



The design/integration/installation team at ULA's new Operations Center. The display wall streamlines weather, telecommunications and national security satellite launch services data, as well as that of deep space and interplanetary exploration missions.

Brian Seid is Co-Owner of Xcite Audiovisuals (www.xciteav.com).

Deploying AV For Aerospace Control

Precise display of mission-critical data is critical.

By Brian Seid

When United Launch Alliance settled on Centennial CO for its new design center and corporate headquarters, we at Xcite Audiovisuals were honored to be chosen as the AV systems integrator for the Operations Center's display wall: the AV nexus of a huge amount of data that had to be timely, legible and dependable. The project demanded an extremely high level of quality (in a field that requires 100% mission success) and an incredibly challenging timeline for completion.

United Launch Alliance (ULA) is the nation's rocket company, designing, building and launching rockets that deliver critical payloads to space for the Department of Defense, NASA and other commercial customers. Nearly every month, ULA conducts at least one launch, and we had three months to have the new headquarters re-established and running smoothly. This required full integration of vast data streams from sites in Alabama, Colorado, Florida, California, Texas and elsewhere, as the company oversees payloads worth hundreds of

millions, sometime billions of dollars. More importantly, these payloads support our nation's critical military forces in harm's way, and provide the most cutting-edge space science from around our solar system.

For ULA and its customers, failure is not an option. To achieve this level of integration, all while planning for the following month's launch, we knew that data had to be shared in a clear and immediate way. When Technology Plus designed the system for the Operations Center display wall at ULA's new complex, it was with this necessity for flexibility and fidelity in mind.

Global Giants

Lockheed Martin and The Boeing Company are giants in global aerospace, defense and security. They joined forces to create ULA in 2006, combining more than 100 years of experience and their Delta II, Delta IV and Atlas V expendable launch systems. The joint venture also helped to streamline the collective launch of the nation's most important space assets, including national security, weather, telecommunications, deep space and interplanetary exploration missions, and commercial satellites.

ULA has more than 3700 employees at sites nationwide. With its formation, ULA made the decision to locate its headquarters in Centennial CO, a suburb of Denver. Although previously scattered across several locations, ULA brought all of its operations into a single campus at the Panorama office park. The new campus houses the design center, overseeing manufacturing, assembly and integration operations in Decatur AL and Harlingen TX, and the actual launch operations at Florida's Cape Canaveral and California's Vandenberg Air Force Base. When ULA made the decision to base in Centennial, the company turned to Howard Steele, a leading industry design consultant and Principal of Technology Plus, to draw up AV design and specifications for ULA's Operations Center.

Xcite Audiovisuals was one of four companies that responded to the RFP/RFQ for the ULA project. Andreas Watt and I founded Xcite Audiovisuals in 2007, with the mission to provide superior customer service and follow up. We believe that our deep bench of experience in all aspects of AV project man-

agement won us the contract with ULA. We recognized that we would have to work collaboratively with ULA's team to meet its stringent deadlines. The team met daily, working through weekends and sometimes working around the clock in order to ensure that the project was on schedule.

Design Considerations

According to Steele, the design criterion for the project was to provide the ability to gather a large number of feeds from multiple sources and display

them in a number of locations. "The design included large matrix switches, scalars, format converters, multiplexers, de-multiplexers, optical splitters, fiber and copper distribution systems and an in-house cable TV system," noted Steele.

The goal was to create an extremely high-resolution projection display wall that would enable engineering staff to share launch information and monitor rocket and satellite data. It would also provide a way to visualize the status of organizing ops teams, review weather maps and video feeds from helicopters

Video Conference & Telepresence Tables



There is absolutely no need to core drill the floor for wiring as it is all handled within the table itself. This provides a cost saving that is tremendous, especially if the customer's building is leased. Most leases require you to refill core drilling sites upon departure of the building, and this is not required with a VFI table.



VFI has come out with a line of modular Videoconference and Telepresence tables that function with either wall mounted screen solutions or our own line of stands. These tables are not designed to replace the 50k head office boardroom tables, however they are to allow secondary offices to be able to have a functioning video table. Every effort has been made to make these tables versatile and extremely economical, and provide a clear view of each participant taking into account camera angles.

VFI will also provide custom cut outs to fit the electronics and power requirements specified by the electronics resellers. In some cases this involves a custom island in the center of the table, that

can be upgrade at a later date as your system requirements change without replacing the entire table.

The advantage to utilizing a VFI mounting solution for the screens and cameras is that you no longer need to mount them to walls, no reinforcement required, and no wiring to run inside walls our stands do it all.

No matter your needs VFI has a solution for you. VFI has resellers in every state and province that can help you with the electronic requirements for a smooth transition to video.

VFI also has a full line of furniture products for educational institutions:

- podiums
- lecterns
- teacher stations
- multi media furniture
- video conferencing furniture and mounts tables for collaboration, and video
- mobile Smart board mounts that have electric lifts for ADA



*VFI has dealers in every state
just waiting to help you*

Video Furniture International inc <http://www.video-furn.com>
contact: toll free 1-877-834-3876 or e-mail: Sales@video-furn.com

A United Launch Alliance Atlas V rocket blasts off from Space Launch Complex-41 with a national security payload for the National Reconnaissance Office. This photo is of the 61st launch for ULA and marks the 50th successful launch of an Atlas V and Delta IV Evolved Expendable Launch Vehicle.



The National Reconnaissance Office's NROL-38 payload, encapsulated in a 4-meter-diameter payload fairing, is mated to an Atlas V booster in preparation for launch from Space Launch Complex-41.

Tips

- In a high-tech environment, build with enough transparency and access so future staff can appreciate the care taken in the design and be able to tweak systems as environments change.
- For some clients, the worksite is also the sales site. Make sure the finished product doesn't just function, but "shines."
- Work closely with IT staff. Know your contact, and know that they know what their organization wants.

and light aircraft, as well as from fixed and mobile sources on the ground.

Finally, the system would serve as a way to monitor information being communicated through the media during a launch: all integrated seamlessly and in real time. Steele was asked to design the ULA system with the cognizance that it is responsible for program management, engineering, test and mission support, both in Centennial and at sites across the country. This is where engineers and executive staff oversee all the data required to complete successful launches and missions.

"The challenge was to manage the large amount of data gathered during the discovery process and develop complex systems designs to meet ULA requirements," said Steele. "We

were working with a talented team of ULA engineers that spent a lot of time developing their requirements so our work was cut out for us."

Real-Time Challenges

According to Michael Przekwas, ULA's Senior Engineering Manager who was assigned as Project Leader, this build/move project was on a super-tight schedule. "We had to start demolition in early July, go through reconstruction and outfitting and be up and running by early October. It was a very challenging timeline," Przekwas said.

After the initial installation of the six projectiondesign F35 projectors and the integration of the switching, control and processing systems, it was discovered that the sought-after WQXGA would not display. Xcite made a number of phone calls and an exhausting number of troubleshooting tests that spanned, at one point, 60 straight hours over a weekend and into Monday morning; we were determined to resolve the issue.

Projectiondesign and Jupiter Systems jumped in as well, and determined that a firmware

update was required to successfully display WQXGA over six projectors through the Fusion Catalyst 4000 wall processors. By updating the firmware, a new industry benchmark was achieved to display WQXGA.

"We launch monthly so, for us, the issue is the ability to pull in data from diverse sources and present a common operating picture that can be shared in multiple facilities and locations, such as avionics labs and launch sites, simultaneously," noted Przekwas. "It is a very complex networking effort that requires the tightest of security and weaving together the company's tailored software applications. We had to bring together components that provided the highest data flow and flexibility, and were sturdy. Finally, ULA wanted something that was visually state-of-the-art that would set the standard for high performance command-and-control, and be a showpiece for ULA's central mission: launching the nation's most critical spacecraft."

The Solution


The system our team settled on was based on two Jupiter Fusion Catalyst 4000 wall processors, each feeding three projectiondesign F35 WQXGA projectors firing at their full resolution of 2560x1600 pixels, and delivering images to a pair of huge 87-inch high by 470-inch wide custom Da-Lite screens. "For a video-wall processor that would support the complexity of the data at the highest resolution, our only option was the Jupiter system," said Steele. "At any given moment, between 10 and 15 inputs can be showing at once, coming from a great many data and video feeds. With so much at stake every time this center plans a mission, everything has to succeed, in the right sequence, at the right second."

The display wall is stunning to look at and has high-performance functionality. "We are so pleased with the results," Przekwas said. "It is everything we wanted. The Jupiter controllers pull in and display huge numbers of diverse inputs, flexibly arranged by our room operators, through six F35 projectors, across an 80-foot-wide screen, in stunning super hi-def. The final result is both beautiful and effective communications. We also have used the room for design review presentations in auditorium format."

Exceeded Expectations

The video display wall has consistently exceeded ULA's expectations. With the system's ability to process and present video, text and computer data in real time from divergent sites, its easy integration across platforms, and its sparkling high-resolution projection, there have been no launch delays due to the technology, and only positive feedback. The system is vigorous enough to meet current needs and has the flexibility to adapt to changes in a challenging environment.

"I'm really gratified with the work we did for ULA's Operations Center. It's a signature system," noted Steele. "It isn't in the textbooks yet, but it should be. All the key qualities for this kind of presentation come to the fore: seamless integration, effortless adaptability for the savvy user, and an elegance of design that leaves customers speechless."

The ULA required a system that is dependable every time the Centennial Operations Center plans a mission and makes a launch. We gave them tomorrow's technology today. 

Magenta Makes Signal Distribution Easy



VOYAGER

Fiber-optic delivery of analog or digital video, plus audio and serial. Switching to 640 ports. Distances to 18.6 miles.

MULTIVIEW

UTP-based delivery of analog or digital video, plus audio and serial. Switching to 256x512. Distances to 2,000 feet.


MAGENTA
We Engineer Confidence

Magenta unravels the complexity of Pro AV switching, extension and distribution. Analog or digital, copper or fiber, our solutions are flexible, scalable and, of course, rock-solid reliable. Which makes them easy to specify and straightforward to integrate.

We're large system specialists, able to connect hundreds of signals across huge distances with unrivaled quality. And now, new products in both our Voyager and MultiView families deliver enhanced operation and more streamlined installation.

In a world of increasingly complex AV systems, Magenta engineers more than great technology.

We engineer confidence.

SWITCHING ► EXTENSION ► DISTRIBUTION

magenta-research.com | 800.805.0944 | sales@magenta-research.com