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AV-Driven Exhibits at the National Museum of the United States Army (NMUSA)

A challenge for museums is to find ways to engage visitors, encouraging them to look up from their phones, and learn the history — NMUSA did just that using the latest AV tech. **By CI Staff**

The new National Museum of the United States Army (NMUSA), which opened on Veterans Day in 2020 during the pandemic, is a 185,000 square foot facility located in Fort Belvoir, Va. It provides the only comprehensive portrayal of Army history and traditions through the eyes of the American Soldier.

Through preserving, interpreting and exhibiting more than 245 years' worth of invaluable artifacts, NMUSA creates learning opportunities for all visitors and bonds the American people to their oldest branch of the military.

A major challenge for all museums is to find ways to engage visitors, encouraging them to look up from their cell phones and learn the history, lessons and stories being presented. Paul Morando, chief of exhibits, and NMUSA administrators believed an ideal way to do this was to use the latest AV technology.

"We saw the value of providing captivating visuals, immersive experiences and compelling interactive displays that draw visitors' attention and participation," said Morando. "At the same time, it was crucial that the technology didn't overwhelm or distract visitors with fancy gadgets that came across as a mere video game experience."

To create a system to accomplish these goals, the NMUSA chose Design & Production (D&P) of Lorton, Va., a leading global provider of state-of-the-art exhibit services for museums. From the start, the firm understood the mandate to create a shared experience where veterans of all ages can come and share their experiences with their families via intuitive exhibits that enticed visitors of all ages to simply walk up and start tinkering.

"At the outset of this project, our team focused on and internalized the nuances of the stories to be told so that we could provide the proper guidance," said Sue Lepp, senior vice president, D&P. "Working together, we found an approach to using technology to engage visitors, draw them in and keep them from going back to their phones, text messages and Facebook."

"Our system development embraced flexibility as technology evolved to allow the educators to personalize veteran-related content in each gallery for specific audiences and events, and then quickly return the playback systems to normal operations," she added.

AV-Driven Exhibits that Grab and Hold Visitors' Attention at NMUSA

Among the standout exhibits and displays which feature interactive touchscreens, dazzling video walls and other AV-driven experiences are:

- The Revolutionary War exhibit, which presents all the battles that took place during the war—from Lexington to Yorktown. Visitors are provided with a comprehensive summary of each conflict, including strategy, tactics, weapons, command and control systems and logistics;
- The War of 1812 display enables visitors to call-up images and

videos, as well as music—which was used for communication in battle and to enhance morale on the battlefield;

- The Fellow Americans pylon displays combine simple video imagery with text to show what current and retired soldiers do on their off-time—such as volunteer at a food shelter or coach a youth sports team;
- The Nation Overseas theater, designed and delivered by The Scenic Route, a global resource production company, presents a highly immersive environment that focuses on World War I. The complex scene uses state-of-the-art show control technology, multi-screen blended projection and sound effects, sequenced with lighting and cast figures to depict the Meuse–Argonne battle during the First World War;
- The World War II exhibit features a 360-degree globe projection display that tells a very complex story in an innovative way. Dual projectors inside the globe depict rotating chronological videos and imagery, with audio and textual information on its outer surface, to give a comprehensive summary of the long history of the war.

A particularly popular exhibit feature, powered by innovative technology, are the Inventions and Innovation "sliders" that are affixed to rail tracks in front of the artifact cases. When physically moved along the front of the case, the screens display information related to the artifact being viewed. This is a great way to engage visitors with important artifacts that may otherwise get overlooked.

One of the most dramatic presentations in the museum is the D-Day display, where visitors encounter cast figure soldiers coming down the net into a Higgins boat, an actual landing craft vehicle that was used during the invasion, against a backdrop of dual projections plus audio and theatrical lighting.

Highlights of the AV Technology Deployed for this Project

Crucial to these exhibits and others throughout the expansive NMUSA facility, was the selection of AV over IP signal distribution between AV sources, monitors and touchscreens. This facilitated superior video resolution (uncompressed 4K) with near-zero latency to provide the necessary interactivity of the exhibits.

At the heart of the system design was a Meraki (Cisco) 10 gig network of ZeeVee ZyPer4k encoders sending all AV signals from source to destination with the ability to reroute specialty programs to any location within the exhibit galleries.

This network was dedicated to the ZeeVee solution, with separate VLAN's for Qsys Audio Control and Medialon Show Control. The displays ranged from large format projection by Panasonic to large format LCD displays by Panasonic and Planar.

PQ Labs provided customized touch table interactivity and 3M supported the majority of the interactive kiosks. Video and interactive sources include Dell, for all interactive computer programs, and Christie's Pandora's Box and Widget Manager, for linear display footage.

The AV signals are sent over fiber optic cables due to the museum's infrastructure and distance requirements for remote and structured sources. For example, content from Christie Pandora's Box servers are delivered to Panasonic Projectors for a 14 screen montage presenting army history in the concourse.

There was no actual programming necessary, nor need for additional hardware, to create multi-views and video walls. The combination of proper network architecture and delivery systems provided major savings in cost, time and effort.

The SDVoE system, including ZeeVee encoders and decoders with built-in USB ports, supported the keyboard video mouse (KVM) capabilities that are critical for the interactive exhibits. It also supports the museum's blended projection exhibits, where multiple projectors are used in tandem to generate a single large image without "sparkling" or other distracting visual effects.

"The SDVoE AVoIP solution provides the system's zero latency that makes it possible to deploy some of the key technologies that make the exhibits so engaging," said Lepp. "The platform also affords the flexibility of inputs and outputs, unlike traditional matrix switch options, which comes into play as each exhibit has different requirements and new elements may be added to the system over time."

The Medialon control system, working in conjunction with the ZeeVee ZyPer Management Platform (via an API), enables museum staff to do the routing and switching of videos simply by dragging and dropping icons via a computer or PC. The system also enables remote management and troubleshooting should performance issues arise.

"We are very happy with the AV system and the way it has elevated the experience of those visiting the museum," said Morando. "A good balance was struck between the powerful presence of the technology and simple and effective human storytelling that creates a lasting impression and appreciation for our nation's heroes."