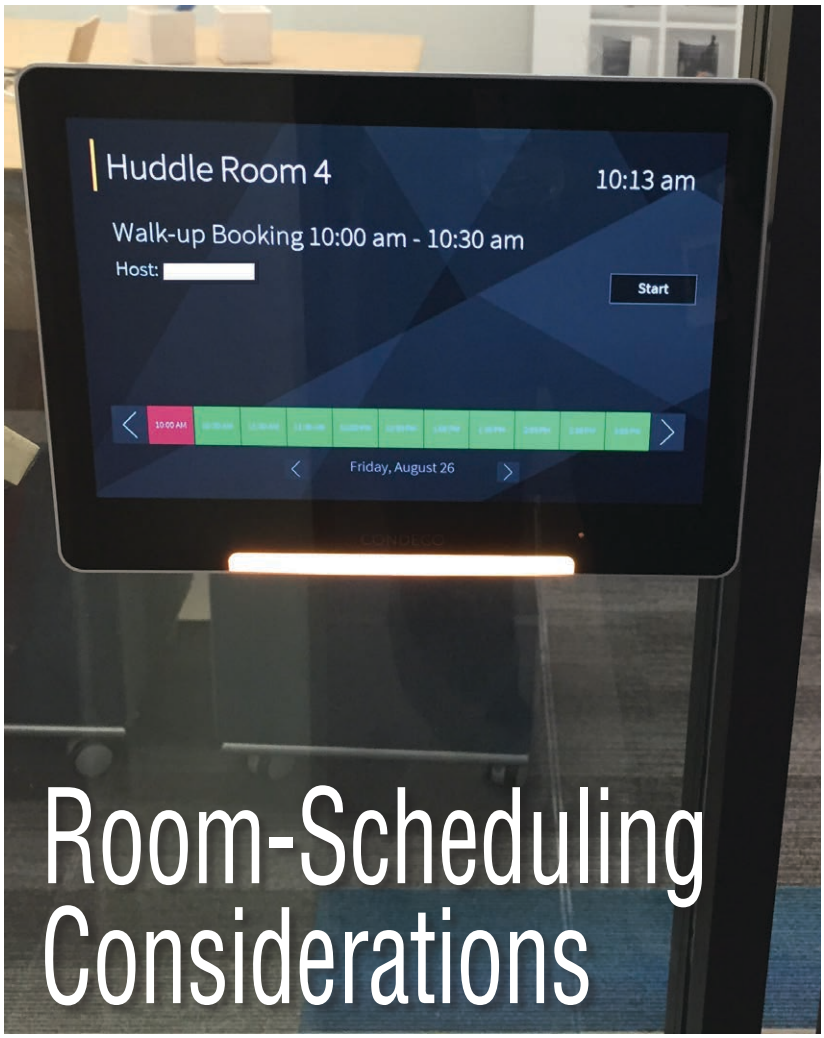
Industry adoption of AES67 has been rapid and wide, leading to its use as the basis for audio transport in the SMPTE ST 2110-30 standard. ST2110-30 and AES67 are so close that the most recent Plugfest was a joint ST2110 and AES67 event. It was a tremendous success, achieving a very high audio interoperability, with more than 100 devices and 60 different manufacturers testing their products on the same network.

Industry-based public interoperability events, called "IP Showcases," are also regularly presented at major trade shows, allowing prospective users to learn and see the state of interoperability and the flexibility of open network standards. And, of course, AES67 is a key element of these.

What Comes Next?

All major ecosystems (Dante, Livewire, Q-SYS, Ravenna, Wheatstone) are now providing some degree of AES67 interoperability, and all are actively participating in AES67 interoperability events. That directly benefits the end user, because he or she can choose a device from almost any vendor of IP-based audio and connect it to his or her network using AES67.

With its wide adoption and its use as the basis for other standards, AES67 is truly a stepping stone into an open audio-networking experience. There is no doubt that this stone will be the foundation for audio in the future. ITAV



Glass mounting with data cabling hidden in extrusion.

Room-Scheduling Considerations

A process to execute on the design.

By Matthew Ezold, CTS-D

It is no coincidence that the rise in flexible workplace initiatives paralleled the introduction and prominence of room-scheduling systems in the workplace. As facilities and real-estate-management teams worked to democratize (and densify) the workplace by moving staff away from exterior offices and into open-workplace seating, phone rooms, huddle rooms, small conference rooms and open pantries started wrapping the building core. At the same time, the introduction of affordable, small-format, flat-panel displays to the commercial electronics market allowed facility-management-software vendors to move away from a desktop interface to a more physical presence in the workplace at the threshold of conference and collaboration spaces.

In the past, management of conference spaces was handled in a variety of ways, but, typically, it came down to being actively managed or set up as a simple shared resource in the enterprise calendar system. When front-of-house conference spaces and a small grouping of workplace conference spaces were all that had to be managed, the manual management of conference spaces, although not terribly efficient, was feasible. As the ratio of flexible-collaboration-space seating to workplace seating started to approach 0.8:1 and, in some cases, 1:1, active management became increasingly untenable and impractical.

Some of the most successful technologies are ones that provide a service equally to both users and administrators, and room-scheduling systems are a good example of that. Users, faced with a plethora of meeting-space sizes and locations, needed a way to locate available spaces near them and then book them with only a few extra steps. Facilities teams needed a way to validate the utilization and occupancy of these newly created collaboration spaces. And, although not benefiting from room-scheduling systems as a result of increased usage, technology teams, previously accustomed to deploying formal audiovisual systems in higher-end conference rooms, found themselves spending more time focused on meeting remote-collaboration needs in two- and four-person spaces.

Room-scheduling systems are typically composed of three core components: the desktop/app user interface, the back-end management platform and the physical room-scheduling display. The capabilities of those three components varies heavily from one manufacturer to another, and they're seen as ranging from simple physical displays that tie into an existing

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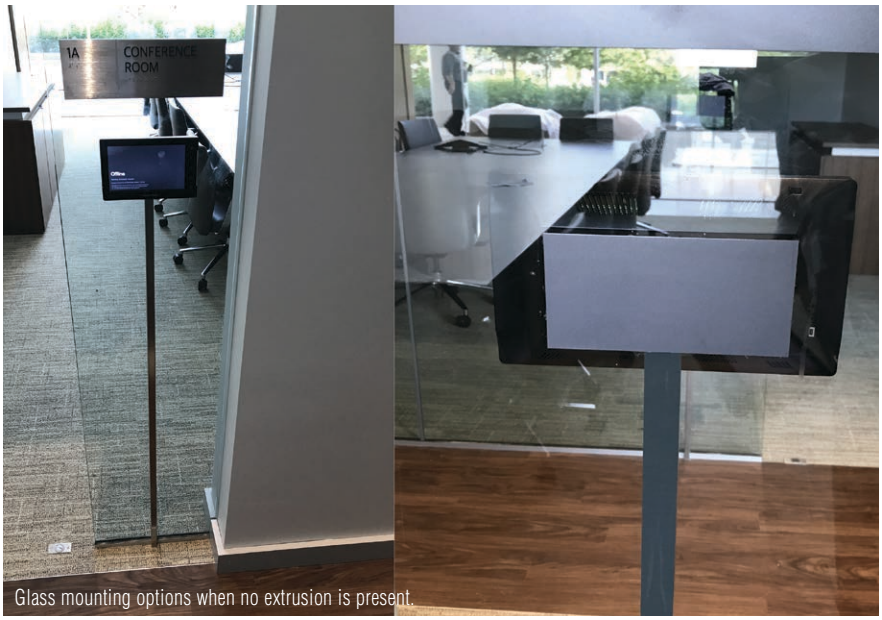
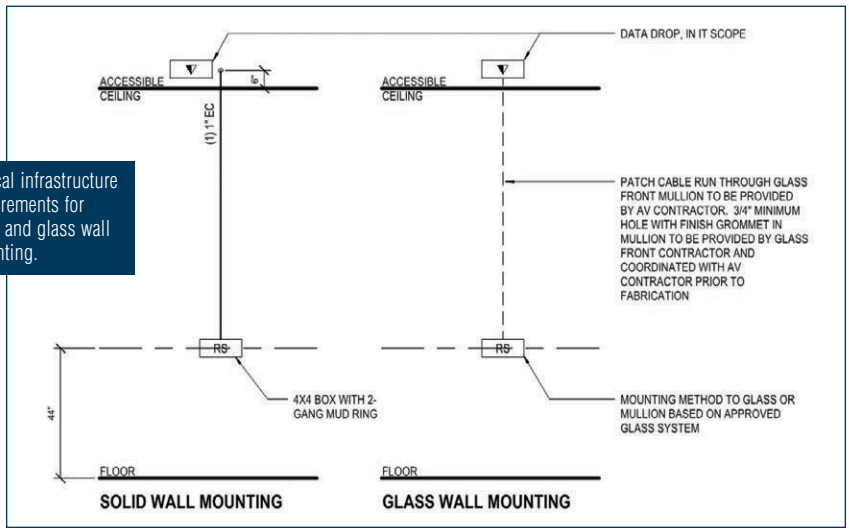


Glass mounting options when no extrusion is present.

scheduling platform, such as Microsoft Exchange or Google's G Suite, to a fully developed space-management platform, where the room-scheduling displays are an endpoint on the management platform.

Determining what level of platform is most appropriate for your enterprise starts with weighing the importance of some key room-scheduling features and choices, including the following:

- Authorization requirements needed to book spaces and the ability to manage and request approval as part of the booking process.
- Ability to request catering, space setup, audiovisual or other resources, including management of those resources, once assigned.
- Occupancy, card reader, Bluetooth beaconing and interfaces to other Internet of Things (IoT) systems for tracking usage or to facilitate finding and booking spaces.
- The ability to capture occupancy down to the user level (not just occupied/unoccupied, but, rather, how many are in the room).
- Preferences for manufacturer-provided scheduling hardware or the use of consumer tablets for room-scheduling displays. (Note the shift toward user technology staff, instead of the manufacturer, managing consumer devices.)
- With any option, make sure to understand what meeting information is displayed and how to limit display of confidential information, when necessary.
- Consider inclusion of workspace user occupancy and desk reservation. Is this required?
- What interface to the management of the remote collaboration platform's (unified communications, videoconference, etc.) meeting scheduling is provided?



Typical infrastructure requirements for solid and glass wall mounting.

Having chosen a room-scheduling platform, the next step is to determine the level of physical deployment in the workplace. Considerations include the following:

- Is there a requirement for "flight boards" or large-format displays near workplace entrances that show room availability and, possibly, a layout of the workplace with available rooms highlighted? These are especially useful in workplaces that use a high concentration of external contractor or hoteling teams.
- If the space is not meant to be bookable, is there value in including a scheduling display to enforce stay limits and prevent users or contractors from camping out in a space between meetings? This can be useful for phone rooms and smaller, two-person huddle rooms.
- On amenity floors, should users' displays be able to be put in a "view-only" mode, thereby preventing users from booking high-value spaces?
- If a space is actively managed, is there a perceived benefit to also having a room-scheduling display?

Moving on to the physical location and installation of room-scheduling panels, there are numerous options for mounting, including height, method for cabling and mounting system.

The height from the floor to the center of a room-scheduling panel has to be set site-wide, no different from choosing the height of light switches or outlets. For most people, a height of 52 inches above the floor is the most natural for viewing and interacting with the display. However, the Americans with Disabilities Act (ADA) seeks to make all user interfaces wheelchair accessible, and it requires the touch portion of the interface to be located below 48 inches above the floor. Practically speaking, that means a height of 44 inches to 45 inches above the floor to the center of the panel will keep almost any panel out there below 48 inches to the top of the touch interface, and it reduces the need for custom heights between manufacturers.

However, that height does tend to

feel a bit low for most people, and it puts a standing user well off axis of the display. Because of this fact, it is recommended that a height mockup be done with the preferred panel to ensure it will work for all users, whether standing or in wheelchairs.

All hardware room-scheduling panels will require a data cable with Power over Ethernet (PoE) that provides a data connection and powers the panel. When a tablet running a scheduling app is used in lieu of a traditional hardware scheduling panel, the data cable is still required to power the tablet, and a PoE-to-USB power converter located in the ceiling or in the tablet mount's case is used. Typically, it has been the AV integrator's responsibility to install these panels, while the IT integrator provided the data drop for the panel in a nearby, accessible ceiling or a raised floor. Regardless of how the installation responsibilities might be divided up, it is important to identify who provides the data drop, patch cable to the panel, and then furnishes and installs the panel.

Room-scheduling panels traditionally were mounted to solid partitions using a single-gang or dual-gang back box, no different from how we would mount an AV touchpanel. However, due to the popularity of glass-front systems for collaboration spaces, it is very typical to see room-scheduling panels mounted directly to the glass fronts. When mounting to glass, a few important considerations are as follows:

- The panel-mounting system should provide for a method to hide the adhesive stick pad and rear wiring of the panel from users within the room. This is done either by applying a masking decal to the glass before installing the adhesive pad or having the glass front graphics vendor provide a custom decal.
- Some glass-front manufacturers now provide a decorative metal frame to hold the panel and hide panel wiring, and it matches the glass-front metal extrusion. Some manufacturers carry this as a stock accessory, whereas others create custom frames for each project. Make sure to include this requirement with the glass-front RFP.
- When a thick extrusion is provided around the doorway, the data cable that provides signal and power can be run within the extruded frame with a three-quarter-inch hole at the panel height. As long as the penetrations at the bottom or top of the extruded frame into the floor or ceiling are provided, this can nicely hide the data cable to the display.
- When no extrusion is provided, some form of decorative metal channel is required to hide the data cable.

Before the first panel arrives on site, it is critical that any back-end integrations and server software applications have been installed and fully tested. Prior to rolling out to a large project site, consider doing small test runs of a few rooms, or a floor at a time, to solicit user feedback and adjust the technology or administrative policies. That way, this technology is seen as enabling user collaboration, as opposed to becoming another obstacle to starting meetings. When planned and deployed properly, these platforms can be integral to a workplace-transformation project, and they can help to drive increased space utilization.

As seen in this CAD rendering, The Box Garden stage features a huge, 6mm-pixel-pitch LED videowall.

Live, Eat, Work, Play!

Legacy Hall's tech-enabled, curated live-performance venue.

By Shonan Noronha, EdD

There's an urban neighborhood lined with upscale retail, dining, residential, hotel and office spaces in the Dallas TX suburb of Plano TX—it's called Legacy West. In this planned community that's geared to a "Live-Eat-Work-Play" lifestyle, Legacy Hall has built a vibrant destination that spans 55,000 square feet. The three-storied Food Hall with indoor and patio seating features more than 20 different dining and drinking experiences from top chefs and bartenders, and the brewery offers tours. Guests can also enjoy high-quality music or watch the large-screen TVs located throughout the facility. Legacy Hall's live-entertainment venue, known as The Box Garden, features a 600-square-foot performance stage with a huge LED videowall as a backdrop, stage canopy LED lighting, and sound systems for live musicians and other performing artists. The Box Garden name is derived from the reclaimed shipping containers that make up a large part of the structure.

Plano's Legacy Hall and The Box Garden were designed, constructed and tech-enabled by top-notch teams. Among them were general contractor Rogers O'Brien Construction and interiors architect Gensler. Nautilus Entertainment Design (NED) designed the audiovisual system, Gemini LSV designed and installed the stage lighting systems, and FSG installed, integrated, programmed and commissioned the AVL systems throughout the facility. We reached out to the design and integration teams, as well as client management, to get their perspectives on the vision, challenges and accomplishments of this multi-million-dollar project.

Legacy Hall's VP, Pat Garza, said, "Legacy Hall strives to attract the best of what DFW [Dallas–Fort Worth] has to offer with regard to music, performing arts and live events. We see our venue as a conduit for local artists to showcase their talents and provide a launching pad for their careers. From an artist-experience perspective, we aim to be the top of the class in hospitality, sound and lighting quality. Our community will know Legacy Hall as the best venue to discover and experience world-class talent."

Garza was clear about what he wanted the AVL systems to do, and he got what he wanted. "With our audio, video and lighting technologies, we have the flexibility to work with the artist on the overall vision of the performance and make it come to life," he explained. "Whether you are a solo artist, a corporation with a sophisticated presentation or a full touring band, our audio, video and lighting solutions will make your art sing."

Discussing the design, NED's Project Manager/Business Development, Daniel LePage, CTS-I, DMC-E, noted that the intent was to create a flexible, user-friendly, high-quality audio and video system. "The owner did not want the space to feel like a typical sports bar and specifically stressed the need for a very high-quality, intelligible and well-rounded audio system," he said.

Shonan Noronha, EdD, is a training and communications consultant. She is Editor of IT/AV Report *and the "Sign Age" columnist for* Sound & Communications.

A 6,500-lumen laser projector displays promos on a wall in the central stairwell.

TIPS

>> Schedule regular meetings with all the stakeholders and vendors—not just at the start, but also throughout the build-out process.
>> Review scope, user functionality and GUI design with the consultant and owner three or four times during the project.
>> Use a single generic control for multiple "views" when programming the GUI; it is more flexible than creating specific controls for each scenario.

The first-floor bar is equipped with pendant speakers, a subwoofer and a 4K display for music, TV programs and digital signage.

According to LePage, the project was unique and fun to design, but it did have a couple of challenges. "For starters," he noted, "the Food Hall has three stories of indoor/outdoor spaces, and it's configured as an 'almost-open-air' atmosphere inside. The desire was to have the ability to create different environments on each floor and each patio, without each environment bleeding into the other."

The location of this entertainment destination also presented a challenge for the design team. "Being located in the middle of Plano's Legacy West community, the project was required to adhere to very stringent noise-decibel restrictions, which applied not only to the interior spaces, but also to the open-air garden venue specifically, which was being designed with a full stage, intended to support various musical and performance acts," LePage noted.

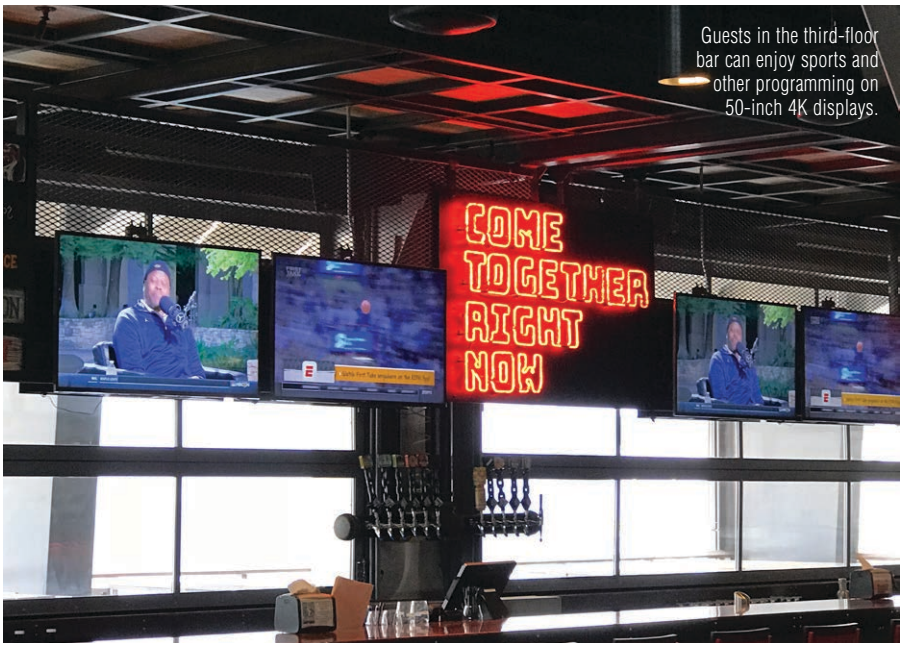
He continued, "We had to design the audio system in such a way as to provide a high-quality sound experience for patrons, while staying within the noise restrictions at the property lines. We worked with acoustical consultant Melvin Saunders, Owner/Principal, Saunders & Associates, to make sure the audio levels being produced by the system could be properly absorbed throughout the space to avoid any slap back, reverberation or spillover from The Box Garden. At the same time, there was a need to have the system be highly user-friendly to give the staff the ability to set up a small event, but also allow larger acts to tie into the house system with the performers' equipment or rental equipment, if needed."

High-Quality, Durable Components

There are 18 customer-facing Samsung 4K LED-backlit LCD flat panels in the Food Hall; content is also displayed from a Panasonic 6,500-lumen laser projector on a large wall with projection-screen paint in the central stairwell. There are also three types of SoundTube loudspeakers on each floor: pendant speakers for the open-ceiling areas for background music, recessed ceiling speakers in the restrooms for background music and surface-mount speakers surrounding the exterior patio areas to provide background music, as well as live audio when there's a performance in the garden.

In the garden, the performance stage features an LED videowall that measures 21' 5/16" wide by 12' 5" high. This display had to be able to withstand extreme Texas weather conditions without compromising the video quality. NanoLumens' NanoSlimOD IP56-rated LED tiles with a Barco videowall switcher/scaler were selected for this open space. With a 6mm pixel pitch and a 6,000-nit brightness rating, the 40-LED-tile display delivers spectacular high contrast and consistent video, even in high ambient light.

The fixed stage-lighting system had to be easily controlled, while also allowing the flexibility for performing acts to bring in additional moving lights or other laser light elements. The lighting also had to withstand weather elements. The lighting package from Motion Labs includes truss lighting fixtures on motors that can be raised and lowered from the stage canopy; Gemini supplied stage LED lights that



Guests in the third-floor bar can enjoy sports and other programming on 50-inch 4K displays.

are controlled through Crestron and DMX interfaces.

Crestron's 3-Series control system is used for the AV systems in both the Food Hall and the garden. The Crestron control system was specified based on industry best practices for AV systems control in this type of space.

TV And Digital Signage

The venue has a DirecTV commercial subscription for TV programming shown on all its displays. The DirecTV system consists of 19 HR24 DVR cable boxes—one for each display—installed in the main distribution frame (MDF) and routed through the video matrix. "It was decided to assign a cable box to each display to satisfy our customers' individual and unique viewing preferences," Tim Ziegler, the venue's Manager, noted. "We can have a cooking program next to a basketball game or the Golf Channel and not worry that, as we change one channel on one display, it is affecting another display elsewhere."

Plans are to use digital signage to promote performances at the venue, the food outlets and community events. Three Rockbot media players in the MDF will be used for signage content in the Food Hall. Rockbot players were selected because they can be remotely controlled, and they have advanced features for playing selected music mixes continuously and broadcasting TV content through the video matrix.

According to Ziegler, digital signage content will be displayed on the LED videowall and projection wall, as well. Nanonation's cloud-based content-management software, CommandPoint, will be accessed through a Dell OptiPlex 5050 desktop PC with Intel Core i7 and 2GB Aver TV card, which is installed in the MDF in the Food Hall. Front Burner Restaurants will manage the TV content and digital signage displayed across the facility. Nanonation is also working with Front Burner Restaurants to provide an innovative stored-value-card-dispensing kiosk, which will be installed in the Food Hall.

Music In The Garden

The garden audio system consists of 20 VUE Audiotechnik al-8-WP-g speakers (10 per side), which will allow full and even coverage of the entire area. "This coverage provides the capability to play back stage performances at even levels and provide control over audio levels leaving the event space," Peter Hensley, CTS-I, FSG's Project Manager, explained. He noted that the speaker clusters are suspended from "Pick Points" with shackle and cable.

Four VUE Audiotechnik as-215-WP-g 15-inch subwoofer cabinets located under the stage fill in the low-end frequency performance of the audio system. There are four VUE Audiotechnik i-2x4.5-WP-g speakers, mounted underneath the front of the stage for audience front fill, and four VUE Audiotechnik a-10-WP surface-mount speakers for sub delay. For additional sound distribution, 13 SoundTube in-ceiling speakers are in various locations, including the Green Room.

A digital signal processor system is installed to equalize the audio system and provide control capability from an iPad control interface. Secondary tie-in capability is provided for larger-venue performances from the back of the stage and on the wall next to the bottom of the stairs by the food court. Two Shure ULXD2/B58 wireless microphones are available for events.

Out Of Sight, But Fully Controllable

The AV racks for the Food Hall AV system are installed in the MDF on the second floor. Audio is routed between the MDF and the stage intermediate distribution frame (IDF) over audio video bridge (AVB) on Biamp Tesira SERVER-IO AVB DSPs. Audio is also streamed over AVB to the audio system in the Haywire restaurant to tie in the audio system during stage performances.

Content is routed from the 32x32 Crestron matrix located in the Food Hall MDF to any source throughout the facility via Crestron DigitalMedia transmitters, connected by fiber or category cables.

Behind the stage, a secondary rack is installed for the stage and the entire garden AV system. The Box Garden AV and Food Hall AV systems are interconnected via fiber. "This enables any source from the MDF to be routed via Crestron fiber transmitter to the videowall," FSG's Senior System Designer, Josh Garrigus, CTS-D, DMC-E, noted. "There are HDMI inputs at front of house/stage on a panel on the stage, and also on a panel in the venue manager's office for routing video to the videowall. There are three user-input locations for audio sources, along with a Rockbot streaming media player and DirecTV programming. Neutrik connectors are used on the custom I/O plates," he explained.

Garrigus continued, "We provided four iPads to manage the audio and video content for each floor, and one for the stage. Individual iPads are assigned to each floor to manage all the audio and video routed through the Wi-Fi network."

Middle Atlantic racks located in the IDF and MDF include the BGR-4532 racks fully customized with Middle Atlantic accessories and UPS-2200R-IP

for battery backup.

All source devices, except the audio input plates, are located in the Food Hall MDF racks in an effort to maintain a central location and enhance ease of serviceability.

Intuitive User Interface

Critical to the efficient use of any system is the graphical user interface (GUI). For this project, the AV system required access and control by several users. FSG's AV Systems Programmer, Daniel Ostertag, CTS, who is also Crestron Certified, noted, "In the face of serviceability variables and end-user-preference variables, *flexibility* is the key to success, while keeping the interface simple and intuitive, yet powerful behind the scenes."

According to Ostertag, code organization, modularity and flexibility were the most important parts of programming this project. He tried to find the best approach to organize the code in the most efficient manner—not just for the many users today, but also for users in the future. "To accomplish this," he said, "the UI uses single control instances that would pass themselves to the relevant device or audio zone. Configuration files loaded to the processor provide almost all text throughout the UI. If the client needs to make changes to the system in the future, new configuration files can be loaded to ease the process." He added, "Sometime in the future, the code may need a revision, if the source input changes or the system is expanded with more video endpoints or additional user interfaces. Best practice of logic is to make small changes in code that can update the user interfaces and end points in a single location, without having to make changes in multiple locations."

Auditorium-quality outdoor speakers enhance the ambience in balconies that overlook the garden.

According to FSG's Hensley, coordination between three separate architects and three separate electricians was extremely challenging. In addition to Gensler, which designed the interiors, idesign focused on the shipping container layouts and design, and Plan B Group worked on creating a relaxing environment in the bar area on the third floor. "Keeping all the information coordinated between one scope and six different information providers required a constant checking for accuracy. Each floor had its own highly customized design, and the first floor had numerous venues that were all different. There was no cookie-cutter part of the project—it was customization at its finest," he quipped.

Rack delivery and coordination of the MDF space was a challenge because there was a lot of equipment going into the room. "All the data racks, RF distribution for cable boxes, security head end and AV racks were located in this MDF, which was very small for all the equipment that had to fit in it," Hensley explained. "It was also difficult to coordinate the many install teams, and we had to make a continuous effort to keep the area dust-free."

Pendant speakers on each floor deliver even levels of high-quality audio throughout the Food Hall.

Racks in the main distribution frame (MDF) house more than 50 key AV/IT components in a very small space.

Key Components

1 Atlona AT-HD570 HDMI 8-channel audio de-embedder
1 Barco ImagePro-II Jr videowall switcher/scaler
3 Biamp Tesira SERVER-IO AVB DSP card frames
18 Crestron DM-RMC-4K-SCALER-C HDMI RX and scaling controllers
1 Crestron PRO3 3-Series control processor
1 Crestron DM-MD32X32 video matrix w/ 26 4K input cards, 2 DM-Fiber input cards, 30 4K output cards, 2 DM-Fiber output cards
4 Crestron TSW-1060 10.1" touchpanel interfaces
1 Extreme Networks Summit X440-G2-48P-10GE4, 48GB port network switch w/ PoE and fiber
2 Lab.gruppen C68:4 115E 4-channel power amps 1,700W/chan
3 Lab.gruppen C48:4 115E 4-channel power amps 1,200W/chan
1 Lab.gruppen C28:4 115E 4-channel power amp 700W/chan
12 Lab.gruppen E12:2 US 2-channel power amps 600W/chan
1 Lab.gruppen E10:4 US 4-channel power amp 250W/chan
5 Lab.gruppen E8:2 US 2-channel power amps 400W/chan
1 Lab.gruppen NLB60E power amp controller for Food Hall
1 Lab.gruppen C88:4 115E 4-channel power amp 2,200W/chan
2 Lab.gruppen C48:4 115E 4-channel power amps 1,200W/chan
1 Lab.gruppen C28:4 115E4-channel power amp 700W/chan
2 Lab.gruppen C16:4 115E 2-channel power amps 300W/chan
2 Lab.gruppen E8:2 US 2-channel power amps 400W/chan
1 Lab.gruppen NLB60E power amp controller for stage audio
40 NanoLumens NanoSlimOD LED tiles, 6mm IP-65 rated
1 Panasonic PT-RZ670-B 6,700-lumen laser DLP projector
3 Rockbot media players
19 Samsung UN65MU6300FXZAs (3) and UN50MU6300FXZAs (16)
2 Shure ULXD2/B58 handheld transmitters Beta58 ULX-D
1 Shure ULXD4D 2-channel RF receiver
93 SoundTube RS600i 6" pendant ceiling speakers
40 SoundTube RS1001i-II-T 10" pendant speakers
40 SoundTube RS500i 5" in-ceiling speakers
14 One Systems 108HTC 8" outdoor surface-mount speakers
14 One Systems PT-38M pan-tilt brackets for 108HTC speakers
8 VUE Audiotechnik i-8-WP-g 8" 2-way passive full-range systems
18 VUE Audiotechnik a-10-WP-g 10" 2-way passive full-range systems
14 VUE Audiotechnik is-26-WP-g dual 6.5" compact surface-mount subs
2 VUE Audiotechnik a-15-WP-g 15" 2-way passive full-range systems
20 VUE Audiotechnik al-8-WP-g 3-way acoustic line-array elements
4 VUE Audiotechnik as-215-WP-g dual 15" vented passive subs
4 VUE Audiotechnik i-2x4.5-WP-g dual 4.5" surface-mount full-range systems
5 VUE Audiotechnik V6-I system engines w/2-in/6-out DSP/tri-amp w/o display

Even "dressing" the system required creative solutions. "All the open-ceiling installation of speakers and cabling required a lot of creative methods and coordination by our team to hide all the anchors and structure and cabling," Hensley noted. "For instance, we used Mag Daddy cable-tie magnets to secure the cabling of over 100 SoundTube and VUE Audiotechnik speakers to the structure." Evincing a sense of accomplishment, he added, "This effectively masked the cabling and gave a clean look to the speaker install."

The AV Foreman, Josh Shore, commented in hindsight, "If we had the opportunity to do it over again, we would have waited until all the light fixtures and ceiling devices were installed, with other trades out of the ceiling spaces, to protect equipment and avoid rework of shifting ceiling plans with pendant speakers. Although we provided a clean install, it took quite a bit of reworking to make it right. It is always a challenge not to be late, but also not to be too soon."

Moving Forward

Hensley shared that he really enjoys challenging projects like this one because, he said, "A challenging project is what makes it an exciting and fun project to work on." He indicated that he could have taken on an even bigger challenge. "If we also had the opportunity to be the structured cabling and electrical contractor, it would have enabled us to streamline schedules and coordination of teams more efficiently—primarily to mitigate scope gaps and risk." As a full-service systems integrator, FSG also offers structured cabling, electrical services, security, access control, lighting, energy management/solar, exterior building signage and creative content creation as part of its portfolio.

When there are multiple architects

on a project, Hensley recommends meeting with all of them at the same time, and doing so regularly. "On this project, although the three architects' scopes were all separate, the AV systems installation and integration intersected with all three; thus, the coordination was a constant challenge," he explained. "For example, the base bid architectural drawings for the Food Hall showed one ceiling plan, and the installed cabling and equipment was based on that information. However, a revision came from another architect with a different ceiling plan. Consequently, we had to reroute cabling and equipment based on the change from an open-ceiling concept to a concave closed ceiling."

Regarding client expectations, the more conversations about how the systems will be used, the better the final product will be. Although the FSG team had a lot of end-user conversations about functionality, Hensley said that every project is custom built and different, and having more conversations helps to manage expectations against scope and specifications. "A lot of "what ifs" come up," he noted. "On this project, the client had different managers for different floors and, thus, different user access, and they also needed overall administrative control." He recommended, "It's a good idea to incorporate three or four inspection points in the project for scope review, functionality review and GUI review with the consultant and owner."

Legacy Hall Rocks

Complex and challenging projects provide the exhilarating experience of accomplishment when they have been successfully completed. The Legacy Hall AVL systems build-out, with its high-quality sound and breathtaking video, which took nearly a year to complete and commission, provided an elating experience for the systems integrator and the customer.

"Legacy Hall's Plano venue is all the buzz in North Dallas right now," Laurie Harrigan, CTS, FSG's Executive Account Manager, stated. She continued, "FSG was honored to be selected as the audio and video installation contractor for the project. The AV systems are a mission-critical part of the project, and FSG's team is proud that the install has been a tremendous success. We have enjoyed bringing this customer's vision to reality—it is truly the best destination in Dallas for a premium dining, drinking and live-entertainment experience."

Reflecting on the strategic goals for the venue, Garza said, "Our LED display will allow us the flexibility to create and use content in many creative ways to engage our customers. Not only will it be a centerpiece of our AV package during live performances, but we also intend to use it as a promotional tool to highlight our food stalls, future performances and events, as well as community engagements. Furthermore, we plan on hosting movie nights, sports watch parties and gaming events—not to mention live cooking demonstrations and competitions."

As we go to press, singer-songwriter Sarah Jaffe, a Texas native, is scheduled to perform at The Box Garden Grand Opening Party in mid-May. The venue expects to host some of the other great talent that Texas has to offer. Check out the events calendar at www.legacyfoodhall.com.

Willie J. Happyjack Memorial School

First-Rate AV For A First Nation

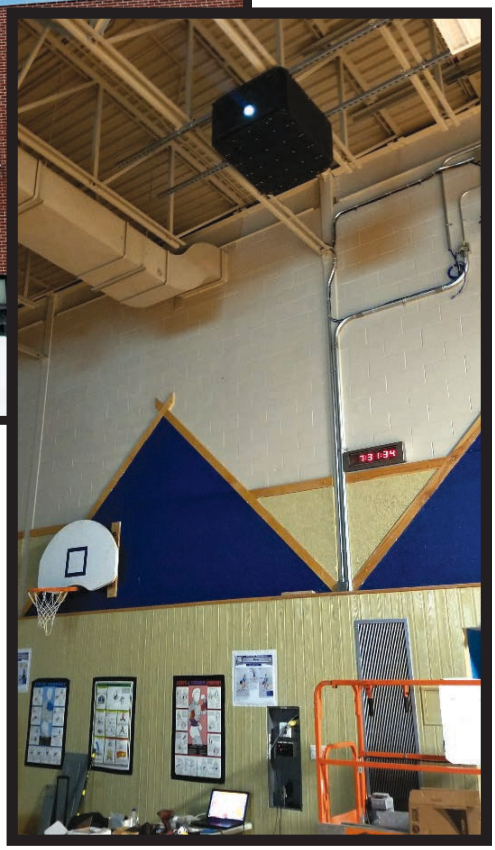
Practical solutions for two Cree schools.

By Shonan Noronha, EdD

The Cree First Nation has a proud cultural heritage grounded in its ancient traditions and the rich natural resources of its homeland, surrounding James Bay in northern Quebec, Canada. When it came time to provide AV capabilities for the gymnasiums in two of its schools, the solution had to be cutting edge to support the important place that sports, learning and community play in local life. From the super-wide-angle, 12,000-lumen projectors to the control and presentation system, the results provide a dynamic experience to help inspire both education and community growth for citizens of all ages.

Although the locations involved are quite remote, the Cree School Board wanted to ensure that the systems delivered high-impact, versatile and durable support for educational activities, sports and fitness training, cinema, and other community events. Montréal, Canada-based PFT Solutions was tasked with developing a system tailored to meet the unique needs of each of the two schools: Willie J. Happyjack Memorial School and Wiinibekuu School.

Discussing the project, PFT's Head of Engineering, Pasquale Fantone, said, "These schools did not have any installed AV in the gymnasium, so it was necessary to design a system that was easy for non-tech staff to use. Because the AV equipment was installed in a gym, we had to ensure protection against damage, but also make it easily accessible and easy to use by programming a simple user interface."



An ultra-bright, 12,000-lumen projector enclosed in a protective cage designed and built by the systems integrator. Side panels swing open to allow access to cables and for servicing. The cage is anchored to struts, which, in turn, are clamped to the building's steel structure.

Components mounted on top of the projector's protective cage include the network switch and wireless video gateway.

A wallplate with wall panel button control processor enclosed in an electrician-supplied protective cabinet.

The display surface built by the general contractor is painted with Screen Goo paint. It is twice as wide as is currently necessary, ensuring that it's ready to accept a second projector in the future. Image is showing a time-keeper used for sporting events.

Two Gyms Up North

Willie J. Happyjack Memorial School is located in the community of Waswanipi, which is 458 miles from Montréal—an approximately eight-hour drive. For the gym at this school, PFT designed a single-projector system that has Barco's RLS-W12 WUXGA, single-chip DLP projector at the heart of the system. Other components include a Crestron DM controller, Kramer's VIA GO for wireless connectivity and an HP fast Ethernet switch provided by the client. Video and other content is displayed on a client-built board that is coated with Screen Goo projection-screen paint.

The Wiinibekuu School is located in the community of Waskaganish, which is about 648 miles from Montréal. For the gym at this school, PFT installed a dual-projector system and a sound system. The two projectors, each of which delivers 1920x1200 resolution, are the same model of Barco DLP projector that is used in the school in Waswanipi. Also similar are the Crestron DM controller, Kramer VIA GO, Crestron DM-PSU-8 power distribution, an HP fast Ethernet switch provided by the client and the display board treated with Screen Goo projection-screen paint, also provided by the client.

At the Wiinibekuu School gym, the sound system consists of a Crown XLI Series power amplifier and two JBL Constant Beamwidth Technology line-array columns, which provide asymmetrical vertical coverage, sending more sound toward far areas of the room. That makes sound levels more consistent

Although most schools in Quebec offer education in French and English, the Cree School Board offers programs in Cree, French and English. Even though language was not an issue with regard to the design and integration of AV at the two schools, the dual-projector setup at Wiinibekuu School provided a distinct advantage nonetheless. "At Wiinibekuu, both projectors can be used simultaneously—for example, for a bilingual presentation, or for presentations from two different sources," PFT's Lead Installer, Livio Rea, stated. "Or, they could be set up for single-projector use, engaging the unit with fewer hours utilized, as determined by the Crestron processor, with the horizontal lens-shift feature on the Barco projector centering the image on the screen."

For ease of use at Wiinibekuu, four Crestron DM-TX-200-C-2G-B-T wallplates for HDMI, VGA, audio and USB

At the Wiinibekuu School gym, the wall-mounted rack includes a video switcher, 16-port PoE switch, processor and audio amplifier.

The AV rack, with cable management, mounted inside the wall at the Wiinibekuu School gym.

Side-by-side projection being tested as a scoreboard/time-keeper at the Wiinibekuu School gym. Audio speakers are on each side in protective cages.

TIPS

>> Connect and test all components in-house before shipping to the site, and plan for backup components, especially for key, low-cost items.

>> Do not take anything for granted, even if it's well documented. For example, on this project, the ceiling structure for the installation of projectors had not been built as per the available plans, and it was only discovered after the suspended ceiling had been removed.

>> Build strong relationships with all stakeholders. You never know who will get you out of a jam, especially when travel across long distances is involved.

connections were installed in the front and back of the gym, along with two in the office, which is located about 150 feet away. The wallplates are linked to the Crestron video matrix switcher via RJ45 over Crestron DM-CBL-8G cable. The Kramer VIA GO is directly linked via HDMI to the Crestron video matrix switcher, and it provides wireless connectivity via the Wi-Fi system.

Custom Protection

Because the Barco projectors were to be installed in gyms, in which they could be exposed to damage, PFT built custom protective cages for the projectors at its workshop, and then transported them to each of the schools. Protective cages for the JBL speakers were also custom built.

At both locations, the Barco rigging frames had to be modified because, as supplied by the manufacturer, they were not designed to protect the projectors for gymnasium installations of this type; rather, they were designed for rigging in staging applications. Because no off-the-shelf protective cages seemed to be available on the market for projectors of this size, the rigging frame that Barco provided was used as a base around which the custom protective cage was built. The design and build of the cage was directed and performed by PFT's Rea.

Although the electrical boxes were installed where specified, modifications were made so that the enclosed components could be accessed more easily by users. To ensure an even better user experience, the control interfaces were customized to fit the work style and environment of the schools. "We designed the GUI to make it easy for the user to understand," Alexandre Filion, PFT's Lead Programmer, noted. "A user should not have to read a document to understand how to use a plug-and-play product." He added that PFT designed an intuitive interface, but also produced a user guide for the client. The team pictured the different scenarios in which the controller would be needed and set it up for user convenience.

"The startup of the video projectors takes time," Filion said. "To make sure nobody touches or fiddles with the system while the video projectors are starting up, the system is locked during this phase and the panel lights are blinking."

Challenges Overhead

Perhaps the biggest challenge centered on the ceiling of the Wiinibekuu School gymnasium. The projector cages had to be fixed to strong and durable structures. "The ceiling structure was not as per the drawing plans, and this was only discovered when the suspended ceiling had been removed," Rea explained. "The original ceiling sloped across the gym, and we had to make sure that the two projectors, which were to be installed at opposite sides, were at the same level." Put simply, pipes of two different lengths were used to hang the projectors at equal height from the floor.

The far-north location of the two schools posed a logistical challenge for PFT. When asked what the company would have done differently, had it anticipated some of the hurdles, Fantone replied, "We should have asked to see pictures of the inner ceiling before dispatching our team to the site. From the pictures, we would have realized that we needed double the quantity of some of the hardware we had planned for." Fantone said that PFT urgently had to dispatch an extra vehicle, with an additional installer, from Montréal, and the installer had to make a stop in Val-d'Or to buy more hardware. Also, because of the change of height caused by the slope in the ceiling, a pipe cutting and threading machine was rented in Montréal and dispatched to Waskaganish in order to custom cut pipes directly on site, as needed.

Additionally, Fantone noted, "Although the systems were connected and tested in-house before shipping, and they had a backup audio amplifier and network switch on site, one of the four wallplates was non-responsive on site. We had to send a technician in Montréal to the airport to get the new wallplate on the next flight out for Waskaganish for next-day delivery." Fantone recommends that all units be tested, and that there be backups, especially for items that have a lower cost.

The new projection systems are certainly brightening the learning and entertainment experiences of students and the larger community, and they're furthering the Cree School Board's mission to build a well-educated and successful Cree Nation through inspired teaching and valued learning. ITAV

Key Components

Willie J. Happyjack Memorial School

1 Barco RLS-W12 projector
1 Barco J lens 2.4-4.0:1
1 Barco RLM W rigging frames, modified by PFT
1 Crestron DM-TX-200-C-2G-W-T Cat5 switcher/transmission system
1 Crestron MPC-M10-B-T 2-Series control system
1 Kramer VIA GO wireless presentation system

Key Components

Wiinibekuu School

2 Barco RLS-W12 projectors
2 Barco J lenses 2.4-4.0:1
2 Barco RLM W rigging frames, modified by PFT
1 Crestron DSP-1280 12x8 digital signal processor
1 Crestron DM-MD8x8 8x8 DigitalMedia matrix switcher
4 Crestron DMC-4K-C-HDCP2 DM input card
1 Crestron DMC-4K-HD-HDCP2 DM input card
1 Crestron DMC-4K-CO-HD-HDCP2 DM output card
4 Crestron DM-TX-200-C-2G-B-T wallplates
1 Crestron DM-PSU-8 DM power supply
1 Crestron MPC-M10-B-T media presentation controller
1 Crown XLI2500 two-channel, 750W @ 4Ω power amp
2 JBL CBT-70J-1 two-way line-array columns
1 Kramer VIA GO wireless presentation system
1 Middle Atlantic EWR-16-22SD
1 Middle Atlantic PD-915R
1 Middle Atlantic DWR-RR16
2 PFT custom protective cages for JBL CBT-70J-1

Convergence Of AV And IT

The future of collaboration.

By Chad Wiggins

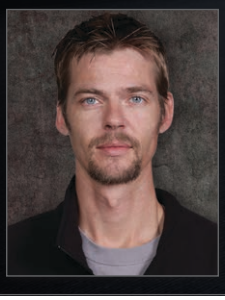
The convergence of AV and IT might not be a new topic, but it is one that continues to develop and open up new questions and opportunities. Although there might have been concern, confusion and even suspicion about what the closer ties between AV and IT could bring for professionals in both sectors, it is becoming clear that everyone stands to learn from this blurring of the lines between domains. It's also becoming clear that it'll enhance the end-user experience and create opportunities for continued growth and development among vendors.

Having said that, it should be noted that convergence is not happening in a consistent manner; different companies are approaching the change in different ways, based upon their industry, size, geographic footprint and culture. That, in turn, influences how each company is defining roles and responsibilities, and making its technology choices. Some opt for hardware videoconferencing (VTC) whereas others choose a unified communications (UC) platform; some companies might adopt AV-over-IP, whereas others opt for a "tried-and-true matrix"; some might continue to purchase their AV as products, whereas others are exploring AV-as-a-Service (AVaaS).

All those solutions can be perfectly appropriate, but it's easy to see how they all present a different degree of AV and IT intersection, as devices, software and networks are deployed. AV solutions have to be flexible and interoperable to serve myriad different company profiles and technology choices. It is, of course, to be expected that organizations will look at their needs and aim to meet them. And, because AV and IT sensibilities are undoubtedly different, this might, in fact, be a rich opportunity to learn from one another.

For example, IT's tendency to focus on "standards" when managing assets like laptops, servers and phones is driving many organizations to standardize the equipment in their meeting rooms. In these types of environments, however, where technology connects to people's senses—and where fidelity is so critical—a standard approach might not always deliver the best results. Although "standard rooms" might look the same physically, there are many potential nuances that defy standardization. For example, are room dimensions and construction materials really the same? How about room acoustics, noise and reverberation? Do some rooms have a sprinkler head in the ceiling right where the microphone should go?

When circumstances such as those conspire to produce a sub-par user experience, someone who has the skills to identify these nuances—and, crucially, to correct them—is needed. It might be a simple EQ move or a change to the coverage area of a microphone, but it most likely will be done by someone who has AV sensibilities…by someone who is skilled at "customs." (By that term, I'm referring to analyzing a space and creating a bespoke solution that meets its specific needs.) The focus is on production values and ensuring each room is set up to operate at its optimum level. Thus, to serve both AV and IT in-



Chad Wiggins oversees global product management for Shure's Networked Systems portfolio, including microphone systems, audio signal processing and software products for networked media applications.

terests, AV solutions have to provide an element of flexibility within a standard configuration.

Infrastructure maintenance and management—the notion of keeping technology operational and up to date in a consistent, methodical way—is an IT practice that AV should embrace. This encompasses everything from utilizing standard network-management tools and event logs, to installing firmware updates and security patches as they become available, to scheduling in power-down cycles. These are tasks that IT departments regularly carry out, but that, historically, AV professionals and AV solutions have not focused on. IT users generally don't want black boxes with unfamiliar brand names that can't be managed in the same way as the rest of their assets. Instead, they want a common back-end software to manage their AV devices and to provide interoperability with other products.

So, what is the AV manufacturer's role in the convergence of AV and IT? When this trend first became a talking point some years ago, it began at end-user sites with the AV department being absorbed into the IT department. The channel had to respond to those changes, and it did. AV integrators acquired IT knowledge (and vice versa), enabling them to have conversations in a language that the customer understood. So, now, it's up to vendors to step up and design great AV solutions that run on standard IT infrastructure and that integrate with native IT workflows.

Many elements of an AV system can be virtualized and delivered as a service that runs on standard IT computing platforms. That's something that would immediately make AV more accessible to IT, facilitate convergence and, potentially, clear up some of those blurred lines. The onus must be on the AV world to make the most of this opportunity and create solutions that might well mean less focus on hardware.

It is not just about the devices, but about how they're provisioned. The well-established model of hiring outside services to design, install and configure equipment and answer service calls has a distinct AV legacy. Many integrators have also begun to offer a

(continued on page 42)

viewpoint

Voice Control And AI Assistants

Will they become standard in enterprise conference rooms?

By David Danto

Artificial intelligence (AI) assistants are everywhere in our society today. Siri, Cortana, Alexa, Google, Bixby and others hear what we say and act upon our instructions. Most people vastly prefer this to having to touch buttons on a user interface (UI) or a remote control. There are some people, however, who fear that this "open mic to the cloud" represents a serious security threat, and who can't see it scaling to widespread enterprise use. Will AI and voice assistants take over as the default AV and collaboration room controls, or do they represent a passing fad—or, perhaps, too high a risk?

Every time I give one of my clients a "state of the industry" presentation, I make it a point to place my mobile phone—with a completely blank screen, in its standby state— on the table and ask it to call my wife. "Hey, Siri. Call Helen Danto." My phone wakes up upon hearing this and calls my wife (who is now not as annoyed as she used to be in being my test subject). If you've spent the less than one minute it takes to train your smartphone to understand your voice, and you set your AI assistant to "always listening," then this works flawlessly every time.

Most people are still stunned that this level of functional AI integration is *today's*—not tomorrow's—technology. And, just as has happened with Skype video and flat-panel TVs, it is only a matter of time before people begin to demand these disruptive and clearly functional consumer technologies in their offices. If you don't believe the room user interface is ripe for disruption, then you're clearly not paying attention.

With my apologies to UI companies and programmers, the fact is, most users *hate* touchpanel interfaces, and they'd do anything to avoid having to use them. Former New York City Mayor Michael Bloomberg once told me that the best UI would be one where the first button reads his mind and does what he wants, and the second button makes both buttons go away until he needs them again. With AI features like voice recognition, facial recognition (from a room's camera), Bluetooth beacons and more, the "read my mind" feature is not very far off. If the AI knows who I am, knows my calendar, knows the other parties/rooms I invited to my meeting, knows how I like to set my room's lights/shades/environment for a call, etc., then I don't have to say much more than "Start my meeting." Alexa and her friends might just be the superheroes we've always wanted, who can save us from the pain of bad room experiences.

The question, however, is this: What do these conveniences cost us? Will having an "always listening" or "always watching" device in our conference rooms lead to data breaches, with competitors and *evil forces* watching or listening in on our conversations? Can the trigger words and the data behind them be secured within an enterprise?

And then, assuming we can fix any potential security issues, have we really thought out the nature of a voice-based UI? Yes, we'll want to say, "Start my meeting," but it's pretty clear we won't want to say, "Make it louder" or "Mute my mic." Some ancillary UI will still be needed: either on our individual devices, or—*heaven forbid!*—back on that omnipresent touchpanel. Do two points of UI make sense?

We asked systems integrators, manufacturers, programmers, consultants and end users for their opinions, and we received the following interesting and varied comments. OK, Google…show us what they said.

David Danto is Director of Emerging Technology for IMCCA (www.imcca.org), and Principal Consultant at Dimension Data (www.dimensiondata.com).

MANUFACTURER

John Restrick
CTO
Cisco Video Technology Group
www.cisco.com/go/collaboration

We see significant interest in voice assistants in the enterprise conference room from customers. Voice dialing on cell phones and home-automation commands for lighting, etc., are both very natural in a conference room. Our firm has been demoing our voice-assistant technology and collecting feedback, and it will bring it to market later this year. In addition, the integrations we have with room automation from our touchpanels will be naturally extended to be invoked with voice commands in the future—allowing control of lighting, blinds and temperature. As with any new technology, however, there are still challenges to be solved.

The utility of voice commands and their broad adoption in the consumer world will lead many, but certainly not all, enterprises to adopt this—in spite of concerns about security. Vendors will have to make sure they are transparent with customers about how the systems work, as well as what information is sent, how it is secured and how the information is used. Two examples are that audio should only be sent when the trigger word is spoken, and there must be a clear indication to the user when audio is being sent to the voice assistant.

I agree that some tasks (*e.g.,* mute) do not lend themselves well to a voice UI; however, others, such as, "Join my meeting" or "Call Dave," are perfect for it. In addition to the microphone, cameras will help improve the user experience by, for example, helping the system figure out who gave the voice command, so that it understands the *"my"* in "join my meeting." Although a button or other forms of touch might be the best way to mute for a long time, it will be interesting to see how much more can be done to remove the need for touchpanels as rooms develop a better understanding of context and as they leverage other information, such as where people are looking and what their gestures mean.

MANUFACTURER

Gerard (Jerry) Pompa
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Perhaps the most impactful IT trend over the past couple of years is the ever-increasing power of voice. Whether searching for directions, listening to music or turning off the house lights for the evening, users and manufacturers are rediscovering the elemental power of the human voice for interfacing, integrating and efficiently communicating with our electronic world. Our firm has long been involved in understanding how new interfaces can assist with multipoint and multi-connected communication sessions. From leveraging instant message "bots" nearly a decade ago to more recent "slash command" integrations for text-driven PCS solutions, such as Slack, Teams and Spark, we find ourselves consistently working with organizations to evolve efficient access, security, authentication and control for group meetings.

Voice- and video-driven collaboration has the potential to affect many aspects of the current call model—access authentication, recorded name translations, discreet commands (mute my line), conference commands (lock the call, end the call), auto-transcription and more. New voice innovations, however, also open the door to evolving threats. So, it becomes imperative that the newly developed functionality be paired equally with new security capabilities, such as voice-signature recognition, data/media encryption and two-factor authentication. These concerns are significant, and they should not be implemented as an afterthought.

As product developers, we must also always be vigilant to deliver meeting value when applying these new toolsets. We should recognize that not every meeting function will best be served by voice or video. Requesting operator assistance by voice might make sense, but choosing from a long list of recordings to play back probably does not. That need might be better served with a simple visual interface.

Collaboration and conferencing services will absolutely change, as voice-driven and video-driven interfaces become more widely deployed. If I can set my thermostat, check messages and see what's happening on the front porch effortlessly by using integrated Internet of Things (IoT) and AI, it's only natural that I will want to start and manage my next conference call in the same way.

MANUFACTURER

Nic Milani
Director of Technology and Market Development
Crestron
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As people become more familiar with voice control on their devices and in their homes, we're seeing an increasing demand for voice-control technology in meeting rooms, especially from IT leaders. But, to get the most out of voice control, you have to think beyond individual rooms and look to a platform approach to control your full office space. Once you have a solid platform in place, you can look to add an AI engine, such as Amazon's Alexa, for example.

Being able to integrate solutions that connect any and all spaces with any and all technology is a critical need in the workplace. This requires that platform approach. Additionally, we believe that the more you connect these devices and drive intelligence, the more important it is to have robust security built in at all levels of the solution. This is often not a function of the AI system, but a function of the robust platform that the AI must interface with. To use an analogy, yes, the steering wheel is an important part of the car, and changes and improvements to the steering wheel could certainly improve the driver's experience—but the function of the car still has to be managed by an excellent engine, transmission, etc.

So, although AI has many benefits, it can create many risks. Trusted vendors are solving this problem on behalf of enterprise consumers by improving the user interface, while also not forgetting the importance of the platform and its functions and requirements.

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SYSTEMS INTEGRATOR

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The penetration of AI assistants in conference rooms is unavoidable. Some enterprises continue to make the same mistake of having a rigid IT mindset. As has been written extensively, facilitating consumerization of IT should be part of an IT strategy. Therefore, it is a logical expectation that, if AI assistants are making huge inroads into the consumer market, IT should be prepared for the fact that an organization's employees will eventually expect it in the workplace, as well. In the new digital economy, the reality is that most organizations will support technology devices, software and services outside the ownership or control of IT departments—that is, they'll be a facilitator for "Shadow IT."

As such, IT teams should seek to understand how AI assistants can enhance collaboration spaces as part of Digital Workplace Transformation initiatives. Understanding how to handle items such as authentication and personal identifiable information (PII), coupled with data stewardship, are some of the due-diligence complexities that IT will have to think through.

Application managers should slowly introduce small sets of simple and useful conference-room commands through AI assistants—for example, quick-start meeting functions, so that hosts and attendees can quickly start their meetings and not worry about how many buttons to push. Application managers will also have to remember the impact to the user experience and use caution to avoid AI *interrupting* meetings, rather than enhancing them.

SYSTEM DESIGNER/PROGRAMMER

Bryan Hellard
President
True View Video
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Eventually, voice control and AI will be a standard form of room control for the enterprise, but it has a long way to go in terms of usability. One of the biggest problems I see with voice control is the need to quiet down the conference room participants before attempting to launch a meeting, or else the user is forced to yell commands from across the room or find the device and speak into it. Its usage can also become problematic when people who have different accents or dialects are using the same conference room. Voice control's best use is when you limit it to things that don't overcomplicate the situation. Unfortunately, controlling a room is a complicated matter, so its actual use will be very limited.

Another key issue is reaction time. Current AI solutions are far too slow for actual use without frustration. Inputting a meeting ID with a keyboard is much faster than speaking numbers clearly and concisely to a voice-control system and waiting for it to respond. Once a user can launch a meeting using voice easily and successfully, and do it more quickly than using traditional means, I don't think they will want to go back.

With AI, the biggest issue is its lack of conversational understanding—or its lack of *actual* artificial intelligence. If a system can understand when you're talking to it without saying the "key" startup phrase every time, it will make a big impact. Currently, it is a chore constantly to say, "Hey, Siri," etc., before delivering a command. Understanding normal communication patterns and reacting to them, when appropriate, will help tremendously. That, of course, raises the additional issue of how to keep that intelligence secure within an enterprise.

Lastly, as it relates to the options available today, integration professionals like ourselves should always be wary of enterprise installations that use residential-grade equipment (but that is a debate for another time…).

viewpoint

SYSTEM DESIGNER/PROGRAMMER

Hope Roth
Programmer
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A few short years ago, I took a class on voice control, and the teacher told us, “It’s fun to play with, but I wouldn’t put it in a boardroom.” Now, Alexa controls all the lights and AV in my house. What has changed since 2015? New natural-language processing (NLP) algorithms (the science behind how our voice assistants recognize our words and then process our commands) have made giant leaps forward. And they’re only going to get better. Every time I click “yes, that was what I wanted” (or, conversely, “no, I didn’t want you to turn my music up to full blast”) in my Alexa app, Amazon uses machine learning to update Alexa automatically. Over time, my voice assistant learns my particular vocal quirks, and it gets better at following my commands.

Voice assistants are fantastic when it comes to straightforward commands. “Alexa, play [my favorite playlist] on Spotify.” “OK, Google. Turn on the living room lights.” They’re still not so great with homonyms, nuance or pulling up deep cuts. I talk to Alexa all day as I start, stop and adjust the music in my home office. But, if I want to embrace my inner hipster and listen to something you’ve never heard of, I’m pulling out my smartphone nine times out of 10 and searching manually.

As an AV programmer, my job is 80 percent implementing the controls that everyone wants and 20 percent oddball requests. Voice control nails that 80 percent. For most commercial applications, we’re there. You can use voice control to turn on a display, set a basic volume level, etc. For more bespoke systems, voice control will have to be a cool add on, with a more traditional UI as a backbone. And, because modern NLP is only possible through the power of cloud computing, you’ll need an in-room backup in case your internet connection goes down.

I don’t know that your average executive will ever feel comfortable saying, “OK, Google. Mute my microphone” in the middle of a tense negotiation. But, as an easy way for an end user to start and stop a meeting, I can certainly envision a multitude of clients saying, “I love using my voice assistant at home. Can you add those controls to our conference rooms?”

END USER

Gary Anselme
Director, Technology
American Express
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Voice control and AI in the conference room have finally arrived. Hooray! The applications are almost endless in the enterprise space. Imagine walking into a conference room and having the room greet you, tell you the agenda for the meeting, and even send presentation slides to the screen and your mobile device. Maybe you're dealing with a top-priority incident, and the room provides you with real-time status updates. The applications and use cases are almost endless. I say *almost* endless because the one key piece of the puzzle that hasn't yet been solved is how to make sure this functionality stays on premise.

The big tech firms all have their versions of voice control/AI, and each one has its own "trigger" word. The feature is great; however, once someone says the trigger word, the connection is open and AI is "listening" to everything until it is asked to do something. What if a person says the trigger word in error? How long is that connection open? How long is AI listening? Is AI listening to *everything* on the other end? What happens to the request data?

Voice assistants and AI will eventually take over as the default AV and room-control solutions, as security around the technology improves and as risks are mitigated. Touchpanels will be an add-on that will serve as an extension. The panel will be a way to disable local voice control/AI. Today, the solution seems more like a risk, because the enterprise doesn't own the data that the enterprise end users request. Enterprises will want to keep this type of data for themselves, so they can use it as they wish. After all, I don't want a third party knowing I like gummy bears after lunch…or do I?

END USER

James Basler
VP, UCC Engineering
Leading Financial Services Firm

When considering the impact of any technology trend that is originating from the consumer tech space, we always have to consider whether the demand from our end users is due to the siren's call of "Wouldn't that be neat?" Put another way, is there an actual operational benefit to the way we use collaboration technology?

In this case, regardless of what we determine the answer to be, it is clear that we will need to do our due diligence to understand the unique security and compliance concerns associated with this technology. My guess is that, even if it ends up that the benefit of voice control/AI assistants are insignificant, it will still be a trend that we won't be able ignore.

I believe that general AI enhancements to existing collaboration technology are going to stand the test of time in the enterprise space, far beyond any temporary impact of voice control. Hopefully, the siren's call won't lead to too many ships being dashed against the rocks due to failed attempts at voice-control implementation.

END USER

Gary M. LaSasso
Digital Strategy and Innovation Consultant
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www.amicustherapeutics.com

Even with improvements to simplify the devices over the past couple of years, touchpanels are still too complex. One-click-to-join has been partially integrated in our enterprise. The main issue preventing us from perfecting the process is the cost to update code and deploy globally.

I don't believe it has to be one or the other. In fact, I think conference rooms would still *need* both. There are too many use cases when the person who is needed to "start my meeting" isn't in the room. What then? Siri, Cortana and others have not replaced the keypad on our personal devices. They have enhanced our experiences and given us options. If only our room touchpanels would do the same.

OWNER'S REPRESENTATIVE

Christopher Maione
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Alexa, what's up? Talk to me, baby!

The consumer world is going bonkers over voice-command "gadgets." Sure, Siri, Cortana, Alexa, Google and Bixby are just the first generation (more like beta versions) of this technology. Wow, I can turn on lights, raise the temperature in my home, play music, set alarms, check the weather, make calls…and the list continues to grow.

Under these present platforms, all the information our AI friends collect goes out to the cloud and—thick as thieves—they sift through relevant content and remarket it back to us. You are an amazing resource of information for our AI friends.

Now, is this technology ready for prime time—ready for commercial (corporate) conference spaces? How do I put this…. *No @#$%@*% way!*

Sure, we could probably turn the light on—even open the shades—but, beyond those, not much more. It is very unfortunate that the typical touchscreen became an overcomplicated technology—mostly due to the overzealous geek programmers who insisted on fitting every button and command available onto the control-panel pages.

Voice control of more complex technologies, such as to establish an audio- or videoconference, or to display a laptop or PC, is just not there yet. Think of all the voice libraries that would have to be "trained" for true voice recognition across all forms of voices, languages, accents and dialects. Will we establish some universal form of voice commands? I just don't see the following happening via voice command:

"[AI assistant]—please set the lights for videoconferencing, lower the shades, establish a multipoint videoconference between New York, room 5A; London, room 2B; and Hong Kong, room 3C. Please also dial the audio bridge for dial-in-only callers and, once established and the meeting starts, please enable the front laptop connection in Tokyo for content sharing."

And, none of those challenges even addresses whether any of our enterprise clients are going to allow into conference rooms "microphones" that are open to the (public) cloud.

I misspoke earlier—this technology is actually *second-generation* audio control. I believe the first generation went something like "Clap on, clap off."

CALENDAR

June 2–8
InfoComm 2018
www.infocommshow.org
Las Vegas Convention Center
Las Vegas NV

June 12–14
Interactive Customer Experience Summit
www.icxsummit.com
Omni Frisco Hotel
Frisco/Dallas TX

June 18–21
HITEC HOUSTON, Hospitality
www.hftp.org/hitec
George R. Brown Convention Center
Houston TX

June 19–22
ESX 2018 Electronic Security Expo
www.esxweb.com
Music City Center
Nashville TN

July 23–26
Campus 2018 Technology
www.campustechnologyconferences.com
Pennsylvania Convention Center
Philadelphia PA

September 4–8
CEDIA Expo 2018
www.cediaexpo.com
San Diego Convention Center
San Diego CA

September 9–13
2018 BICSI Fall Conference & Exhibition
www.bicsi.org
Henry B. Gonzalez Convention Center
San Antonio TX

September 16–19
4th IEEE International Smart Cities Conference (ISC2)
smartcities.ieee.org/conferences-events
Kansas City Convention Center
Kansas City MO

Compiled by Dan Ferrisi *All specifications supplied by manufacturers and/or distributors.*

Clear-Com's IP Transceiver

Clear-Com's FreeSpeak II IP Transceiver (IPT) is based on Clear-Com's IP Platform solution, featuring AES67 compatibility, low-latency signal distribution and high-performance audio routing with high audio bandwidth. As a result, FreeSpeak II wireless beltpacks can now be addressed across a user's LAN. Additional enhancements support a higher density of users per transceiver. Existing FreeSpeak II beltpacks can be upgraded to work with the IPT through a simple firmware update. All transceivers are connected to an AES67 IP router and to the Eclipse HX system fitted with Clear-Com's E-IPA high-density audio-and-intercom-over-IP system card. Each E-IPA card—also native AES67 based—provides up to 64 ports of IP connections, which effectively supports 64 IPTs. The IPT transceiver can be powered from a PoE switch or local power source. Direct fiber connection is also available on each IPT.

Clear-Com www.clearcom.com

Gefen's Gen 2.0 AV-Over-IP Line

Gefen, from Nortek Security & Control (NSC), is shipping its EXT-UHD-LANS-TX, EXT-UHD-LANS-RX, EXT-UHDKA-LANS-TX and EXT-UHDKA-LANS-RX models, all part of the new Gen 2.0 AV-Over-IP product line. The EXT-UHDKA-LANS-TX (sender) and EXT-UHDKA-LANS-RX (receiver) solutions enhance AV extension and management for workstation environments where video and USB connectivity is required. In addition to basic KVM functionality, the KM Emulation feature facilitates real-time simultaneous keyboard and mouse control of each source from all connected workstations, eliminating the inherent limitations of earlier systems. The receivers feature a built-in scaler to help optimize the image for a variety of displays and different viewing environments. A videowall controller accommodates any screen configuration up to 16x16 and provides flexibility in sizing and manipulating live and signage content in demanding installations.

Gefen www.gefen.com

J+P's Ultra HD Rackmount Transmitter

Just Add Power (J+P) announced the rackmount version of its 3G ultra-HD-over-IP Power over Ethernet (PoE) transmitter. The 4K ultra-HD rackmount transmitter, the VBS-HDIP-747, expands J+P's lineup of devices, enabling integrators to mix and match J+P devices to fit their hardware requirements on 4K HDMI projects. The J+P 1RU rackmount VBS-HDIP-747 3G ultra-HD-over-IP PoE transmitter provides the same features and benefits as the compact VBS-HDMI-707 PoE TX. Both models distribute 4K video with HDR support to seamlessly meet ultra-HD requirements. They also feature HDCP 2.2, optional 4K to 1080p scaling at the display location, 2-way RS232 and IP control, and support for all audio formats up to and including Dolby Atmos and DTS:X. The 3G ultra-HD-over-IP models can be mixed and matched in the same Gb network, providing a scalable systems approach to 4K video signal distribution requirements.

Just Add Power www.justaddpower.com

Prysm's Native Apps

Prysm has unveiled 2 native apps for its digital workplace platform. Prysm Desktop allows users to connect their teams with shared visual workspaces where everyone is empowered to bring relevant content and ideas into focus across virtually any screen size. Users can collaborate with participants regardless of their work location and consolidate status updates, feedback and action items for subsequent review and prioritization. They can also share any desktop or web application alongside files, notes and sketches. Prysm Desktop is for Microsoft Windows 10-based devices. Prysm iPhone allows users to engage in Prysm projects while mobile or in-room. They can share files, website content or other apps to visual workspaces and add ideas and notes directly to Prysm projects to enhance collaboration. Users can quickly and securely log in to Prysm-enabled displays directly from an iPhone.

Prysm www.prysm.com

Lawo's Networking Solution Software

Lawo's smartDASH System Monitoring and Real-Time Telemetry is a vendor-agnostic enterprise software suite that provides full network and media visibility across an all-IP, all-SDI or hybrid WAN/LAN broadcast infrastructure. Bridging the gap between IT and video engineering, smartDASH addresses both sides of the operation to provide a comprehensive view of what a network is doing and how the media streams flowing through it are behaving. Based on a UNIX OS, this software-defined networking solution uses a robust database to document and rapidly search any aspect of the network's operation—from a simple cable ID number to the path of a multicast across a transnational multi-hop WAN. Additionally, by leveraging a vast library of hardware communication protocols, the system automatically interrogates live and dormant path connections to create the most intuitive and data-rich presentation layers of a COTS-hybrid infrastructure.

Lawo www.lawo.com

Riedel Communications' Intercom Panel

Riedel Communications has introduced the 1200 series SmartPanel—the RSP-1232HL. It features multiple full-color multitouch displays, 32 hybrid-lever keys, the ability to leverage apps for multifunctionality and the ability to adapt to the various workflows in use. For the 32-key user interface, each lever key has an integrated rotary encoder that provides control over parameters in the same location as the key. The levers have the appropriate form, weight, comfort, responsiveness and anti-fatigue qualities to reimagine the way an intercom panel should feel. The RSP-1232HL supports varied workflows. Some comms users prefer "Talk and Listen" workflows where the user chooses what to listen to from an initially silent panel. Other workflows prefer a "Talk and Mute" workflow where users start with a panel that broadcasts everything, with the users selectively choosing which signals to turn off. Users decide which mode they prefer on a per-panel basis.

Riedel Communications www.riedel.net

Lumens Integration's Wireless Presentation System

Lumens Integration Inc. has introduced the TapShare TS20 wireless presentation system for classrooms, meeting rooms and auditoriums. The TS20 system operates on 802.11ac with 5G Wi-Fi to provide a presentation experience without latency. It has a built-in multi-interface that includes HDMI, DisplayPort, USB and IP. In addition, it's compatible with all HDMI sources and supports split-screen display. The system is easy to install, and no additional drivers or software are needed. Presentations can be shared with the single touch of 1 to 4 pods. The TS20 will be available in Q3/18. The TapShare unit comes with the base and 2 pods. The storage dock and 2 additional pods can be purchased separately.

Lumens Integration www.mylumens.com

Media Vision's Infrared Wireless Discussion Mics

Media Vision's TAIDEN HCS-5335 Series infrared wireless discussion mics are smaller than a smartphone. The gooseneck or boundary infrared wireless mics by TAIDEN are easy to install, and they deliver high-fidelity audio with no need for frequency management, no eavesdropping and no crosstalk. And, they offer the ability to install multiple systems in adjacent rooms. The solution is ultra-portable, with no equipment rack pieces. The infrared transmitter and central processor are combined in 1 small, tabletop unit that can be placed at the center of the table, with a wide coverage radius. A PoE Dante-enabled solution ensures scalable installations with simplified wiring. Key conference-management capabilities, including camera tracking, can be achieved through web control, from any browser-enabled device.

Media Vision www.media-vision.com

Lightware's AV-Over-IP Video System

Lightware's UBEX optical fiber-based AV-over-IP video system product line transfers 4K ultra HD @ 60Hz 4:4:4 signals uncompressed on a 10Gb Ethernet network. UBEX can operate both point-to-point and as a networked AV system. Each UBEX can operate in sender or receiver modes, and also as a transceiver unit; switching among these operation modes can be easily performed by a firmware change. A virtual matrix system can be built using UBEX units as input and output endpoints, and by including a standard Ethernet switch as crosspoint. The device has dual, field-replaceable SFP+ optical modules, with extension distances that range between 400m with Multimode (MM) and 80km with Singlemode (SM).

Lightware www.lightwareusa.com

Williams Sound's Small-Area IR Transmitter

Williams Sound's IR T1 small-area infrared transmitter offers a compact footprint. It is ideal as an assistive listening system for small areas or for private TV listening in small conference rooms, hospital rooms, assisted living facilities, medical treatment centers and jury deliberation rooms. The IR T1 provides a coverage area of up to 1,000ft², and can be powered by AC power or a standard USB port on a TV. High-efficiency LEDs display power status and audio input. It is available with tripod mount or an optional flatpanel TV-mounting bracket. It offers plug-and-play installation with 3.5mm audio input and 1- or 2-channel operation (2.3 and 2.8). It also features a power-conserving sleep mode.

Williams Sound www.williamssound.com

ITOPIA: PERSONALIZATION AND THE HUMAN FACTOR

(continued from page 6)

still respecting user privacy and prerogatives? How will we unlock the value of machine learning and analytics to enrich the experiences of our end users? For starters, we can focus on the human spirit, rather than just on the technology. We can do our best to make sure that user interfaces are truly *human*—not confusing or isolating. Beyond the interface, we can do many things to make the hardware, software and total experience of our solutions more responsive to the needs of our end users. We can try "walking a mile in the shoes" of our users, imagining the best experience they could have in any given situation.

Communications technologies and data analytics are continuously evolving, giving AV/IT systems designers the power to address individual users' needs. It is up to us to ensure that this great power is used responsibly, and in a way that will make each AV/IT solution feel more natural to the human beings who use it.

INSIGHTS: CONVERGENCE OF AV AND IT

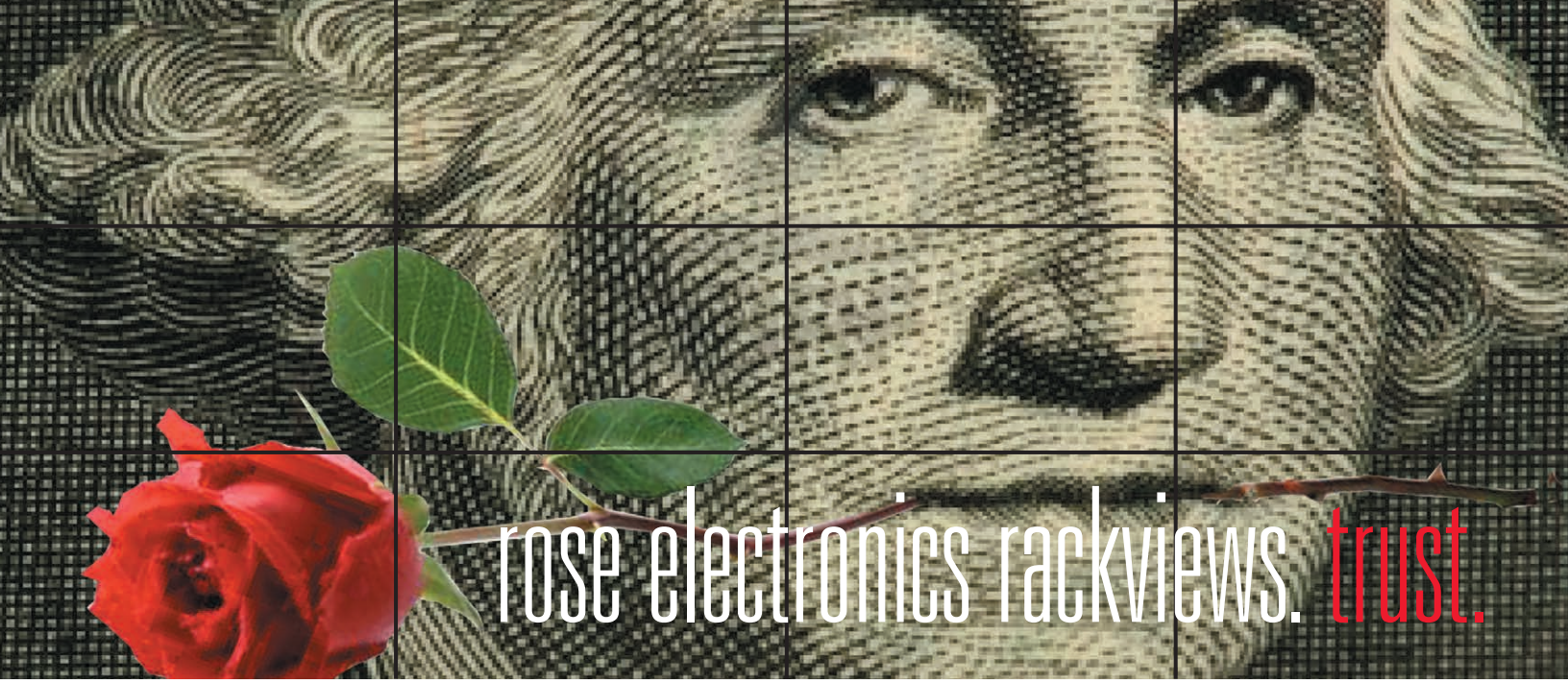
(continued from page 31)

managed-service-based model, which is a great fit for IT divisions that are a little more hands-off with AV. For certain others, though, a third model is evolving—a model in which IT is embracing AV. Rather than outsourcing, they are developing AV skills and bringing design roles, commissioning, operations, management and maintenance in house. For a company that has hundreds of rooms, investing in a skilled team can be a cost-effective option. This, once again, brings us back to the manufacturer's role when AV wares are becoming more soft than hard.

Consider the case of enterprise software, for example. Whether it's enterprise resource planning (ERP), customer relationship management (CRM) or other enterprise software, manufacturers are expected to be responsive and more available to consult, and they're expected to offer support and play a bigger role for customers who invest in their product. IT professionals expect more than just a transaction with vendors; they have a different value assessment of software components in their overall ecosystem and the services around them. The IT division might even contribute some custom software to make things work. AV solutions should be provisioned in the same way. AV solutions that can adapt to different provisioning models, and that can be managed by any combination of AV and IT professionals, will have the greatest chance of being adopted.

What's interesting is that the customers themselves are also changing, with much bigger players investing in AV technology. We're learning a great deal from this change: The importance of efficient solutions and easy-to-use tools are just two things, and this opportunity to learn is going to make us better.

There is no doubt in my mind that the convergence of AV and IT is a huge opportunity. Being able to serve IT customers and learning from their practices, thinking about AV products in a more institutional environment, investing in product development that will meet changing needs and collaborating more closely with end users—all of this, taken together, will add up to exciting times ahead for AV/IT.



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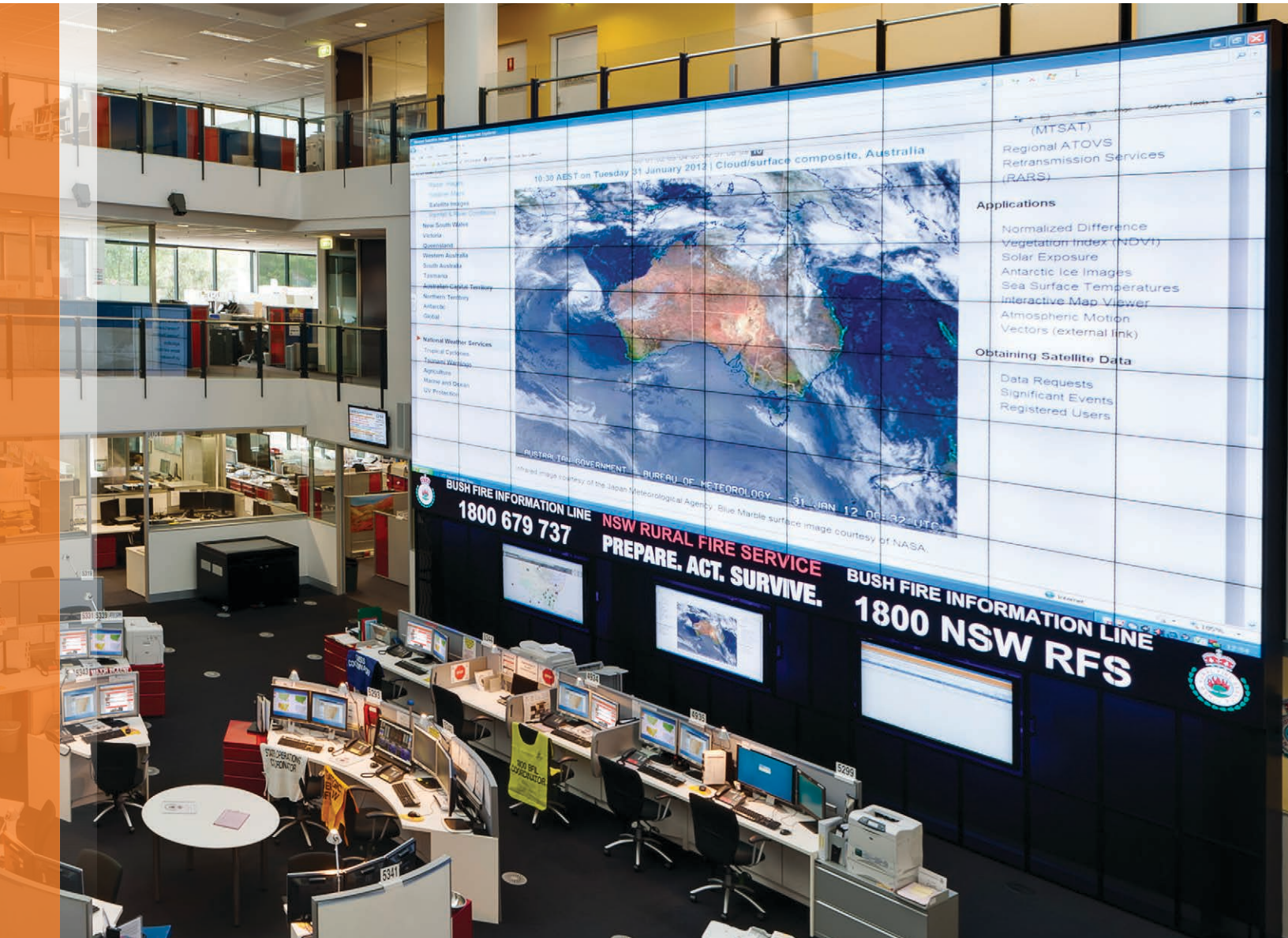

See it live at InfoComm booth #N-1306