MAKING THE RIGHT DISPLAY AND COLLABORATION TECHNOLOGY CHOICES FOR GOVERNMENT
Reliable, consistently-performing display and collaboration technology is critical for effective and efficient operations, fluid communications, and airtight security within government organizations. In order to provide an optimal viewing experience for teams working with data and visual assets, it’s important to select a flexible and scalable complement of projection, LCD panel, and 4K display and collaboration solutions when setting up video walls and digital signage. Here are some guidelines for making AV choices that will deliver high-performance solutions and ROI to government organizations.

**INTRODUCTION**
As public entities face the challenge of outfitting everything from small training rooms to complex emergency operations centers, it’s important to know the breadth of solutions available and the relevant criteria for selection.

“It’s not about just one display or one type of interaction, it’s about connecting the right video displays to various needs, and then integrating those individual technologies into an efficiently-managed system that can maximize ROI and reduce total cost of ownership,” observes Jeevan Viveganthan, Director of Product Development for Business Products at Christie®. “At the end of the day, no matter how people want to share information, there are budget limits to consider, and there are plenty of technology options to fit any scenario.”

The following factors will be useful in the evaluation of video technology options by government agencies and organizations.

**TOTAL COST OF OWNERSHIP**
As AV budgets are tight for many government organizations, cost is a key consideration. However, cost is more than just sticker price. Agencies are advised to select high-quality display solutions designed to cost less over time. They need to ask about reliability and look for robust components built to operate without interruption. To keep total cost of ownership (TCO) down, they must look for ease of operation, low maintenance requirements, and energy-saving features. Also important are built-in technology options that reduce the need for additional external components to combine images or display content.

“A lot of government technology users are seeking to eliminate costs associated with replacing projector lamps, and they’re looking at lampless projectors as a replacement option,” notes Jason Tennstedt, Control Room and Visualization Solutions Manager for Christie. Lampless projectors rely on laser or LED technology with thousands of hours of life, lasting for the duration of product use without the need for purchase or installation of a new projector lamp. The substantial cost savings that results from not having to have backup lamps on inventory or ordered throughout the lifetime of the product has convinced many government buyers to make the up-front investment in lampless projectors. Similarly, demand is up for new, more energy-efficient, LED-backlit LCD panel displays, which produce cost savings through decreased utility bills during the lifespan of the product, reducing TCO.
ROOM SIZE
Size of audience and usage of content should be used to determine display size and type. “For rooms where there will only be five to six people working together, an LCD panel display of a reasonable size may be more than adequate. But at some point the room size becomes too large, and even an 84-inch display wouldn’t be visible to a group of 20 or 30 people,” Vivegananthan notes.

In that case, projection “is a much more cost-effective way to provide visual support for a larger area,” he adds. “Then, moving up the scale to applications where you need to reach 100 people or more, it’s time to look at large-venue projection or video wall solutions. Video content can be displayed larger than life when tiled video walls, arrays of LCD panel displays, or large-scale immersive and/or 3D projection are paired with interactive or collaborative technology for group sharing, editing, and annotating.”

The right video display technology can bring new levels of engagement to public spaces. The Cleveland Public Library (CPL) was looking for a way to make its digitized material more accessible to users, and the solution it implemented was a multi-screen interactive video wall made up of four 55-inch LCD panels equipped with ultra-durable glass screens. Narrow bezels between the vertically mounted panels create a seamless and captivating depiction of the library’s archives.

The installation has been a huge success, enabling a multitude of uses—even interactive games that encourage children’s interaction with the collection. “In terms of scale, images on our video wall are larger, the maps are much more dramatic and easy to see, and the artwork is larger and brighter than on a home computer screen,” observes Chatham Ewing, CPL’s Digital Library Strategist. “It’s one thing to see a painting, for example, on a small screen, and it’s quite another to see the same painting six feet tall and five across!”

RESOLUTION
In terms of resolution, HD remains the most commonly used format in most display applications. However, in specialty cases where detailed information must be displayed, a 4K panel or projection solution may be in order. “With 4K you can display four times as much information as [with] an HD option,” Vivegananthan explains. “It’s not really necessary if you’re just showing video clips, but if you’re an institution and you’re displaying research data, this is a more effective display format.”

Then there are more specialized cases requiring analysis of different technology factors. “When higher resolution is needed for advanced imagery, satellite information, or geospatial data, 4K comes into play,” Tennstedt points out. From there, the next level is a 3D cave automatic visual environment (CAVE), with 3D glasses and tracking systems, common to the advanced research and development realm of government.

Beyond the coolness factor, there is a strong business case for a CAVE, he notes. “We’re seeing that there is an ROI aspect of CAVEs for manufacturing, where instead of prototyping, an immersive 3D video system is able to take computer-aided design (CAD) data and produce a 1:1 scale model of the equipment that enables designers to interact with a life-size version of the model. That’s an efficient way to see the changes they’re making, or check sight lines, mechanical functions, or even lay out factory floors.”

Ultra-high-resolution video also adds more oomph to public-facing applications.
Science Museum of Virginia upgraded its planetarium to a digital projection system that produces 8K images in 3D across its 180-degree hemispheric display surface. The responses from audiences have been so enthusiastic that the museum has added new presentations, including several that display current astronomical events and data with stunning realism.

**BRIGHTNESS**

The next step in selecting a video display is to consider the ambient light in the room and ensure that the type of display in question has enough brightness to present a clear image. In most small rooms, Vivegananthan says, an LCD panel display or a 2,000- to 7,000-lumen projector will do the job. In larger spaces, such as an auditorium, atrium, or company cafeteria, a 20,000- to 30,000-lumen projector is recommended. It’s easy to go up or down from there, heading up to 40,000 lumens for situations with extremely high ambient light levels, or back down to a 10,000-lumen projector if budgets are tight.

**PROJECTORS**

When considering the projector route, one must look at optical efficiency. The higher the efficiency, the lower the operating costs. And contrary to what one might expect, a multi-lamp projector typically uses smaller lamps that last longer and cost less than the larger lamps used in single-lamp projectors even though both lamp options achieve the same light output. Finally, it’s important to factor in the cost of air filter replacement where necessary, or look for a filter-less projector.

The next choice is between lamp or lampless projection. Lamp-illuminated projectors are still the most cost-effective solution, and today’s lamps have longer life, requiring replacement maybe only once or twice over the life of the projector. There are two types of lamps, mercury and xenon. Mercury is the most common as it provides great lamp life and the bulbs can be replaced easily. Xenon is more professional-level in that the lamps are harder to handle, so they are mostly found in cinema projectors.

Solid-state illumination, or lampless projectors, may require a slightly more sizable investment, but are commonly rated for 20,000 hours of run time, which is beneficial for applications that run 24/7, such as control rooms or research facilities.

Currently there are three categories of lampless projectors: LED, laser phosphor, and RGB laser. LED provides up to 2,000 lumens of brightness, which is typically not enough brightness for most large-format applications. Laser phosphor is an emerging class, producing brightness up to 10,000-12,000 lumens. RGB laser is sometimes referred to as “pure laser” or “true laser” because, rather than using a phosphor, the red, green, and blue light is beamed directly from the lasers, creating the best color representation and richest, highest-contrast displays. However, RGB is more expensive and physically larger, although it does pack a punch, with brightness levels of 30,000-50,000 lumens for larger-scale applications.

Solid-state illumination, or lampless projectors, may require a slightly more sizable investment up front, but are commonly rated for 20,000 hours of run time, which Vivegananthan points out is more than will likely ever be needed for a government application.
**LCD PANEL DISPLAYS**
The de facto standard for LCD panel display technology today is the LED-backlit LCD display, observes Vivegananthan. He notes that OLED is another illumination type that is attracting attention, but it has yet to hit the mainstream.

In order to build a large video wall display comprising several panels, it’s important to look for a solution with an ultra-narrow bezel and select a robust video processor. Interactive features can also be included or added on, transforming meeting rooms, digital signage, or public displays into an engaging experience. For more flexibility in shape and size, it’s possible to build a video wall using display tiles, which can be configured in a multitude of ways to create a dynamic media experience.

**VIDEO WALL TILES**
Video walls provide an opportunity to create a rich, larger-scale media experience to support teams working with multiple streams of data or for presentations within larger conference rooms and for bigger audience groups. For most government applications, video walls are composed of LCD panel displays or video tiles. For the latter, the sky is the limit in terms of size and shape, as tiles can be assembled into any number of flat or curved configurations. Furthermore, the addition of touch interactivity to a tiled display enables collaboration, engagement, and hands-on solution development.

**COLLABORATION TECHNOLOGIES**
More and more, operations and research teams are looking for ways to connect and work together easily – whether they’re in the same room or working across locations. This is where collaboration technology can help to bring teams together and increase efficiency. A collaboration system can be implemented to share content locally or remotely via the network from mobile devices and other sources connected wirelessly into the system. This allows meeting participants to see the same content in a collaborative session, regardless of geographical location.

**ICN ADDS NEW LEVEL OF VISIBILITY**
Across the multitude of government applications, one technology factor supersedes nearly all others – the need for robust communications and streamlined cross-bureau collaboration that will ensure the safety and security of citizens and infrastructure. This was a case recently exemplified by a new video wall implementation completed by the Iowa Communications Network (ICN). ICN is the only state-owned broadband carrier network in the United States, providing high-speed broadband Internet, data, video conferencing, and phone services to public schools, higher education, hospitals and clinics, state and federal government, National Guard armories, and libraries.

These capabilities place ICN at constant risk for cyber attacks, creating a need for high-level network monitoring. Additionally, its range across the state of Iowa necessitates wide-scale awareness by ICN of any damage wrought by tornadoes and construction equipment. To address these various monitoring and visual communications needs, ICN sought what Executive Director Ric Lumbard describes as “real-time monitoring delivered by a very strong visual presence network that provides a high level of situational awareness.”
York University
The immersive, visual system enabled them to conduct research into the effects of compromised peripheral vision, utilizing a large field of view, with high resolution and good stereo over a full-field for research participants.

Christie Edgeless Graphics Geometry (EGG) 3D stereoscopic visualization system is comprised of 8 Christie Mirage WU-L WUXGA projectors with Autocal™ and Christie Twist.™

awareness—a flexible, high-caliber visual presence that only high-definition video could give us, providing us with the resolution we need to quickly assess what’s going on and make crucial decisions."

To achieve this goal, ICN designed and built the new Broadband Information Center (BRIC). Central to the space are two large-scale video walls, comprising 12 HD LCD panels, powered by nine video processors that allow for sharing visual data among associated government bureaus that collaborate on the operations, engineering, and technical assistance required to maintain the statewide network. Complementing ICN’s 24/7 network operations center, located at a separate secure facility, the BRIC is ICN’s advanced services center, providing layer three technical support operations. The new video wall solution allows stakeholders to see and interact with video sources and connect via videoconferencing to review contextual information through the monitoring of news, weather reports, crisis events, and the constant barrage of cyber attacks faced by ICN.

The networked aspect of the video wall solution is key. “We’re on a fiber, wide-area network and we wanted something that could grow and use the current infrastructure that we have, instead of relying on video switchers in multiple locations. If information is up on a video wall, we wanted to have the ability to bring it up on a second wall, whether that is in another building close by, or 200 miles away,” notes John Borden, Telecommunications Technology Enterprise Expert, ICN.

ICN has been using the BRIC for a little over one year, and Lumbard describes its use as ever-expanding. “We’ve just crossed the starting line,” he notes. “There are a lot of government stakeholders that benefit from having a strong, situationally aware, visual presence network, and we have an aggressive list of expansion ideas. We can provide our various stakeholders with visual presence through our system, or extend a screen into their IT department to help them monitor their network. It’s one thing to have a strong broadband network, it’s another to be able to see, manage, and collaborate on the monitoring and protection of that network. This is just the tip of the iceberg in terms of what this system can provide.”

The scalability and flexibility demonstrated by ICN across video and collaboration technologies is representative of what is
required in a multitude of government use cases, especially in terms of TCO. Creating a strategy for a robust and secure display technology solution means identifying a government entity’s objectives, evaluating and selecting displays to meet those goals, and ensuring that the necessary support services are provided to ensure that a display system continues to provide benefit far into the future. Choosing the right technology today can guarantee the longevity of government investment for years to come.

CHRISTIE’S PERSPECTIVE

For many government applications, the most valuable attributes of a successful display solution are scalability and repeatability across numerous rooms, offices, and locations.

“We have solutions that scale neatly across a wide range of applications, from meeting rooms to large-scale projection, digital signage, and advanced 3D and immersive video,” says Jeevan Viveganthan, Director of Product Development for Business Products at Christie®. “Institutional buyers have a wide range of needs, and we have a wide range of expertise. We can help enterprise customers to scale up or down and provide a migration path to higher-end technologies. We have solutions that fit any budget, and we’ll work with buyers to provide a custom fit for their needs.”
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