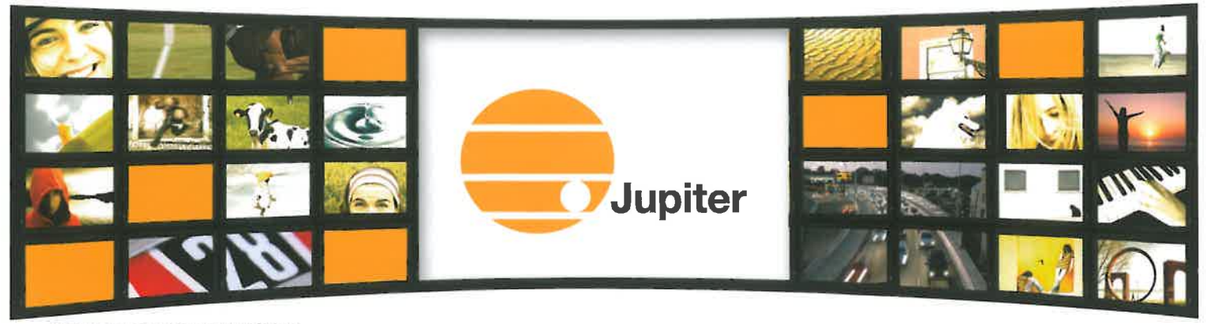

REPRINTED FROM JUNE 2012

AVTECHNOLOGY

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TECH MANAGERS MUST TAKE THE LEAD ROLE ON UNIFIED AUTOMATION

USER-FRIENDLY NEW PRODUCTS

HIGH-DEF DOWN UNDER

NEW VIDEO WALL TECHNOLOGY HELPS CONTROL BUSH FIRES IN NEW SOUTH WALES

By AVT Staff

The display wall processing system was designed to be flexible enough to change and grow with the NSW Rural Fire Service requirements.

The slightest spark can become a raging fire in minutes when the winds are blowing and the humidity is low in rural New South Wales, Australia. The Rural Fire Service in NSW is charged with protecting 760 thousand square kilometers of bush and grassland, an area larger than the state of Texas. Their main resource: 70,000 volunteer firefighters organized into 2,100 rural fire brigades. Trying to cover such a large area with thinly spread resources is a daunting task and demands that resources be used wisely. The only way to succeed is to have the best situational awareness possible. That's why the RFS decided to install a huge video wall in its new headquarters building in Homebush near Sydney. The wall was built using narrow-bezel flat-panel monitors from NEC and a PixelNet® video acquisition, distribution, and display system from Jupiter Systems.

KEY ELEMENTS /// FOR THE END USER

EASE OF USE:
Since its completion and installation, the video display wall has more than met the NSW Rural Fire Service's expectations. The flat screens used in the display wall system design take very little floor space a key consideration for a facility that needs to deploy all available space during an emergency. The system can be expanded, essentially without bound, to add new inputs and additional single screens or wall displays while maintaining performance, quality, and ease of use.

BACKGROUND

Salaried personnel manage the day-to-day operations at central headquarters, regional offices and district fire control centers. In addition to fighting structural fires in more than 1,200 towns and villages, the NSW Rural Fire Service is the lead agency in charge of fighting bushfires and protecting communities from bushfires. In that role, the NSW Rural Fire Service works closely and collaborates with government departments and other stakeholders, including rural land managers, local governments, and other agencies including electrical, telecommunications and water utilities, transportation services, emergency services and the military. The NSW Rural Fire Service also handles search-and-rescue operations, attends to road accidents and provides support during storm and flood recovery.

CHALLENGES

Given the breadth of its mission, the scope of its operations and the size of its membership, the NSW Rural Fire Service wanted to upgrade and expand its communication and operational tools. When the NSW Rural Fire Service undertook a major upgrade of its headquarters, the plans included the installation of a video wall as a communication and operational information display tool, which would be incorporated into the final building design.

The primary goal was to have a central information point to keep all NSW Rural Fire Service workers up to date during an emergency.

info
IMAGE DESIGN TECHNOLOGY (IDT)
idt.com.au
JUPITER SYSTEMS
jupiter.com
NEC
necdisplay.com
NSW RURAL FIRE SERVICE
rfs.nsw.gov.au

The overall goal was to have a central information point to keep all NSW Rural Fire Service workers up to date during an emergency. For example, the information shown on the display wall is when developing emergency response plans and organizing firefighting teams. The display wall can also serve as a way to monitor information being communicated through the media during fire responses. This way, the NSW Rural Fire Service can determine what additional information to release to supplement and explain information already in the public domain. Finally, the display wall should enable access to and sharing of incident information and allow members and staff to monitor weather data and bushfire movement in real time. Satellite imagery can be displayed along with weather maps and video feeds from helicopters and light aircraft as well as fixed and mobile sources on the ground.

SOLUTION

The display wall was part of a larger project developed by EO Design. EO Design relied on IDT to design the video wall processing system and recommend the best solution. The display wall is made up of 100 screens and measures 10 meters by six meters. The wall had to be capable of showing 32 inputs at one time in viewing windows of variable. Video quality was important and real-time update was essential. The final requirement for the display wall processing system was to be flexible enough to change and grow with the NSW Rural Fire Service requirements.

IDT, the sole distributor of Jupiter Systems products in Australia and New Zealand, recommended Jupiter Systems' PixelNet system, which met all of these requirements and specifications. When it was first installed, the PixelNet system had 32 DVI inputs and 28 outputs. The system has since expanded to include eight additional DVI input nodes. This expansion reflects how pleased the NSW Rural Fire Service is with the display wall system in general. The system is supported by 14 computer systems and four servers. The display wall can show either one large visual, such as a map, a few signals in medium-sized windows or up to 40 inputs in windows of various sizes on the display wall. These inputs might include graphs, weather predictions, live feeds from various sites, and streaming news reports. The system can be expanded, essentially without bound, to add new inputs and additional single screens or wall displays while maintaining performance, quality, and ease of use.

RESULTS

Since its completion and installation, the video display wall has more than met the NSW Rural Fire Service's expectations. The flat screens used in the display wall system design take very little floor space a key consideration for a facility that needs to deploy all available space during an emergency.

The combined contributions of EO Design, NEC, IDT and the NSW Rural Fire Service showcase how Jupiter Systems display wall processors, NEC LCD displays, and strong engineering and design from EO Design and IDT can develop a solution that meets current and ongoing needs in a challenging environment.

moreonline
Watch this video about how the NSW Fire Service uses technology. Visit avtechnologyonline.com/june11

An operator has access to most systems that can be controlled and monitored remotely, including radio and security cameras. Data can also be posted from two computer monitors to the display wall using a small touchpanel, seen here above the binder.

but on mission critical deployments, success comes with insights gained from previous projects and new learning. During the design phase of this project, we conducted extensive onsite research and discussed client needs with the team. We noted the myriad inputs (local workstations, dedicated computers for monitoring utilities, existing analog security cameras, new digital security cameras, etc.) that would be required to display the information from these sources on the videowall.

We ensured that sightlines to the videowall were maintained despite a low ceiling. Potential projector noise and excess heat output due to close proximity of projectors to personnel were minimized with the LED-based projectors. During the commissioning phase, our team also worked closely with the end users to generate videowall window layouts most useful to them.

One of the lessons learned from working on high-use systems such as this is to always include in the AV specifications additional time during commissioning for the AV integrator to tweak the system's user interface and programming to the end user preference. It may take multiple rounds of training to gather the appropriate feedback from all personnel who will be using the system, but the effort could save service calls and frustrations later.

Worth The Time

It is worth the time to get familiar with your client's standards and protocols personnel regarding AV equipment that can be serviced in-house because they may want to have an instruction set, especially to minimize downtime in cases of emergency.

It also pays off in the long run to request that the IT department review its connections to the AV system (individual workstations sending video to the videowall, tie-ins with building network, etc.) during commissioning to ensure that its equipment and AV equipment are functioning as expected.

The new Service Response Center at Texas Children's Hospital is fully functional, meets the current needs of end users, and is designed for easy future expansion. It is rewarding to see our design efforts come to fruition. SAV

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AV FOR SYSTEMS INTEGRATORS, CONTRACTORS AND CONSULTANTS

Reprinted from
June 2013

Jupiter

Texas Children's Hospital Enhances Safety & Security

SRC's central information hub supports key hospital priorities.

By Thaddeus Leopoulos

Texas Children's Hospital has been selected by *U.S. News & World Report* as one of America's top pediatric hospitals for 10 years in a row because of the quality of its patient care. The 469-bed hospital in Houston admits more than 21,000 inpatients and treats nearly 1.5 million outpatients per year. More than 8600 inpatient surgeries were performed over the last year, and there were more than 82,000 emergency room visits. Along with a rigorous standard of quality and attention to the medical subspecialties that the patients and their families see every day, the hospital also delivers the same level of attention to the technology and "behind the scenes" systems that patients don't see.

Significant Investments

Texas Children's Hospital recently made significant investments in a new Service Response Center, enhancing its high performance back-end systems for safety and security that enable the hospital to run at an extremely high level of performance. The hospital's Service Response

Thaddeus Leopoulos is a Senior Project Consultant at HFP Acoustical Consultants.

Tips

- Know your client's protocols regarding AV equipment that can be serviced in-house.
- Request that the IT department review its connections to the AV system.
- Include additional time during commissioning for the integrator to tweak the system's user interface and programming to the client's preferences.

Center (SRC) brings together the medical campus' overall security cameras and infrastructure monitoring into a single dedicated hub featuring a 20'x6' video display wall and other updated technology.

Previously, hospital security was monitored in one room and hospital infrastructure was monitored in another. The new SRC was designed to bring all of the hospital's monitoring functions into one central location to provide access to critical information from all areas of hospital operation, and to foster open and seamless collaboration among departments.

The Service Response Center team selected HFP Acoustical Consultants to design the AV system, and I served as the lead designer for the project.

Real time video feeds from security cameras provide close-up views to operators at any of eight workstations.

Gear

AKG digital wireless mics
AMX control solution: MVP-9000i wireless touchpanels and NXD-435 touchpanels
BSS Audio Soundweb London audio processors
Digital Projection International M-Vision Cine LED and E-Vision projectors
Display Devices high-precision projector mounts
Jupiter PixelNet solution: managed Cat6 switches, controller, input nodes, output nodes and edge blending output nodes
Meyer Sound Stella 8C speakers
Stewart Filmscreen projection screens

One of the challenges facing the hospital during the design of its new SRC was to centralize all the data in its systems from the main campus and remote branches into a single collaborative hub, capable of displaying and managing information from hundreds of sources: from cameras tracking the loading dock and front doors to information from the fire, sprinkler and security alarm systems.

One of the key pieces of technology for this project would be a central display system that would allow all operators to share and view information on a single large screen, serving as a communication and operational data display tool. In case of an emergency affecting the hospital, this display wall had to incorporate all the relevant inputs while also assisting in the development of emergency response plans by enabling the sharing of critical incident information.

System Components

After careful evaluation, we chose the PixelNet Distributed Display Wall System from Jupiter Systems to serve as the visualization hub for the new Service Response Center. It is one of the more flexible and future-ready videowall processors available, based on Cat6 cable, which offers good distance performance, is readily available and easy to maintain.

Digital Projection International's (DPI) LED-based projectors were selected because they are not lamp-based and offer a long MTBF (mean time between failures) life, which eliminates the need for frequently replacing lamps in this 24/7 environment. For control, AMX offers wireless touchpanels with the longest battery life, and has a good small touchpanel suitable for placing at individual workstations without taking up too much space. These panels are IP-based and PoE (Power over Ethernet) powered, allowing for easy connectivity and maintenance.

We also paid special attention to audio, selecting Meyer Sound loudspeakers for their quality and durability, BSS digital signal processors for their robustness and versatility, and AKG digital wireless microphones (instead of analog ones) for privacy in the transmitted signal.

After the design was completed, Whitlock served as the integrator on the project. Taking HFP's design, Whitlock installed all of the equipment, pulled all cabling for the nodes, and programmed PixelNet and the AMX touchpanel systems. They delivered system training for users and administrators, and provided a single-point-of-contact, comprehensive service and support program.

Quality Performance

The PixelNet display wall system's images and content are delivered by two DPI blended M-Vision Cine LED projectors. These LED projectors have excellent color gamut range and contrast performance, and they are designated as "Lifetime Illumination" displays due to their LED light sources rated at 60,000+ hours of illumination. Because of this, we expect that the main display screen should be fully operational, 24-7, for years, without replacing a single light engine. LED technology offers a real advantage in this regard over a traditional lamp-based projector. The choice of projection was based on giving the SRC a large display surface, minimizing its overall cost and minimizing the components that could potentially fail.

The new SRC houses all operators in one single large room with eight workstations, each with their own dedicated monitors to allow individual team members to work on their own tasks and to share what they are seeing up on the large central display wall. The technology enables all of the inputs to be fed into a central display wall where they can be viewed and shared.

Critical Details

With the PixelNet system, the critical details from one workstation monitor can be pushed to the central display when the operator needs to show his or her data feed. Touchpads are used to configure the content layout of the wall, as well as assign inputs to feed each screen. Wireless control of the videowall offers maximum flexibility for managers who might not be seated when directing the hospital's response to an event.

The audio system consists of discreetly wired distributed loudspeakers overhead, which receive their inputs from a digital signal processor (DSP). Local workstation and monitoring computers have audio and video inputs to the AV system, allowing for flexible routing of audio to some or all loudspeakers, as well as routing audio to the adjacent conference room for breakout sessions. Digital wireless microphones allow for secure audio reinforcement over the loudspeaker system during crises or large events commanding the room's full attention.

Blending Images

In the new Service Response Center, there are eight separate workstations, with each featuring two PixelNet input nodes at the desk. Service and support is easy because nodes can be simply swapped out at the desk by the end user without requiring expensive service calls.

Our design team also took advantage of the PixelNet Warp/Blend Node, which blends the output of the two projectors, creating a seamless 20'x6' image with 30:9 aspect ratio across the display wall. We didn't have to go to a different vendor for the edge-blending capability, which made the specification easier for us, the installation easier for Whitlock and will make sustaining the overall system easier for Texas Children's Hospital.

An added benefit of blended projection is the superb image quality, whether the videowall is configured with many windows or just one. The customer can choose any configuration of window size and location on the videowall, and the image quality will not change due to gaps in the image, as is often experienced with other display technologies.

Data Hub

Jupiter's PixelNet Distributed Display Wall System acts as the data hub for all of the inputs used in the centralized display wall, and in the conference room next door. I did extensive research on videowall processors from all of the top manufacturers, and it was the only one that had IP-grade control and distance capabilities, as well as the power to create multiple videowalls using unique or shared inputs. It is also the only system to offer the kind of flexibility that Texas Children's Hospital was looking for. If, for example, the hospital wishes to expand the configuration in the future, they need only add input or output nodes and industry-standard Cat6 switchers. They will not have to research and buy a new proprietary frame-based system that may or may not be compatible with the existing equipment.

"The Jupiter PixelNet solution really simplifies the design and implementation of a large display system with multiple source inputs and output configurations," noted Chris Lawson, Global Account Manager for systems integrator Whitlock Systems. "The user interface was easy to use and very flexible. Once we demonstrated the capabilities of the PixelNet solution to the hospital's staff, the value of the new system became real to the users of this space, who now can monitor many security aspects of the hospital system simultaneously."

Texas Children's Hospital also wanted the capability of simultaneously feeding information from its new Service Response Center into an adjacent conference room. This would function as a breakout room in the event of a hospital emergency, where a few video sources could be monitored more intensely without changing the main video wall.

The hospital already had a comprehensive analog camera security system, but it was decided that all new cameras would be digital in order to provide higher quality video and additional capabilities. Now, when the hospital brings in a camera feed, they can do it from anywhere in their system with the state of the art digital security, and the PixelNet system displays and manages both the new digital and legacy analog camera feeds.

Hospital's Commitment

The importance that the hospital places on safety and the related back-end systems is directly related to its patient-centric service commitment. Every aspect of hospital design and operation is designed to provide the best possible experience for women, children and their mothers. This new collaborative space manifests that mission in every way.

Because of that investment, a great many more feeds can be brought into the centralized operations center. More people can see and share the large displays, or zero in on a specific problem, such as a fire alarm activation. Now, when there is an event requiring attention from the Service Response Center, the relevant video feed is shown on the display wall. Each operator in the new center has a small touchpad with a graphical representation of the display wall, and can push visual information considered important onto the larger display wall for sharing.

PixelNet allows the SRC to create many different windows on a single large display wall and monitor the elevators, fire alarms, water and utilities, and pressurized gas systems that serve patient rooms. The system also enables access to electronic internal hospital information and software.

Success Factors

Planning and attention to details are essential for the success of any project,

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Reprinted from May 2013

WALLENBERG HALL'S MISSION CONTROL

Stanford University provides engaging learning experience.

BY DAN NELSON, CTS-D, RCDD

Stanford University in Stanford CA is home to some of America's brightest young minds in the fields of engineering, computer and biological sciences, and many other disciplines. Stanford faculty and administrators are constantly seeking creative new ways to enable a more interactive and engaging learning experience inside the classroom, including making more contemporary media tools available to faculty and students.

Dedicated Facility

The Stanford campus's Wallenberg Hall is a dedicated facility for resource-rich learning spaces with the flexibility to handle more interactive and experimental types of teaching. The classrooms have been designed specifically for instruction in the context of up-to-date information and media technologies.

As part of bringing leading edge instructional technologies to Stanford, the Wallenberg Hall classrooms have now been designed and outfitted with wall display technologies in the same style of command and control center information display used at NASA Mission Control and other public sector agencies that require real-time updating and intelligence-gathering capabilities.

Wallenberg Hall, a 112-year-old building, was refurbished from 1999 to 2002, with the goal of being a "working laboratory" for advanced learning tools and technologies. As part of the redevelopment, the Wallenberg Hall Learning Theater was outfitted with three Christie projectors, each with a resolution of 1600x1200. The projectors could each display one input at a time, for a total of three individual simultaneous displays.

Although this was considered state-of-the-art-technology at the time, in recent years, interactive display screen technology has advanced far beyond what was possible in 1999. In 2012, the Wallenberg Foundation decided to sponsor an update to the Learning Theater's technology to expand the possibilities of interactive classroom instruction. The Learning Theater was to be outfitted with a Christie MicroTiles high-resolution 32-foot-wide by 8-foot-high display wall, architected by staff in Stanford's Office of the Registrar. It is controlled by Jupiter's Fusion Catalyst 4000.

Unique Expectations

Sound Image was the systems integration and design company selected for the installation project. The Wallenberg Hall project had unique expectations for the user interface. The Registrar staff had designed the initial interface. They wanted the display screen controls to be fluid and dynamic like a wall-sized iPad. Everything had to be easy and intuitive, so anyone could walk up, touch the control screen, and quickly figure out how to use the control panel and how to interact with the information display.

Programmer Paul Ruden did a good job of enhancing the user interface. The AMX touchpanel just happens to be about the same aspect ratio as the wall. According to Robert Emery Smith, Director, Technology Services, Office of the Registrar, Wallenberg Hall, "We wanted an interface that is pretty much intuitive and self-service. Faculty can be a bit intimidated at first by the new technology, but they leave saying that was easy."

Dan Nelson, CTS-D, RCDD, is with Sound Image, Inc. (www.sound-image.com), which has offices in Escondido CA, Tempe AZ and Nashville TN.

Brad Howell

Wallenberg Hall on the Stanford University campus in Stanford CA.

Stanford University

Students take advantage of today's technology at Stanford University's Wallenberg Hall Learning Theater.

Another challenge was the variety of research being done at Wallenberg Hall, everything from physics to computer science to art history. Stanford required a versatile, scalable solution that could adapt as the technology continues to evolve.

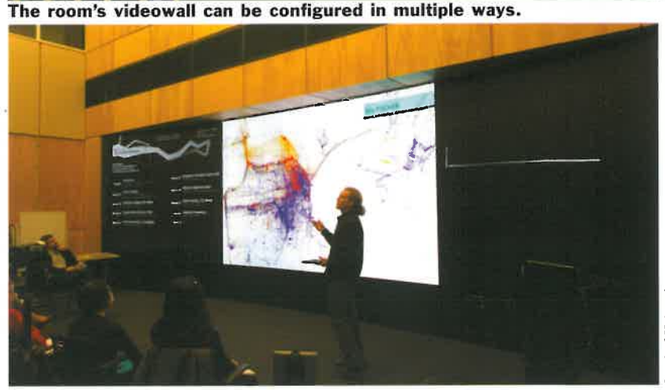
The backend of the system had to be able to track all the coordinates in multi-dimension array in the AMX control system, plus provide the localization of sound. For example, if a classroom presentation had to set up a Skype conference call with three or four people in Tokyo, Ireland and Boston, the sound of each person's voice had to follow the individual where they are positioned on the large wall. Also, Stanford wanted to use the large screen for gaze studies, eye-tracking research, that determines where people are looking when there is so much information on the wall. So the new room needed to be able to cover all disciplines of research, and the back-end system had to have a solid backbone infrastructure that would be able to support technology that may not even be available yet. Because we are tracking all the Jupiter window coordinates, touchpanel coordinates and the audio coordinates, we can output that from the AMX controller for the researchers to use.

Installing the new display wall in the Learning Theater proved to be challenging on various levels, especially because the walls are not squared. Also, they needed to facilitate sightlines in the room in the extended space when the flanking classrooms are joined to the Learning Theater, and because a person presenting close to the wall wouldn't be able to see what was displayed with a different geometry. Not only was this an exceptionally large display wall, but Sound Image was also installing it onto a curved wall. To do this, the company worked with rp Visual Solutions [http://rpvisuals.com], which has experience in mounting MicroTiles on a curved wall, to assemble and reassemble the wall multiple times until the tiles fit.

The project was on a tight timeframe because the new display wall had to be up in time for the new semester of classes. Sound Image had originally planned for a month of testing, but was given only two days of testing due to unrelated construction delays. Fortunately, the company used a lot of components that were mostly off-the-shelf, such as Christie MicroTiles, the AMX control system and the Jupiter Catalyst 4000. Both Sound Image and Stanford worked with Jupiter and Christie to test everything, from the cooling the to the DVI extenders, while the general contractor remodeled the room.

Stanford University

The room's videowall can be configured in multiple ways.



Stanford University

Major Components

AMX NetLinx integrated controller for large rooms, N-3100 controller, MXD-2000XL-PAN and TPC-APPLE iPad

Christie MicroTiles, 720x540 native resolution per tile

Jupiter Fusion Catalyst 4000 with 16 input x 34 output configuration

LaunchPort iPad enclosure/inductive charger/magnetic wall mount, touchpanel control software to echo the big AMX interface on the handheld device

NEC MultiSync V651TM (MultiTouch) 65" displays

Panasonic BB-HCM580A PTZ network camera

Peavy MediaMatrix NION nE processor

Camera control software to manage the PTZ Security Camera

It's an impressive display. The Christie MicroTiles give a deeper, richer, far greater range of color than what they had in that room before. I think the Jupiter Catalyst 4000 was probably the only processor that had the capability to do such a demanding and complex job. Plus, the Jupiter processor scaling capability is impressive and will serve Wallenberg Hall well as new technology evolves.

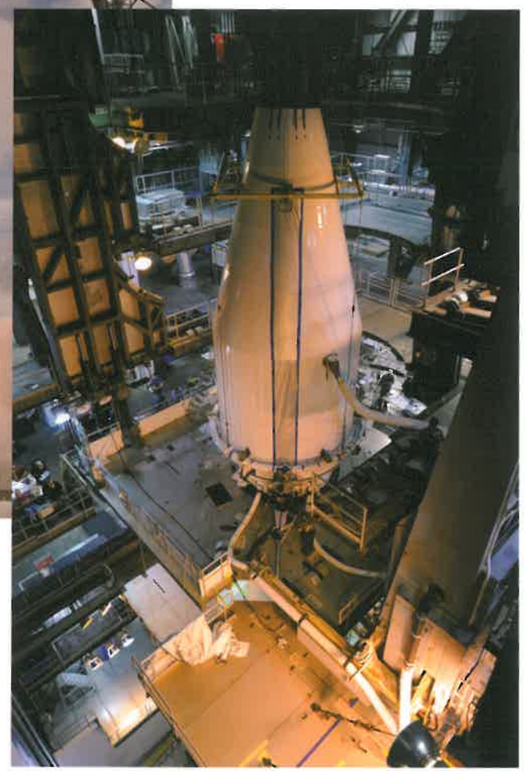
The capabilities of the new Wallenberg Hall Learning Theater display wall were put to the test on Election Night 2012, as students from the Stanford journalism program covered the re-election of President Barak Obama. Students got to experience a frenetic array of updates, exit polls and election results, scrolling in a constant feed from multiple sources. The energy in the room was similar to NASA Mission Control: The room was full of graduate and undergraduate students focused on the "command center" display wall, covered with rich media, videos, charts, graphs and social media feeds, as well as their own website (source for KQED and the San Francisco Chronicle, among others), and the Google Analytics page for their site, where they could monitor visitors in real time. Many of the students, supervised by faculty editors, were writing news reports that would immediately be published and disseminated that night by other news media.

The Wallenberg Hall Learning Theater display wall is an ideal example of how technology can be integrated into new ways of learning for a wide variety of subjects and academic levels. The display wall enables real-time updates, connectivity and communication worldwide, and a multidisciplinary approach to learning.

Suits The Mission

The new display wall is ideally suited to the mission of the facility, according to Wallenberg Hall's Smith, because it gives faculty flexibility to teach the way they want to teach. "There is a difference in how professors teach with technology," said Smith. "How you teach and incorporate technology is an entirely unique thing for you as a teacher, based on your experiences and preferences. There is not one way to teach with technology. So, instead, we've looked for ways to use media and modern information technology tools to enhance and reinforce the professor's own teaching style." ■

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.

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. IT/AV

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.

IT/AV REPORT
ADVANCING COLLABORATION & COMMUNICATION
REPRINTED FROM
VOLUME 10 NUMBER 2
Fall 2012

Deploying AV For Aerospace Control

Display of mission-critical data is critical for United Launch Alliance's Operations Center

SUPPLEMENT TO *SOUND & COMMUNICATIONS*
Jupiter
95505

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.

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 management 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, scalers, 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 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

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

Vol. 58 No. 2

Reprinted from February 20, 2012

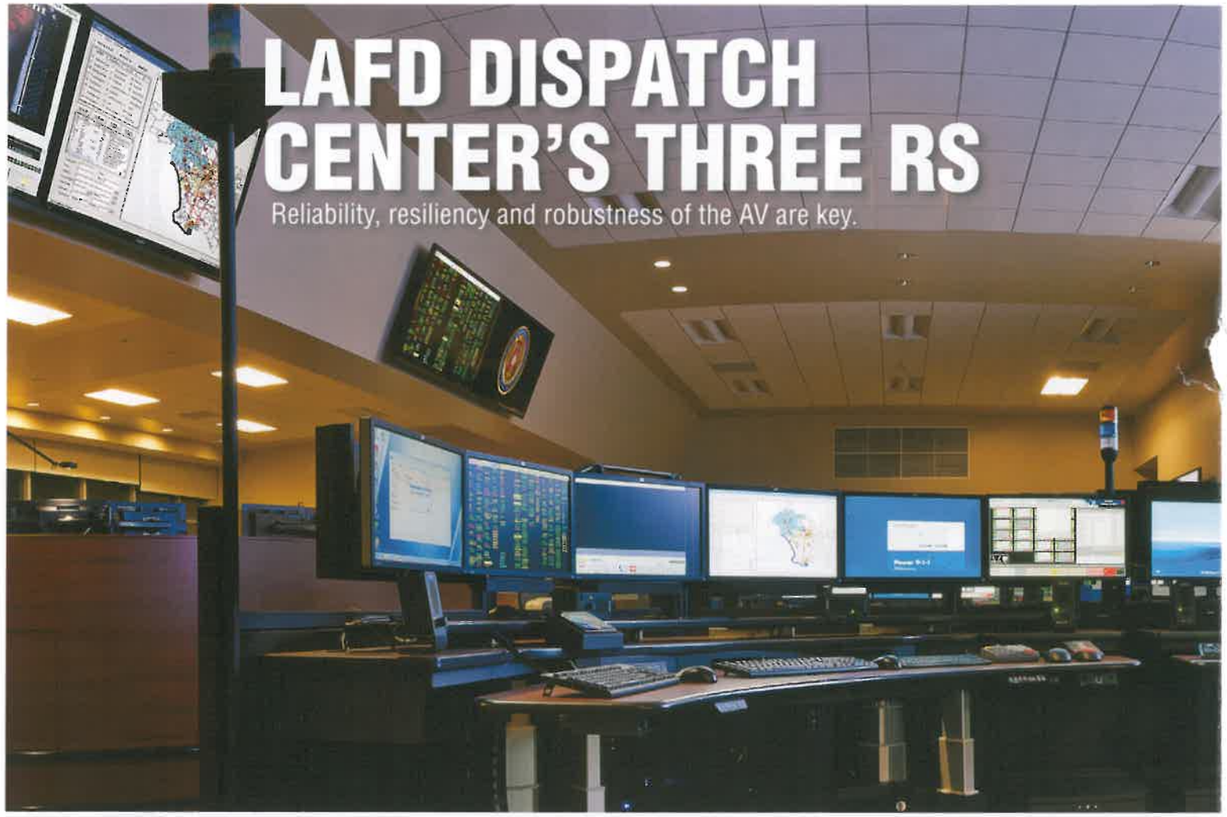
SOUND & COMMUNICATIONS

SINCE 1955

AV FOR SYSTEMS INTEGRATORS, CONTRACTORS AND CONSULTANTS

LAFD DISPATCH CENTER'S 3Rs

Reliable
Resilient
Robust



LAFD DISPATCH CENTER'S THREE RS

Reliability, resiliency and robustness of the AV are key.

BY JIM STOKES

At first, this writer came up with three "Rs" just to grab your attention. After consideration, there are, indeed, three "R"-related words that characterize the Los Angeles Fire Department (LAFD) dispatch center's AV install. They are reliability, resiliency and robustness. Those attributes will be apparent as we journey through the operations control bailiwick.

Our tour guide is John Bilar, Jr., CTS, VP Technology, Spectrum ITC Group (www.spectrumitc.net), Oceanside CA. *Sound & Communications* is most appreciative of Bilar's technical assistance. The project's two-fold challenges were working within the complexities of city government and designing the LAFD dispatch AV system in accordance with the needs of the dispatch center. Our coverage here delves into how the distribution and videowall display systems evolved, as well as how the AV all ties together. Although the LAFD AV will be our primary subject, we'll also take a broad overview of the entire City of Los Angeles emergency operations center/EOC facility. In a sidebar ("An Insider's Perspective"), Kevin Corcoran, LA City EOC project technical director, offers his insider's view of the fire department's AV capabilities.

Bilar spearheaded the design and engineering team over a four-year project for the entire EOC facility. The building houses not only the fire department dispatch but also a police division and the emergency management department for the City. "What we designed was a unique kind of implementation," asserted Bilar. "My team, with the experts I brought on, provided the expertise to integrate everything on paper, [furnish] the equipment list and [provide] the actual schematic drawings." In turn, the City designated the integrator, Burst (www.burstvideo.com) in Denver, to do the install.

Underground To Above Ground

Going back in time, the main City of Los Angeles fire department dispatch center (operations control dispatch), along with other essential emergency centers, was located in an underground 1960s-style bunker, four floors under the City Hall East building. The data display systems in the old dispatch center were essentially obsolete and usually nonfunctional, limiting the effective display of critical sure would like to have someone take a look at this'."

In summary, the Jupiter PixelNet distributed display wall system supports inputs from PCs and HD television tuners, outputs to the display wall and send/receive to/from the "grant/revoke" architecture to each of the four other "receive/originate" rooms in the EOC. (We'll detail the grant/revoke feature later.) Specifically, PixelNet is comprised of various source nodes, including DVI inputs via "cigar boxes" from in-room PCs or distant computers in other rooms, and component inputs via "cigar boxes" to accommodate a wide range of sources from high definition to analog to off-air from cable or television. There's also a single "cigar box" for a local document camera and other composite sources. Sources are wired on Cat cable. The distribution system's backbone switch does a fast connection among the nine stackable work group switches.

The 43 distribution system outputs have several image destinations, including the fire department dispatch room's 28 LCD videowall display and other displays throughout the building. We'll detail the display after discussing this next component. One unique facet, according to Bilar, is the facility's CATV system hybrid design that allows shared, selected news and information for the three individual EOC stakeholders: fire, police and emergency management. That's where the grant or revoke feature comes in.

Grant/Revoke Feature

Although each of the stakeholders has its own operation center, they are not islands onto themselves. They have to share information. Bilar pointed out that, if the users in LAFD choose to send high definition images out of those nodes to other departments in the building, there's a grant or revoke function to that destination via touch-panel. Of course, that function applies to the other departments, as well. Thus, they all have the ability, on an individual basis, to pick and choose, or decline, as relevant whatever imagery is sent to them.

Specifically, the synergisms of the Extron Fox 500 DVI fiberoptic transmit/receive extenders enable the grant/revoke architecture's high resolution image transmission via fiber. The system operator in each of the EOC's five receive/originate rooms is able to grant two unique user-selectable high definition video and audio feeds to any of the other four receive/originate rooms in the EOC building. We hasten to clarify that those five rooms are among the three aforementioned building stakeholders. Each of the five rooms can also originate a unique user-selectable broadcast feed that's EOC facility-wide via a high definition QAM TV channel. That capability is from the mentioned Extron DVI transmit extender.

Brad Howell, courtesy Spectrum ITC Group

Each of the two A-Pad audio selectors is at each position in the Dispatch Center, mounted in a small movable enclosure that allows the operator to position it for convenience on the console. Users can scroll through available audio sources on the A-Pad and listen to content of their choice, including AM and FM local radio stations, audio associated with images on any active screen in the dispatch center, and audio from the user's PC.

And that's the AV for the LAFD dispatch center, the third of the big three stakeholders in the City of Los Angeles EOC. To recap, the Spectrum ITC design team provided full-time services onsite for four years as subject matter experts, supporting the City's interests during the systems implementation. And it should be intuitively obvious that the Spectrum-designed system is characterized throughout by reliability, resiliency and robustness, from input to output. ■

An Insider's Perspective

Kevin Corcoran, LA City EOC project technical director, explained that his job was to handle project management of the installation, including implementation and testing installed AV hardware and software. His role included working with Bilar in the design and procurement aspects of the project.

"John's designs were eloquently simple," said Corcoran. "[The system] allows users to shift from a manual way of doing things, where one person sees information, to allowing many people to see multiple kinds of information and have it displayed on a videowall." He considered the "magic box" technology where all the switching and signaling took place. "Whatever came in one end of this magic box came out the other end, exactly the way the user needs it. And that type of integration is rare to find in an individual. But John was the one who got that."

Corcoran felt that the perspective of scalable technology should be addressed to *Sound & Communications* readers because some readers may be wondering, "This place is so big, (but) I'd like to be able to use this kind of technology in my [client's] small space." So, what Bilar did in the design was to make everything scalable.

"When I give tours of the building," said Corcoran, "I tell people that, if you look at the different rooms we have on first and second floors, you can pick and choose aspects that you'd be able to use in your own emergency center or dispatch center."

Sound & Communications Contributing Editor Jim Stokes has been involved in the AV industry as an AV technician and writer for more than 30 years.

six monitors manned by one operator/dispatcher. These configured layouts were conceived by Bilar's teams and supplied by the fire department.

Bramic Creative Business Products, Pickering ON, Canada (www.bramic.net) manufactured the consoles, which have a "sit/stand" capability to accommodate the operators. If an operator wishes to stand, there are buttons that raise the entire back area so the monitors are lifted. The work console area can also be raised where the operator puts his hands and keyboard.

Thirty Nine Operator Positions

There are 39 operator positions, each of which is equipped with a Crestron APAD-B keypad audio selector. They're placed in a small enclosure allowing the operators to move the keypad to either side of the console. The device allows the operators to scroll through local AM and FM radio stations to get news and information from the outside world, with the sound coming out on a local speaker via Parasound Ztuners.

"What we did was take rooftop services audio to receive radio stations from the local area," said Bilar. "We've remodulated it into the CATV signal within the FM band, so we're sending AM around the building on FM. And it sounds great." (It's a whole lot better than receiving just a few or not any AM stations because of a leaky RF environment in the building.) Other handily accessed AV sources include a Sony Blu-ray player and a Philips DVD.

Videowall Display

The NEC videowall is fed from the Jupiter PixelNet, which we'll detail later. The LAFD display wall traces its origin to the LAPD RACR, which was also in need of a large display during its inception. Bilar related that the initial design was for rear-screen projection despite the bit of noise and lamp changes. However, Bilar's meeting with friends with NEC corporate from Japan triggered the move to the four-high by seven-wide flat panel display consisting of 28 NEC 46-inch thin-line bezel flat screens. "It's not that big of a deal anymore because everybody got onboard. But at the time, the ultra narrow bezel meant we could finally contemplate ganging up an array of flat panels and not have massive, big chunky, distracting mullions around the images."

Brad Howell, courtesy Spectrum ITC Group

The entrance to the new City of Los Angeles Emergency Operations Center.

In the search for the distribution system, Bilar related, "We went to tradeshows with the LAFD and people from the City of Los Angeles. We were almost going to go with a militarized system of two entire arrays. It would have required a whole rack of switchers. Imagine if the system went down. Picture city people at two in the morning when Long Beach is on fire. Imagine that and having to, by hand, switch hundreds of connectors, not really knowing what they are doing.

Bilar related that a choice was nearly made to go with a massive clustered system with racks. However, considering the single mode of failure combined with having to buy two massive DVI switchers at a cost of hundreds of thousands of dollars, that option wasn't very appealing. Imagine what would happen in system failure where every source and target would have to be switched over. Thus, the better option was going with distributed problems via "cigar boxes" (nodes).

He continued, "If one of those (nodes) dies, you can swap it in a minute or two out of a little cardboard box in a drawer. So it's all about resilience in this Jupiter PixelNet system, where there is one workstation that runs it. And then we put the application on a secondary system that runs parallel with it. If an input or output node dies, the hit to the resilience is minimal and it can be corrected easily."

Parallel Workstations

Bilar further explained that putting the Jupiter system on two parallel workstations running in tandem "was our design." Therefore, one primary control processor and one standby/secondary control processor run the same control code as a "hot spare." In case that locks up, there are subswitchers built into the system that enable a "limp home mode" or failsafe.

"In failsafe, we still have at least four of the critical PCs' images on the screen," said Bilar. "We put them on quadrants, which is built into the NEC display. You feed it a signal and, if you tell it to do so, it will take a single image and zoom it over to four panels in each corner. That makes for a pretty big image. It's better than getting a call at 2:00 in the morning, saying 'We can't see anything.' So you get a note the next day: 'We had to go to failsafe. We are running that way now. We are fine. We can see the important stuff. But we

Brad Howell, courtesy Spectrum ITC Group

A view over positions 23, 24 and 25. The News & Information Display on the south wall is at the right. The Captain's and Battalion Chief's Raised Command Stage Area is visible at the left.

news and information necessary to the department's efficient functioning in a digital era.

Therefore, post-911, voters in Los Angeles approved Proposition Q, the citywide public safety bond measure, which provided $107 million to build a two-story, 84,000-square-foot EOC facility in downtown Los Angeles. The survivable building has blast-resistant walls and is designed to withstand an 8.0 earthquake.

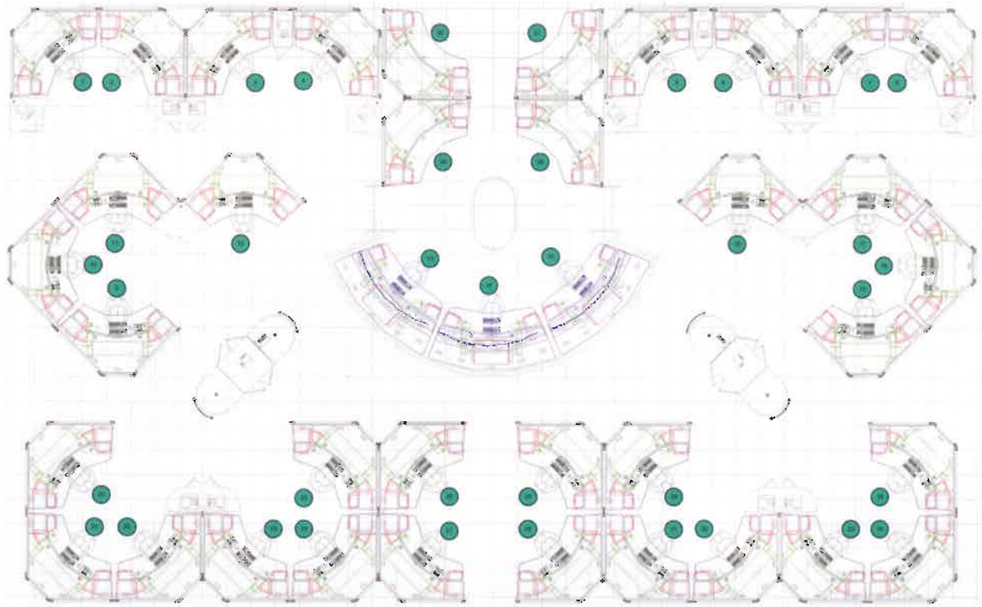
Brace yourselves, dear readers: We're going to give you some official acronyms. However, don't be dismayed; we'll use common English wherever possible. The EOC houses three stakeholders: the emergency management department (EMD), where operation is incident-driven; the Los Angeles Police Department's Real Time Analysis and Critical Response (RACR) Division; and then there's our primary subject here, which is the Los Angeles Fire Department's Operations Control Dispatch (OCD), whose operation is 24/7, and the Department Operations Center (DOC), which is incident driven.

As for the EOC facility itself, it's housed in a unique, base-isolated, survivable building. Distribution and display of critical news and Information and PC Data is all-digital. We are told that it is one of the largest, most technologically capable EOC facilities in the world. The EMD and LAPD venues are located on the ground floor of the 84,000 square foot facility. The LAFD's OCD, DOC and many additional department venues occupy the second floor of the facility (see sidebar, "Working Within The Complexities Of City Government," for more details.)

Inside The Dispatch Center

Dispatch center AV is accessed via Crestron touchscreen, which is done at command level. According to Bilar, a normal LAFD platoon consists of one battalion chief, three captains and 26 firefighters/dispatchers. That's the big picture. Normal operations on the floor would vary from a minimum of eight to a high of 14 dispatchers with one captain. At any moment, one or all the dispatchers and captains can be recalled to the floor as needed. Some reasons for "all call" would include system failure requiring manual call processing, overwhelming call volume and significant instances such as structure fires, river rescues and brush fires, to name a few.

The dispatch center is about 90 feet wide by 50 feet deep. Taking an insider's view at the heart of the center, there's the videowall at the center top with two semicircular dispatcher clusters positioned back to back below, as can be seen in the accompanying photos. Each cluster, or pod, has



Floor layout for the new LAFD Operations Control Dispatch (OCD) room. When the LAFD fully transitions into the new facility, the name is changing to: Metropolitan Fire Communications.

Equipment

7	Avocent Emerge ECMS2000 (PC node) transmitters
2	Avocent Emerge ECMS2000 (user node) workstations
1	Avocent DM2000 management appliance
1	Black Box KVT191A ServView III w/USB keyboard, trackball mouse
1	Black Box JPM804A-R2 24-port shielded RJ45 patch panel
39	Bramic Creative Business Products custom consoles (client supplied)
16	Contemporary Research 232-ATSC ATSC/Clear-QAM RF tuners
7	Crestron C2N-HBlock distribution blocks
39	Crestron APAD-B keypads
1	Crestron TPS-15G-QM touchscreen
1	Crestron C2N-HBlock distribution block
1	Crestron CNXHUB distribution hub
2	Crestron PRO2 processors
2	Crestron C2ENET-2 network interface cards
4	Crestron IRP-2 IR emitters
8	Crestron ST-COM com port modules
1	Extron DVI matrix DMS 1600, 12x12
2	Extron 1x6 composite video DAs (For PixelNet output nodes clock)
9	Extron Fox 500 DVI (TX)-Multimode-60-859-11 DVI to fiber extenders (Tx)
8	Extron Fox 500 DVI (RX)-Multimode-60-859-21 DVI to fiber extenders (Rx)
1	Extron MAV Plus 6464A w/FRC audio matrix
4	Extron BUC-102 audio impedance matchers
2	Gefen EXT-DVI-841 8x1 DVI switchers
39	HP PF804AA AV audio monitor bars
1	Jupiter Systems PixelNet distributed system display wall
14	Kramer VM-2C 1x2 component DA
28	NEC X461UN 46" thin-line bezel LCD flat-panel displays
1	NEC KT-46UN-RC IR remote receiver
1	NetGear GSM7224 24-port 1GB network switch; RACR Technographer KVM
1	NetGear GSM7224 24-port 1GB network switch; control processor Inter-System Communications
25	Parasound Ztuner v.2 AM/FM tuners
2	Philips DVDR3576H/37 DVR/HDD/DVD
1	RP Visuals RPSP090115E 4x7 custom data wall display support structure

List is edited from information supplied by Spectrum ITC Group.

John Bilar, courtesy Spectrum ITC Group

The "primary" and "secondary/spare" control system processors. It is estimated that a city operator would complete a 100% switchover of the facility's control system in under 10 minutes, physically migrating the cables from the primary (at bottom) to secondary units.

Brad Howell, courtesy Spectrum ITC Group

LAFD AV system equipment racks; four dedicated display PCs are at lower right.

John Bilar, courtesy Spectrum ITC Group

The previous EOC facility sported "Dr. Strangelove"-style hallways, according to John Bilar. The entrance to the old "Bunker," which led to the combined EOC, LAPD and LAFD center four stories under City Hall East.

John Bilar, courtesy Spectrum ITC Group

Brad Howell, courtesy Spectrum ITC Group

The interior reception lobby at the entrance to the new City of Los Angeles Emergency Operations Center.

City Government Complexities

The LAFD's OCD and DOC facilities were conceived to provide decision-support, and were designed for crisis management where decision makers have access to critical news and information of various types presented to assist command and control decisions.

The LAFD chose AV design consultant John Bilar Jr., CTS, Spectrum ITC Group, to serve as the AV solutions architect and subject-matter expert responsible for facility-wide AV technology vision, strategy, design and control system interface look and feel throughout the multi-year project.

It's awesome just to list the departments within departments. The $5 million dollar LAFD project comprises 21 venues, including main LAFD OCD/DOC, situation/status and resource status (Sit-Stat/Re-Stat), multiple management, training, briefing and supervisory rooms, and related support facilities, incorporating 14 discrete, resilient control systems.

"We went from ideas and a hole in the ground [for the new building] to face-to-face meetings with stakeholders for weeks and weeks," related Bilar. "A design was flushed out, conceptually. [The City] had the money, but it also had a behemoth of an organization. You'll see that from the entities we had to coordinate with. It should have been easy, but it was not. It's a big organization."

Specifically, Bilar worked directly with battalion chiefs, commanders and the senior staff of the LAFD. He coordinated efforts and facilitated communication among the LAFD, the City's general services division, bureau of engineering, the information technology agency, the mechanical, electrical, structural, IT and telecom engineering teams, the architectural teams of HOK and Fluor, and the city contractors providing and installing the AV equipment and facility cable plant.

"We coined the phrase, 'display of critical news and information,' because we kept running into issues where the political people within the City were interested in seeing that this didn't become an entertainment facility," Bilar pointed out. "Any time they heard 'screens' mentioned, we started getting rumblings: 'That sounds like a Best Buy or a place to watch shows.' So we had to go back to our stakeholders to discuss with them and get it clear that we were talking about *critical news and information*. Would it be TV? In many cases, it would. But the focus was on the *news and information* that we carried on those." Bilar added that the range of screen content would include not only TV but also computer images and some classified images.

Research & Development

Jupiter Systems is recognized as the innovation leader in the industry. The list of Jupiter breakthroughs includes the first display wall processor to allow the presentation of multiple windows on a display wall, the first PC-based display wall controller, the first processor to run Windows applications for presentation on the video wall, and the first network-based display wall system. When looking at R&D as a percentage of revenue, Jupiter matches or exceeds industry peers, confirming its commitment to continuous innovation.

Channel Strategy

Jupiter understands the importance of partnering with best-in-class providers to ensure customers receive support and solutions of the highest standard. Our partnerships are based on mutual benefits and long-term commitments. We consider our resellers and integrators to be an extension of Jupiter, and back them with the best products and support in the industry

Commitment to Quality

At the core of our Quality Management System (QMS) is a strong commitment to delivering consistently superior products and services to our partners. Through documented quality management practices, ongoing performance assessments, and industry benchmarking, Jupiter Systems maintains best-in-class standards for the quality of our products as well as the reliability of our services.

Certification

Jupiter Systems is ISO 9001:2008 certified for the design, development, manufacture, marketing, sales, order fulfillment, and call center support of visualization products.

Jupiter products are also certified in relevant jurisdictions as UL, CCC, and CE compliant.

Environmental Sustainability

Jupiter Systems recognizes its corporate responsibility to protect the environment and is committed to operating in an environmentally responsible manner.

Jupiter builds products to perform better and last longer. We believe that a high quality product that retains its performance characteristics and value in service for many years is more environmentally responsible than one that must be replaced frequently due to inferior materials, poor quality workmanship, substandard engineering, or lack of imagination.

All Jupiter products are RoHS compliant–we use no lead, mercury, cadmium, or other hazardous substances restricted under Directive 2002/95/EC.

We create energy-efficient products, providing solutions to our customers that help them to meet their operational and environmental goals. Perhaps even more exciting, Jupiter products are used around the world in diverse applications that help reduce emissions and waste, including advanced mass transit systems, intelligent traffic management centers, smart power generation and distribution systems, and next generation manufacturing.

Jupiter

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Visualize. Collaborate. Control.

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Jupiter Systems

Information is streaming into your operation from every corner of the enterprise at the speed of light. The requirement is to accurately assess it, make the right decision, take action, and monitor the results. Sometimes seeing the the big picture means seeing a big picture.

The video wall — sometimes small, sometimes very, very large — is now widely employed as a way for managers to develop a common operating picture. By putting video, images, and data up on a shared screen, teams share the same situational awareness.

Jupiter takes visualization one step farther. With a simple drag and drop user interface, users can select, move, compare, manipulate, and engage the information. Collaborating freely in the analysis, scenario planning, and execution, better decisions are made faster. The visual information can even be shared with remote colleagues on video walls across campus or across the country, bringing distant expertise to bear.

Video walls are also used in other applications to educate, to train, to monitor, to deliver services, and to entertain.

Federal Police Intelligence Center of the Public Security Secretariat (Mexico)

See the Big Picture

The room is ready. The best monitors have been chosen and mounted on the video wall. The network includes PC's, cameras, sensors, and remote telemetry from a hundred sources. The best people are there to observe, react, and manage the operation How do you get the right information up on the wall, make it easy to use, and keep the organization focused on the big picture and not the technology?

That's where Jupiter Systems comes in. From traditional rack mounted controllers to modular distributed display wall systems to streaming video servers, Jupiter's visualization products are the brains behind the shiny HD screens. See a hundred things at once or stretch any window to cover the entire video wall Control it with a mouse or a touch panel. We move any pixel from any source to any place you want to see it on the video wall.

A Global Leader

Jupiter Systems is the leading worldwide supplier of display wall processors. Jupiter's best-of-breed products are designed for continuous, 24x7 operation and are used in network operation centers, electric power generation, transmission and distribution control rooms, boardrooms, intelligent traffic systems, emergency services dispatch centers, financial management operations, surveillance and security centers, and fixed and mobile military command centers in thousands of sites around the world.

Customers include the transit authorities of Boston, Washington, D.C., and Chicago, telecommunications companies such as AT&T, Sprint, TeliaSonera, Deutsche Telekom; and other users such as Boeing, GE, Northrop Grumman and NASA.

Jupiter display wall processors are consistently chosen across all branches of government: local, state and federal. Jupiter products are essential elements of briefing centers and control rooms at the CIA, NSA, FBI, U.S. Army, U.S. Navy, U.S. Marines and U.S. Air Force, as well as in the Pentagon.

Jupiter processors are also found in Munich Airport, the emergency response center in Barcelona, the Warsaw stock exchange, the World Health Organization, police agencies throughout Asia, Europe, and the Americas, at Reuters Switzerland, and in many other major companies, universities and government agencies throughout the world.

Jupiter Systems product lines offer a continuum of performance, functionality, redundancy and price, providing customers with choices to precisely meet their needs and budgets. Jupiter products are manufactured in the US, in the company's ISO 9001:2008 registered facility, and are backed by the industry's most comprehensive warranties.

Founded in 1982, Jupiter Systems sells products through a global network of value-added resellers and integrators, supported by Jupiter offices in North America, Europe and Asia. The company operates a wholly owned subsidiary in China (Jupiter Systems China) and owns Teranex, a leading manufacturer of video processing products for the broadcast industry. Jupiter Systems is employee-owned and incorporated in California.

Markets

Jupiter products deliver power, flexibility, and unparalleled value to a broad variety of applications and industries.

Security

In order to protect it, you have to be able to see it. Jupiter's high performance display wall processors offer a full array of features including dynamic window sizing and positioning, smooth zooming within images, custom borders and titles, programmable presets, and backgrounds. Supporting intrusion detection systems, perimeter surveillance, visual analytics, and remote camera management systems, Jupiter products are used in government and commercial security centers around the world.

Traffic & Transportation

To monitor and manage traffic flow, handle the complexities of mixed mode transit systems, and coordinate emergency response, transportation agencies around the world use Jupiter technology to present real-time information from cameras, traffic sensors, GIS, GPS, and other elements of the intelligent transportation system to system operators. Jupiter products are used in both passenger and freight rail systems, airports, harbors and traffic management centers on six continents.

Utilities and Infrastructure

Utilities and ISOs face unending need, unpredictable external forces like weather, fire, and earthquake, and the need to drive greater efficiency. By getting all of the critical data onto a video wall, where managers can see it all, Jupiter provides operators with the real time information they need to reconcile demand with reality. Operators can survey their networks in high resolution, zoom in on potential problems on the grid, and react to prevent cascading problems before they develop.

Military

Jupiter's best-of-breed products are designed for continuous, 24x7 operation in command and control settings, both tactical and strategic. Jupiter's high performance display wall processors are used in military operations around the world to provide the common operating picture so critical to decision making. Built for a wide range of applications, Jupiter products have been adapted for battlespace requirements on land, sea and air. To develop situational awareness, you need to be able to see everything available--video, data, images, maps, and more. That's what Jupiter delivers.

Government

Managing jurisdictions that range in size from small towns to nations requires access to the best information available and a way to see it in context. Governments from Pattaya City in Thailand, to Arapahoe County in Colorado, to the Polish National Assembly, and more than a dozen US government departments and agencies use video walls powered by Jupiter to deliver the leadership and services that citizens demand.

Education

Educators have moved far beyond the chalkboard and now bring in information from multiple sources for classroom instruction. Presentation of real time and archival data drives a deeper and more relevant connection to the curriculum

Emergency Operations Centers

In the wake of 9/11 and Hurricane Katrina, national, state, and local agencies have created new structures and processes for coordinating responses across multiple agencies and diverse disciplines to save lives and protect property. Delivering video, images, and other data from the field to Emergency Operations Centers in a way that allows collaboration and the development of a common operating picture is essential. That's where Jupiter comes in.

Health Care

Delivering real time video, images, and medical data from the operating room, cardiac cath lab, electrophysiology lab, or other clinical facility to classrooms and consulting physicians, Jupiter technology provides pixel perfect access to critical procedures. Applications extend from medical education and CME to diagnosis and treatment.