

AV TRENDS IN GOVERNMENT

How transformations in videoconferencing and AV technology impact the way we meet and collaborate.

INSIDE:

- ▶ The move from hardware to software-based approaches - and what that means for secure conferencing
- ▶ The role of AV in open government
- ▶ Open workspaces – the walls come tumbling down
- ▶ What to consider when buying AV equipment for government entities
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The Transition From Videoconferencing Hardware to a Software-based Approach

How do you get more use out of older videoconferencing gear in this new world of cloud conferencing? What are the implications for secure conferencing?



"Let's schedule a meeting." In the past, those four words meant reserving a dedicated room and coordinating multiple schedules. Agendas and handouts had to be prepared and someone had to take notes for others who couldn't attend. Others who had to be present needed to book travel arrangements, leaving their schedules to the mercy of airlines and trains.

One or more computers and/or media players had to be interfaced to a projector or large flat panel display. Sometimes a videoconference was necessary, adding more layers of specialized and expensive AV hardware and complexity. Frequent calls to help desks weren't uncommon. In some cases, only rooms that met specific security requirements could be used for the meeting.

All of this work was tedious, time-consuming and expensive (and at times, counterproductive). Yet, we put up with it because there just weren't any other options.

That is, until about fifteen years ago, when subtle changes began rippling across the AV industry.

A freeware program was invented in Europe that allowed anyone to chat by video over the Internet, which was already transitioning to fast broadband connections. A dedicated Internet "channel" for personal videos launched shortly afterward. Two years later, the first "smart" phones came to market, followed by tablet computers.

While all of this was happening, wireless connections were picking up speed and becoming ubiquitous in just about every electronic gadget from Blu-ray players to cameras. Smartphones became an essential part of our lives as more and more "apps" were developed for them, including entire suites of word processing, presentation, and spreadsheet programs. Inexpensive high-definition cameras were now standard features in phones, tablets and laptops.

A BRAVE NEW WORLD

No one knows the exact date when all of these trends intersected. But intersect they did, re-writing the rule book on meetings. Now, anyone could set up a meeting at a moment's notice, in any space, at any time, using any presentation platform they wanted. Spontaneity, often lost in the shuffle, returned to meetings. A new term, "collaboration," arose to describe groups of people sharing ideas.

**The birth of
collaboration: how
did we get here?**

The dedicated meeting room began to look outdated. With personal electronics, fast WiFi, a large video screen, and a few chairs, small groups could “huddle” to exchange and discuss ideas. Remote participants could join using videoconferencing software on laptops and mobile devices. Prices for AV hardware (like those of consumer electronics) had been declining since the turn of the 21st century, adding functionality while reducing physical size.

Most importantly, many of the functions of dedicated AV hardware were now being performed by software. You didn’t need to install and operate a dedicated videoconferencing system – all you needed was the camera and microphone in your mobile device, some low-cost software and a fast Internet connection.

That dedicated rack of AV hardware was getting a lot smaller. In some cases, it was replaced altogether by specialized wireless collaboration and presentation hubs, connected to projectors and large flat screen displays. Now, instead of connecting a cable to a computer (and making sure you had the right adapter!), you simply launch an app, enter a user name and room code, and share your presentation to the main screen

The significance of this new way to present can’t be overstated. It represents a radical change from decades of hardware-based signal switching and distribution to software-based switching (SBS), one that relies less on physical connections and more on wireless. And it comes hand-in-hand with the use of cloud-based programs to communicate, a/k/a software as a service (SaaS).

That’s not to say that AV hardware is obsolete: Far from it! We’re still using cameras, displays, microphones, and audio amplification. What is changing is the way we switch audio and video signals, moving away from dedicated AV cabling to transporting signals over IT networks.

We’ll still use video cameras, microphones, large displays, and audio amplification when we meet. But our content will increasingly come from mobile devices, Internet video channels like YouTube, and cloud servers.

Instead of large racks full of expensive, dedicated videoconferencing hardware, we’ll rely more on Zoom, Skype, GoToMeeting, WebEx, and other Web-based services to conference and chat with video. And that means we can meet just about anywhere at any time and easily share our presentations with others, connecting from Windows, Android, and iOS platforms.

SAAS, SECURE CONFERENCING, AND HUDDLES

This move from a hardware-centric to software-centric approach presents significant challenges for government applications, specifically in meetings that involve classified information. A Sensitive Compartmented Information Facility (SCIF) is defined as an accredited area, room, group of rooms, or installation where sensitive compartmented information may be stored, used, discussed, or electronically processed.

AV equipment used in SCIFs employ secure, hardware-based signal switching and distribution



Conferencing is moving from hardware-based solutions to cloud-based applications.

systems for obvious reasons. A move to SaaS would require high levels of encryption and authentication, given the reliance on wired and wireless connections. That’s not to say that such a move would be impossible – emerging technologies that include millimeter-wave wireless connections, combined with robust encryption and multiple authentication factors, can provide the required security.

While SCIFs are dedicated meeting spaces built to detailed specifications, there are no clear definitions for huddle spaces, which tend to be minimalist. The idea of a huddle space revolves around the concept of an ad hoc meeting. If two or more people want to share, discuss, and collaborate, they can do it spontaneously, just about anywhere – even in a lounge, a cafeteria, at a patio table, or in a lobby. As in a football huddle, there is no delineated space for meetings: People simply get together, interact, and move on.

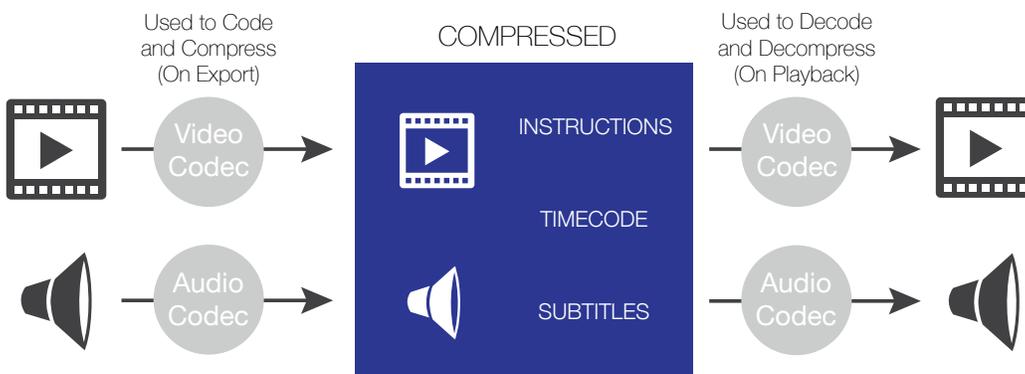
At the minimum, some sort of large shared display is required, along with a hub for participants to connect and share presentations from their mobile devices and laptops. Videoconferencing cameras can be added to allow other participants to join remotely. Aside from that, all that’s missing is a few chairs and/or a couch.

The increasing popularity of SaaS applications, informal meeting spaces, and reliance on personal mobile devices is also intersecting with a move to non-traditional open office space. The Integrated Workplace Initiative (IWI) is a “smarter workspace” initiative that will allocate more square footage for meeting and collaboration areas and less for dedicated offices. It acknowledges and embraces the move to a more mobile workforce.

While this move to mobile productivity is welcome and necessary, what happens to all of the legacy videoconferencing equipment used in traditional meeting rooms? Is it destined for recycling, or can it be adapted to this new world of mobile conferencing and collaboration?

The answer to the last question is, "adapt!". Before we go into further details, let’s take a moment to better understand the differences between hardware-based and software-based AV signal management and services.

BEHIND THE DEFINITIONS: CODECS



The transition from hardware-based to software-based signal management has created a new crop of acronyms and definitions. Until recently, AV equipment used in meetings and conferences involved (a) multiple boxes installed in racks, (b) extensive wiring to connect all of those boxes together, and (c) some sort of control system to operate everything.

For videoconferencing, a specialized piece of hardware known as a “codec” is required to convert audio and video to a signal formatted for travel over an IT network. The codec also processes incoming audio and video and converts it back to audio and video for the meeting room.

“Codec” is actually a combination of two words – “code” and “decode.”

“Codec” is actually a portmanteau of two words – “code” and “decode.” Both compression and decompression are necessary to transport video over IT networks as the required bandwidth of uncompressed high-definition video would clog up all other Internet traffic. Codecs are also used to compress and decompress audio.

Codec hardware used to be quite expensive. Today, just about every type of consumer electronics equipment has a video decoder built-in, and some devices (laptops, smartphones, tablets) also encode video.

The most widely-used codec is MPEG4 H.264 AVC (Motion Picture Experts Group H.264 Advanced Video Coding). Your streaming TV supports it, as do set-top boxes, DVRs, Blu-ray players, digital SLR cameras, and point-and-shoot cameras. Next-generation cameras for videoconferencing often provide a direct network connection for streaming as they encode to H.264 while capturing video, eliminating even more hardware.

Another codec format that is used for mobile devices and streaming video is HTTP-LS (Hyper Text Transfer Protocol - Live Streaming). This codec is implemented in software, although it is not widely used for commercial and institutional applications. HTTP-LS is more popular for consumer applications.

A more advanced version of MPEG4, the High Efficiency Video Codec (HEVC H.265), is also available. It is software-intensive and allows for greater compression of HD video, resulting in improved transmission efficiency over networks. Yet another codec, Google VP9, works in a similar manner and is used exclusively to stream HD video from YouTube to computers and mobile devices.

The important thing to remember here is all of these codecs are software-driven. While they can be built into dedicated conferencing hardware, there’s simply no need to do so. If a meeting participant has a smartphone, tablet, or laptop, they’re ready to conference.

SAAS DEFINED



Software as a Service (SaaS) works just the way it sounds. The software required to run a specific application doesn’t reside on your computer or mobile device, nor is it loaded from a CD or downloaded from a Web store. Instead, you install a small app and then log into a portal. The software then launches and runs from a remote cloud-based server.

One of the first programs to be delivered this way is office productivity software, which until recently was purchased outright. Now, you have the option of ‘renting’ the software for a specific time period, logging into a remote server to use it only when you need it.

A more appropriate example of SaaS for our purposes is meeting connectivity software. When you join a Web conference via a platform such as Skype for Business, Zoom, or GoToMeeting, you launch a small app and log into a Web URL. At that point, the remote software takes over and provides you with a graphical user interface, displays controls for speaker/headset and microphone audio, and brings up a dashboard of settings for you to share your screen, see who’s attending, and chat with other participants.

With SaaS, all you need to participate is a compatible desktop or laptop computer, tablet, or

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smartphone. When the meeting is complete, you simply log out. The beauty of this approach is that you can participate in a Web conference using any model of computer or mobile device you want. There's no need to specify and install specialized, expensive software and hardware for conferencing. As long as your operating system is supported, you're in!

BRIDGING OLD AND NEW

Along with the trends toward lower-cost electronics, increasing use of personal devices in meetings, widespread use of HD video, and more efficient codecs and SaaS, there is yet another trend impacting the government AV market: Budgets.

Cost-cutting is nothing new, but it seems to be the order of the day at all levels of government from municipalities to federal operations. At the same time, Integrated Workplace Initiative is leading the charge to reconfigure conventional government office space for multiple uses, following similar trends in the corporate and education worlds. New work areas are large and open, and meetings can happen just about anywhere.

The days of building single-use meeting rooms are drawing to a close (with a few exceptions, such as SCIFs). A greater reliance on fast WiFi connectivity eliminates the need for dedicated wall plates and ports. Cubicles can still be practical – after all, some degree of soundproofing is still needed – but meeting participants don't need to congregate in one space as often as they did in the past.

The challenge is getting more use out of older videoconferencing gear in this new environment of Software-Based Signal Distribution (SBS) and SaaS. Instead of conventional video connections like DVI and HDMI, the new world of conferencing revolves around the idea of Unified Communications (UC), trying to find a common connection standard and platform for a myriad of cameras, media players, and audio systems.

As a result, a fast, multi-function connector is a better choice for linking everything. And the connector of choice is now the Universal Serial Bus (USB), version 3.0. USB is fast, flexible, symmetrical, and "smart." It knows what you've plugged it into and can transport data, provide power for charging or operation, and even functions as a display connector – all at the same time.

More and more mobile devices and laptops have adopted USB 3.0, providing a solution to our earlier problem of re-using existing videoconferencing cameras. That solution is to 'bridge' between those older camera and audio systems and SaaS conferencing programs by using an AV bridge with video and audio inputs and USB outputs.

Vaddio's OneLINK Bridge Codec Kits do exactly that - connecting legacy cameras and microphones over USB 3.0 to any cloud conferencing software, such as Google Hangouts, Skype for Business, WebEx, and Zoom. The hardware in the rack goes away (well, most of it), making for a simpler and cleaner installation.

Another problem with legacy cameras is the limited distance afforded between camera and codec. Now, OneLINK Codec Kits provide an HDBaseT™ interface that extends video, power, control and network up to 328 feet (100 meters) over a single Cat-6 cable. Existing Cisco® and Polycom® systems can now be installed in larger rooms with more flexibility in camera and/or codec placement while appealing to end-users who want to enjoy the benefits of Web-based conferencing.

For more extensive applications such as lecture capture, Vaddio offers combination AV switchers with USB output, switching between multiple cameras, video sources, and microphones and providing preview and program monitors as well as a USB output for Web conferencing. We'll discuss those in more detail in the next chapter.

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The Trend Toward Open Government

Governments exist to serve the people. Openness, accountability, and honesty define government transparency.



In a free society, transparency is government's obligation to share information with citizens and is at the heart of how citizens hold their public officials accountable. Information on how officials conduct the public business and spend taxpayers' money must be readily available and easily understood.

Government transparency is beneficial for efficient democracy, as information helps citizens form voting decisions and meaningful conclusions about upcoming legislation. An open, transparent government allows for the dissemination of information, which in turn helps produce greater knowledge and societal progress.

Calls for more open government at all levels began in the 1950s as a response to federal agencies classifying or restricting access to documents and minutes of meetings right after World War II. It was believed that this trend toward restricting access was in response to concerns about foreign intelligence agents attempting to infiltrate numerous agencies, including military and intelligence groups

Two significant acts of Congress helped open the doors of federal agencies. The Freedom of Information Act (FOIA), 5 U.S.C. § 552, is a law that allows for the full or partial disclosure of previously unreleased information and documents controlled by the United States government. The Act defines agency records subject to disclosure, outlines mandatory disclosure procedures, and grants nine exemptions to the statute. The FOIA was signed into law by President Lyndon B. Johnson on July 4, 1966 and went into effect the following year.

While the FOIA focused primarily on information and documents, another law specifically targeted meetings and proceedings of federal agencies. The Government in the Sunshine Act (Pub.L. 94-409, 90 Stat. 1241, enacted September 13, 1976, 5 U.S.C. § 552b) affects the operations of the federal government, Congress, federal commissions, and other legally constituted federal bodies. At the federal level, these laws cover only agencies with collegial, multi-member leadership (such as commissions) and federal advisory committees.

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A Washington D.C. Circuit Court decision in 2000 stated that, "The Sunshine Act provides, with ten specified exemptions, that 'every portion of every meeting of an agency shall be open to public observation.' 5 U.S.C. 552b(b) It imposes procedural requirements to ensure, inter alia [among other things], that advance notice is given to the public before agency meetings take place. It also imposes procedural requirements an agency must follow before determining that one of the ten exemptions from the openness requirement applies. However, neither the openness requirement, nor the related procedural requirements, are triggered unless the governmental entity at issue is an 'agency,' and unless the gathering in question is a 'meeting' of the agency."

From the Reporter's Committee for Freedom of the Press: "State and local governments often take their lead from federal agencies. All states have open meeting laws, often referred to as "sunshine laws," requiring agency officials to hold certain meetings in public. These laws do not necessarily ensure that members of the public will be allowed to address the agency, but they do guarantee that the public and the media can attend the meetings.

The ability to record a meeting, either through audio or visual recording has generally been viewed as implicit in sunshine laws if not explicitly written into the state law. For example, Utah and Oklahoma statutorily permit the recording of meetings. Similarly, states like New York and New Jersey have recognized a right to recordings through judicial decisions. Other states have no provisions guaranteeing the right to recording meetings, but sometimes the practice is generally allowed anyway if it does not disrupt the proceedings.

State laws apply to a variety of commissions, boards and councils. Generally, sunshine laws guarantee public access to meetings only when a quorum of a group meets to discuss public business."



THE ROLE OF AV IN OPEN GOVERNANCE

AV technology is an essential component of governmental transparency, particularly when providing viewing and documentation of public meetings. There are two ways this can be done:

- (1) Video streaming, where one or more cameras are used to continuously record and stream meetings for the benefit of remote viewers, and
- (2) Lecture capture, where two or more sources of video, graphics, and photographs are switched and mixed during the course of a meeting.

There is a difference between the two. With video streaming, graphics such as charts, photos, and artwork may be shown during a public meeting, along with video clips. Unless a separate camera is

Live streaming and lecture capture allow for governmental transparency.

focused on the main display screen or a direct connection is switched to the source of the images and video, remote viewers may not be able to clearly see these elements with a simple video streaming setup.

With lecture capture, all elements of a presentation are usually recorded for time-shifted viewing. Lecture capture requires active switching between video and audio sources, and the capture can be live-streamed and/or recorded for future viewing and archiving.

SETTING UP A LECTURE CAPTURE SYSTEM

It's not difficult to configure a lecture capture system for public meetings. But there are a few things you need to think about first.

There are minor differences between recording a public meeting and a lecture. The primary difference is that, during a lecture, attention is focused on a single instructor and any audiovisual aids used during the class. A secondary camera may be set up to show questions from students as "cutaway" videos, but the majority of recorded video will be of the instructor.



In public meetings, there may be multiple speakers, a moderator or chair, and a comments period. One camera may not be able to capture all of these. In addition, everyone who speaks will also need a microphone of some kind, even if they simply raise a hand and speak from their seat. And of course, there may be visual aids, PowerPoint slides, charts, and even video clips to capture during the meeting.

Another consideration is the size of the meeting room. No two room layouts are alike, and multiple cameras will be required to cover all participants and attendees, particularly if there is a public comment period. Cameras that perform across a wide range of light levels and adjust automatically are a must. It's not unusual to see brighter lighting at the head of the room than in the back, but someone standing at a microphone in the rear needs to be seen and heard just as clearly as the meeting chair.

TOOLS FOR LECTURE CAPTURE

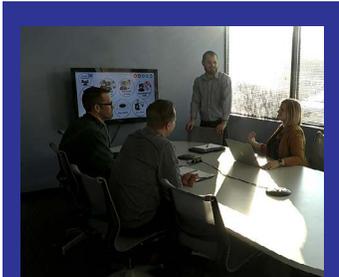
Designing and installing a lecture capture system doesn't have to be a complex task. The most useful tool in your lecture capture kit will be the pan-tilt-zoom (PTZ) camera. While PTZ cameras have been around for several years, the newest models are compact, have quiet motors, can be operated remotely over long distances, and capture high-definition 1080p/60 video. Some models can also capture audio. Specialized designs such as Vaddio's RoboTRAK will automatically track any single speaker or presenter who is wearing a special IR sensor lanyard, eliminating the need for a camera operator.

Older PTZ cameras sensors will generate distracting noise when operated under low light conditions, giving the video a very grainy appearance. The sensors in today's PTZ cameras have wide dynamic range and increased sensitivity to low light. Sony's Exmor® camera sensor, found in many Vaddio cameras, provides high contrast, detailed images, and saturated colors even in dimly lit rooms.

For legacy cameras, Vaddio OneLINK Codec Kits provide an HDBaseT™ interface that extends video, power, and control functions up to 328 feet (100 meters) over a single Cat-6 cable. Existing Cisco® and Polycom® codecs can be used in larger rooms with HDBaseT capable cameras and longer focal length lenses like the Vaddio RoboSHOT 30E HDBT camera. This product is especially useful to customers who want to use these existing cameras for Web conferencing.

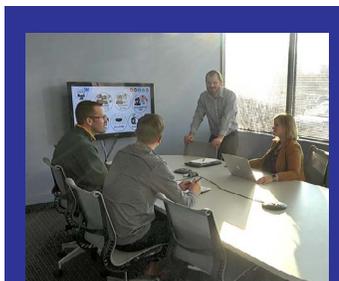
Multiple cameras will be required to cover all participants, particularly if there is a public comment period.

Unified Communications (UC) videoconferencing systems have adopted the Universal Serial Bus (USB) to connect both video and audio. However, some cameras may not provide this option, connecting instead through formats like HDMI, HD-SDI, and DVI. To make the jump between formats, an AV “bridge” is required, converting from a range of analog and digital video signal formats to USB.



WDR OFF

Bridges are also useful if you need to use an existing audio reinforcement system with UC software. A line level audio connection from the existing room mixer can connect through Vaddio’s EasyUSB Audio Bridge to the USB port on a conferencing desktop or laptop computer. For rooms without an installed audio reinforcement system, the EasyUSB Mixer/Amp provides a dual function – it takes care of in-room mixing and amplification of microphones and speakers, plus it provides a USB output for UC software applications.



WDR ON

For more complex lecture and meeting capture systems, Vaddio’s AV Bridge and AV Bridge Matrix products can switch multiple cameras and microphones. The AV Bridge MatrixMIX is the industry’s first multipurpose AV production switcher that brings live event production to unified communication applications with switching, advanced camera control, USB/IP streaming, and graphics mixing capabilities, all from one device.

With this product, you can seamlessly switch between video sources with audio following automatically. Up to six cameras and microphones can be connected and switched, plus two additional video inputs included for computers and graphic sources. Dual video outputs connect to program and preview monitors, and there’s also a multiviewer output.

Sensors in today’s PTZ cameras have wide dynamic range and increased sensitivity to low light.

On the audio side, an 11x7 audio mixer accepts analog, embedded HDMI, USB and IP audio. Switched and mixed video/audio is output as USB 3.0 for UC connections along with H.264 video formatted with Real Time Streaming Protocol (RTSP) for a direct Internet connection. AV Bridge MatrixMIX replaces what would have been a full rack of hardware just two decades ago.

To sum up, lecture capture should be an integral part of every public meeting to support transparency. The tools for constructing a lecture capture system are powerful, easy to connect and use, and affordable. Today’s AV tools give you a choice: Build your system from scratch to work exclusively with software codecs, or re-deploy existing videoconferencing cameras that were originally paired with older hardware codecs.

An AV "bridge" converts audio and video signal formats to USB.

Smarter Workspace Management

How remote workers, mobile devices, and new efficient workspace initiatives are changing the face of governmental meetings and collaboration.



The days of commuting to a dedicated office and sitting in a cubicle for hours are rapidly drawing to a close. Agencies and organizations no longer find it necessary to maintain large, showcase offices, especially with so much business taking place over the Internet. Flying employees in from across the country to have meetings is expensive, time-consuming, and often counter-productive.

It's not unusual today to find entire departments of workers logging in from home to do their jobs. Improvements in audio and videoconferencing have reduced the need for in-person meetings and conferences, and some agencies only schedule in-person meetings once or twice a year. The adoption of cloud-based file storage and retrieval makes it easy for any member of a group to comment on and edit a document, slide show, spreadsheet, engineering or architectural drawing, or video, no matter where they live.

For most organizations, the expense of renting or leasing office space is the second-largest cost after salaries and benefits. It's not surprising that so many government agencies, institutions and companies are looking to reduce the cost of office space – and to devise more practical ways to use that space, all with the goal of maximizing defined budget dollars. There is less interest in defined offices and more interest in areas where workers can meet and collaborate, including so-called ad hoc meeting areas also known as huddle spaces.

THE WALLS COME TUMBLING DOWN

In some government agencies, most of the employees work in the field and rarely make an appearance in the office. As a result, large spaces laid out with long halls and lots of cubicles often go unused. The United States Courts system doesn't own property and must pay \$1 billion in annual rent to the General Services Administration (GSA) for courthouses and other space. Containing rent costs has been identified as the federal courts' single greatest cost-saving initiative, particularly as some departments have downsized staffs in recent years.

In response to this challenge, the Facilities and Security Office (FSO) at the Administrative Office of the U.S. Courts developed the Integrated Workplace Initiative (IWI), which employs technology to literally break down the walls in court and probation offices. IWI calls for a visually open, space-efficient network, where employees shift among workspaces and are not tethered to assigned desks. The goal is to develop modern, cost-effective, and more agile work spaces, integrating architectural design, business technology solutions, and people.

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The Integrated Workplace Initiative (IWI) calls for a visually open, space-efficient network, where employees shift among workspaces and are not tethered to assigned desks.

One of the first facilities to implement IWI housed the federal probation offices for the Northern District of Illinois in Chicago. A story on the U.S. Courts Web site states, “Aided by rapidly changing mobile technology, probation officers increasingly work in the community, visiting homes and workplaces of convicted offenders who are reentering society under supervision. Reporting in via cellphones and tablets, these officers can spend long hours and even days outside the office.

This project showed that IWI can indeed slash space requirements and rent costs. When probation officers relocated in 2015, they moved from 53,000 square feet (4923 square meters) of leased commercial space to about 20,000 square feet (1858 square meters) in a federal building located downtown near the Everett M. Dirksen U.S. Courthouse. That represented a space reduction of 55 percent, and projected annual rent savings of more than \$1.4 million.



The key to IWI is mobility, inside and outside the office. Using a smartphone and a laptop or tablet as their mobile desk, employees can take their work anywhere in an IWI office. They could temporarily reserve a glass-enclosed huddle room for a small meeting, or request a private phone room to join a conference call. They can sit in an open work lounge to catch up on emails and use a docking station to park their computer and write a report.”

Around the same time, FSO created a national demonstration of IWI at the Thurgood Marshall Federal Judiciary Building in Washington D.C. The original offices occupied 25,585 usable square feet (2376 square meters) with 74 private offices and 19 workstations. Only three rooms were available for meeting and collaboration – no private work rooms or work lounges were available.

Proof of concept was completed in 2014 and construction began in 2016, taking about a year to complete. When the dust settled, the new facility occupied 21 percent less square footage and the private office / workstation ratio was completely reversed, with just seven private offices to 57 workstation areas. Eight more meeting rooms were added along with 13 private work rooms and a new work lounge.

THE IMPACT OF THE INTEGRATED WORKPLACE INITIATIVE

In addition to achieving the primary objective of reducing rent and lease costs, IWI ditches the decades-old concept of what an office should look like. Both the Northern Illinois District and Marshall Building realized that the largest amount of square footage should be devoted to productivity and not administration.

In the case of the Northern Illinois District, probation officers are rarely in the office, so the Courts were paying for unused space, whereas the Marshall floorspace didn’t allocate enough variety of workstations and work rooms. Bolstered by the success of these two installations, more IWI projects are in the works as the Administrative Office looks to cut back on leased space all across the nation.

According to the U.S. Courts story, “Other government agencies can learn from IWI. By factoring in the number of workers on any given day who are teleworking or otherwise outside the office, IWI

Using a smartphone and a laptop or tablet as their mobile desk, employees can take their work anywhere in an IWI office.

offices require fewer square feet. The open layout can offer other benefits, including more chance meetings and collaboration among staff, and a better lit, more visually inviting environment.”

CONFERRING ON THE GO



The Judiciary’s increasing emphasis on meeting and collaboration space meshes perfectly with employee’s schedules and reliance on mobile devices for productivity. The federal government is not alone in reducing its footprint – many Fortune 100 companies have made similar decisions to downsize corporate and field offices, letting employees work remotely to cut down on commute times and enjoy more flexible work schedules.

We learned earlier that improvements in audio and videoconferencing technology have made all of this possible, specifically the growing use of SaaS programs for conferencing that include Zoom, Microsoft Teams, WebEx, and GoToMeeting. While a camera-equipped laptop may be adequate for a single remote participant, a group of people will need better coverage for remote meetings.

One such product is Vaddio’s new HuddleSHOT*, an all-in-one USB conferencing camera with integrated audio. Its ultra-wide, 125-degree horizontal field of view makes it possible to see more of the meeting participants in smaller huddle spaces. HuddleSHOT’s camera captures images with 1080p/60 resolution, and two 10W speaker drivers with optimized EQ optimized provide full-bodied stereo. A pair of beam-forming microphones deliver more focused audio pickup as far as 12 feet (4 meters) away. For ease of operation, HuddleSHOT has been designed as a ‘plug & play’ product with driverless operation and three simple connections: USB-C for USB 3.0 uncompressed video streams to BYOD PCs; an ethernet jack for network and PoE (simultaneous IP streaming); and a second, optional EasyMIC port for a Vaddio TableMIC or CeilingMIC.



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Purchasing Considerations for AV Equipment

We hear the phrases “Buy American!” and “Made in the USA” frequently these days. Indeed, many government agencies and organizations have adopted purchasing policies that give preference to American-made products wherever possible.



However, we know that manufacturing of electronic equipment (both consumer and professional) is increasingly shifting overseas. Prominent examples include smartphones, televisions, laptop computers, video projectors and monitors, and digital cameras and camcorders. For that matter, much of the AV gear in racks also originated in an overseas factory, even though the final assembly happened in the United States. How is it possible for some of this equipment to bear the “Made in USA” label?

CONSIDERATION: IS THE PRODUCT AMERICAN MADE?

The Federal Trade Commission (FTC) regulates and enforces use of “Made in USA” labels and claims. According to the FTC, *“For a product to be called Made in USA, or claimed to be of domestic origin without qualifications or limits on the claim, the product must be “all or virtually all” made in the U.S. The term “United States,” as referred to in the Enforcement Policy Statement, includes the 50 states, the District of Columbia, and the U.S. territories and possessions.*

“All or virtually all” means that all significant parts and processing that go into the product must be of U.S. origin. That is, the product should contain no — or negligible — foreign content. When a manufacturer or marketer makes an unqualified claim that a product is Made in USA, it should have — and rely on — a “reasonable basis” to support the claim at the time it is made. This means a manufacturer or marketer needs competent and reliable evidence to back up the claim that its product is “all or virtually all” made in the U.S.”

Under present-day rules, a product such as an AV signal switcher could contain one or more circuit boards fabricated in China. But the housing, indicators, buttons, and display all could be made on this side of the Pacific. The manufacturer could legitimately claim “Assembled in the USA” even though the heart of the product – the circuit boards – comes from abroad.

On the other hand, if the circuit boards, housing, and everything but the connectors was fabricated in America – and all of the assembly work took place in America, too – the manufacturer could fairly claim “Made In USA” as the imported connectors would constitute a very small percentage of the finished product’s price.

It may surprise you to learn that a great deal of audiovisual equipment is still manufactured in the United States.

It may surprise you to learn that a great deal of audiovisual equipment is still manufactured in the United States, much of it from ISO-certified companies. And that doesn't necessarily mean higher costs over imported goods as a result. (It does mean that American manufacturers will provide stronger warranties than the typical 90-day period associated with consumer goods.)



CONSIDERATION: IS THE PRODUCT BAA- AND TAA-COMPLIANT?

There are laws that require government funds to be used only for the purchase of domestic products or at least provide a price preference for such products. You may have come across the acronyms, “BAA” and “TAA” at some point. Both are offshoots of “Buy American” and “Made In USA” policies. Here's what they stand for:

The law implementing the U.S. government's preference for domestic products is known as the Buy American Act (BAA) and applies to purchases exceeding \$2,500. To be certified BAA-compliant, the product provided must qualify as a domestic end product, which is either (1) an unmanufactured end product, mined or produced in the U.S., or (2) an end product manufactured in the U.S. if the cost of components mined, produced, or manufactured in the U.S. exceeds 50 percent.

The Trade Agreements Act (TAA) works differently than BAA and allows for the procurement of products from certain countries other than the United States. It typically applies to federal government purchases that exceed \$193,000 for the acquisitions of supplies or services, although some individual Free Trade Agreements apply lower thresholds.

The TAA does not use the 50% cost-of-components test like the BAA does. Instead, the TAA employs the “substantial transformation” test, which is not based primarily on the value or percentage of U.S. (or designated country) components. Instead, the question is whether the product has been significantly altered or its use altered as a result of the process it underwent in the U.S. (or designated country).

Most of the camera, microphone, extension, and bridging products offered by Vaddio are TAA- and BAA-compliant. Presently, all of the pan-tilt-zoom (PTZ) cameras offered by Vaddio are BAA-compliant and are the only PTZ cameras designed and built in the United States.

CONSIDERATION: IS IT EASY TO INSTALL AND OPERATE?

Not only has audiovisual equipment gotten more powerful and “smart,” it's also easier to use when compared to similar products of just a decade ago. This especially applies to videoconferencing cameras, audio gear, and codecs, which previously required specialized knowledge to install, interconnect, and operate.

When you stop to think about it, that recent video chat you had with someone, using nothing more than your laptop, is clear proof of how easy it is to use conferencing equipment. That's largely due to “smart” connectors, i.e. when you connect a camera or audio equipment to a bridge, or use an extension to increase the reach of a PTZ camera, the bridge will know what's plugged into it when the connection is made and will configure the connection automatically.

The Universal Serial Bus (USB) port, version 3.0, works the same way. When a USB device is plugged in, the host equipment can identify the signal source automatically. Connect an AV bridge or PTZ camera to an Internet switch for streaming, and the switch will assign an address to the bridge/camera. Even codecs have some intelligence built-in, adjusting the video frame rate based on available network bandwidth to ensure the videoconference isn't interrupted – only the picture quality is altered slightly.

**A great deal of
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The convergence of mobile connectivity, SaaS, and faster WiFi means that setting up a videoconference is easier than ever, and also affordable. With plug-and-play operation and SaaS, a basic conferencing setup can be put together quickly.

And it doesn't have to be hard-wired into a specific room: A Vaddio ConferenceSHOT AV camera, combined with one or two microphones and a laptop, becomes a conferencing hub that can sit on a coffee table. A flat screen display on a cart (or even a television) serves as the display monitor, and the ConferenceSHOT AV outputs both audio and HD video via USB 3.0 (for connection to a unified communications device) and an H.264 stream, ready for a network connection.

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Future Trends in Conferencing: 5G, 4K and USB

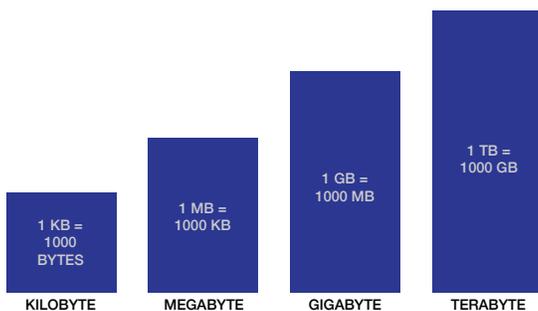
The world of electronics is, as you might expect, evolving at light speed. How will 5G, 4K and USB technology changes affect the mobile workforce?



The computing power in a smartphone is greater than that of a desktop computer from 20 years ago. We've evolved from rudimentary dial-up connections in the 1990s to super-fast broadband over cable and fiber optic lines.

Ten megabytes was considered a lot of memory storage in 1988. Today, it isn't unusual to see computers equipped with a terabyte (TB) of memory. USB "thumb" drives with 64 GB of storage can be purchased for about the cost of lunch. And with ever-faster Internet connections, more and more people are relying on cloud-based storage that can be accessed from anywhere, rather than saving files to local drives.

Memory Storage Units



AV technology is rapidly evolving too. An increasing number of AV products now have IP addresses and can operate on local area networks. Cameras have advanced light sensors that work even in low light levels. Image resolution has been standardized at 1920x1080 pixels with 60 Hz refresh, and we're now seeing 4K resolution in everything from action cameras to smartphones and pan-tilt-zoom (PTZ) cameras.

5G MOBILE AND WIFI

There are a few more trends that will impact the mobile workforce. The first is 5G (fifth generation) mobile networks. 5G technology is slowly rolling out in the U.S. with wider deployment expected by 2020. Mobile devices equipped with 5G chipsets will be able to upload and download files and video at several hundred megabytes per second (Mb/s) as compared to 802.11ac/ax WiFi where download speeds are typically tens of megabytes per second. The catch is that new radio bands will be required to achieve the fastest possible speeds on 5G networks (between 500 Mb/s and 1 Gb/s).

5G technology is being introduced in the U.S. now, with wider deployment expected by 2020.



There has been some discussion that 5G networks could theoretically be fast enough to replace WiFi, particularly in dense urban environments. “Millimeter wave” radio bands will have enough bandwidth and channels to handle such high speeds, but current mobile networks won’t see a substantial improvement for some time to come. Only radio bands above 6 GHz will be able to handle the higher bit rates.

USB 3.0

Even with more devices moving to wireless connections, there will still be a need for fast hard-wired connections. The Universal Serial Bus (USB) version 3.0 represents a significant advance over its predecessor, providing a single, unified “smart” interface with the following characteristics:

- USB 3.0 offers a miniaturized connector for mobile electronics
- It has a symmetrical design so it can be plugged in up or down
- It offers multiple functions (data, power, display, etc.)
- It has on-board intelligence to configure the type of connection after plug-in

There are several advantages to USB 3.0, one of which is linking to cloud-based unified communications (UC) applications. It can also function as a display connector and provide phantom power to connected devices, such as PTZ cameras.

The preferred connector design for the USB 3.0 interface is known as Type-C and has 24 pins arranged in a symmetric pattern. The Type-C connector is already becoming standard on late model laptops and will be the interface of choice for smartphones and tablets (excepting Apple products, which use the Lightning interface).



USB 3.0 supports data bus speeds up to 20 Gb/s in both directions, across multiple physical lanes. DC power to operate and charge connected devices is also available through this connector. When connected to a display (such as a computer monitor or television), the Type-C connector operates in Alternate Mode. One or more physical lanes are used to transport display signals up to and including 4K resolution while simultaneously transporting data and power.

In this way, manufacturers can eliminate the need to support multiple connectors on mobile and portable electronics. The Type-C connector also knows what type of connection must be provided when plugged in. In addition, laptops will also recognize a Type-C connection and configure the port automatically. For the end user, this means less time setting up and operating AV and conferencing gear, approaching a ‘plug and play’ environment.

For all the benefits of USB Type-C, there are still plenty of USB 2.0 connectors in use. This means that a supply of adapters should be kept on hand. (USB 3.0 Type-C can support USB 2.0, but not the other way around.) Manufacturers of AV gear still provide plenty of USB 2.0 connectors to their products. (At present, very few AV products support the Type-C format, as manufacturers take their lead from the computer industry.)



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