Vol. 57 No. 3

March 21, 2011

SOUND & COMMUNICATIONS

SINCE 1955

AV FO ITEGRATORS, CONTRACTORS AND CONSULTANTS

KONG VS. T-REX!

UNIVERSAL STUDIOS HOLLYWOOD CREATES WORLD'S LARGEST 3D ATTRACTION.

EXPLORERS WANTED

NASA'S EXPLORATION SPACE IS A MODEL OF MODULARITY AND NONVERBAL PRESENTATION.

WORSHIP CENTER AV SURVEY

92 SECONDS ON SKULL ISLAND

AV technology helps create King Kong 360 3-D at Universal Studios Hollywood.

BY JUDITH RUBIN

©2011 Universal Studios. All Rights Reserved.

If this King Kong were "real," he'd be 30 feet tall, 20 feet wide, 15 feet deep and weigh 6000 pounds. Instead, he's projected onto two screens, each measuring 187 feet wide by 40 feet high (the equivalent of 16 movie theater screens).

Fire on the Universal Studios Hollywood back lot in Spring 2008 wiped out several movie sets, damaged the famous Back to the Future clock tower and destroyed the popular King Kong tram-tour attraction from the 1980s. It was decided not to build a new Kong animatronic but, rather, to update the popular attraction by replacing it with King Kong 360 3-D, an immersive multimedia experience. It opened July 1, 2010, and features a gigantic 3D projection system with two 187-foot-wide by 40-foot-high screens within a football-field-sized soundstage.

Skull Island

Passengers have their breath taken away in stereo when the tram pulls into Skull Island, the show doors shut and they are engulfed by the Peter Jackson-directed battle of Kong and the dinosaurs. It rages for 92 seconds of consummate wraparound 3D imagery produced and animated by Weta Digital (www.wetafx.co.nz), Peter Jackson's New Zealand-based company recognized with five Academy Awards for digital effects, most recently for *Avatar*. On February 1, King Kong 360 3-D was honored with a VES Award from the Visual Effects Society for Outstanding Visual Effects in a Special Venue Project.

Throughput is impressive and constant, at 160 seats per tram, with the show repeating over the course of the 10- to 16-hour Universal Studios day. Thanks to a custom pneumatic motion base, their vehicle pitches, heaves and rolls as the beasts roar, punch, leap and lunge their way through battle in the jungle landscape. The show doors open and the tram emerges, its applauding passengers only a little worse for wear, slightly sprayed with Kongspittle. Tram ridership is up. Kong is back.

The Details

- King Kong 360 3-D features the world's largest 3D projection installation ever produced.
- Two seamless, compound curved screens, the equivalent of 16 movie theater screens, surround the Studio Tour tram.

Judith Rubin (www.judithrubin.blogspot.com) is a freelance writer and editor specializing in themed attractions and entertainment technology.

- If the digital 3D King Kong could leap off the screen, he would be 30 feet tall, 20 feet wide, 15 feet deep and weigh 6000 pounds.
- Whereas the average film projects at 24 frames per second, King Kong 360 3-D's 16 ultra-high-definition projectors display 60 frames per second, creating an incredibly fluid sense of reality.
- Guests see and experience the equivalent amount of media—one terabyte of information—that is usually rendered for one hour of a feature film.
- The attraction was developed initially in the legendary airplane hangar built by Howard Hughes for the construction of his giant Spruce Goose airplane.
- When it came time to find a permanent home for Kong, Universal constructed the largest soundstage in the studio's history, with an area larger than a football field.

Technical A-Team

Design, installation and control of sound and video systems were in the charge of Paul Cuoco, Technical Manager-AV & Lighting for Universal. "We had to figure out how on earth to deploy polarized, stereoscopic 3D to a linear audience where everybody has to look off axis," Cuoco said. His team within Universal included Senior Technical Manager/Senior AV Engineer Brian McQuillian and Technical Coordinator Drew MacDonald. Universal's Technical Director Bill Whitcomb oversaw design, integration and control of the show action equipment: motion bases, show doors and compressed air system. Among those Whitcomb worked closely with were Universal's Greg Bryant (Ride System Specialist) and David Lundberg (Technical Manager-Controls).

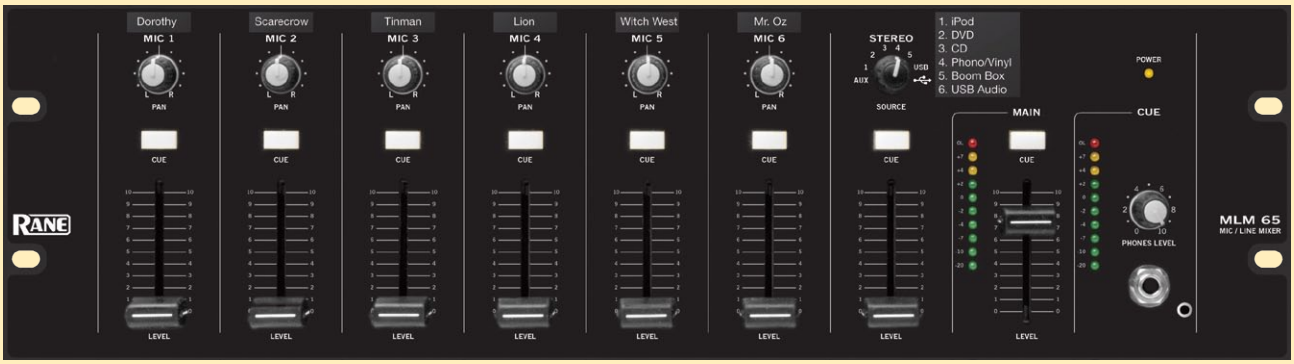
Other members of the Universal in-house team steering the project included Thierry Coup (SVP, Creative Studio), Jen Sauer (Creative Director), Mark Rhodes (Director of Media Production), Valerie Johnson-Redrow (Show Producer), Daryl Parker (Technical Manager-Special Effects), John Dunne (Technical Manager-Set/Scenic), Greg Burnett (Facility Design Manager), Rae-Mi LeRoy (Project Coordinator) and Drew MacDonald (Technical Coordinator).

Universal Creative VP Chip Largman noted, "The Weta Digital team, including Peter Jackson and Matt Aitken, along with Sassoon Film Design and Park Road Post, not only created a great new King Kong 3D movie, but they also played a significant role in the technical process and brought considerable expertise to the job." The technical specialists interacted with Universal's facility design team and the Weta content production team.

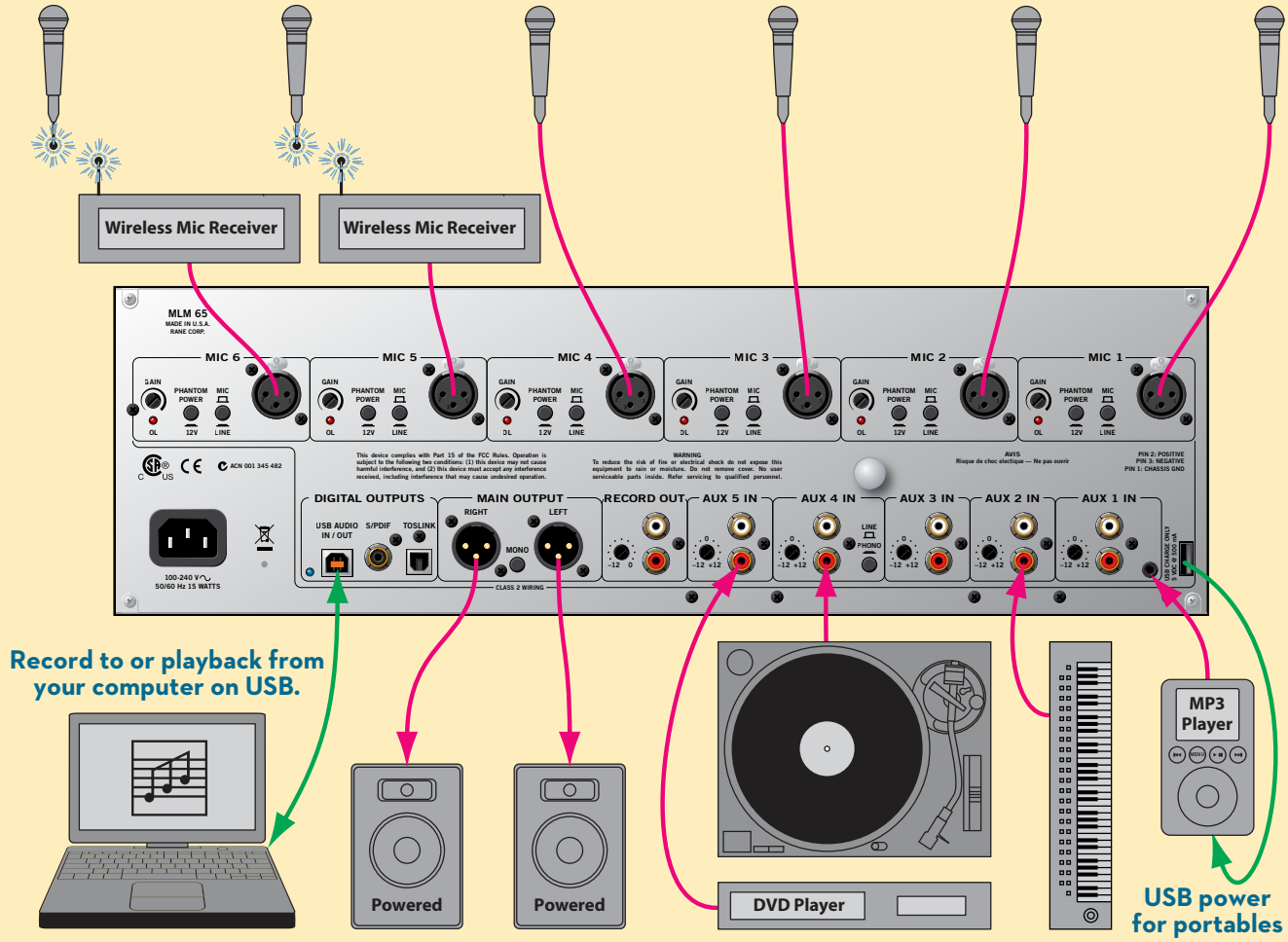
3D special venue cinema specialist Peter Anderson, ASC, provided input on system design as well as content design in the role of Stereoscopic Specialist/Projection Design Consultant. Additional outside providers included Creative Technology Consulting (Ben Sheldon, working closely with Whitcomb), Engineering Consultant Jason Taylor, Leff Brain Consulting (Project Manager Steve Leff), Electrosonic Systems Inc. (projection systems, www.electrosonic.com), Pro Sound (audio

NO EXPERIENCE REQUIRED

Easily mix a variety of sources for schools, churches and meeting rooms.



THE RANE MLM 65 MIC / LINE MIXER



The new Rane MLM 65 connects any audio: mics, computer, MP3 player, keyboard, even a turntable, it accepts them all. So easy, even an adult can do it.

Rane Corporation • 10802 47th Ave. W. • Mukilteo, WA 98275

TEL 425-355-6000 • FAX 425-347-7757 • WEB www.rane.com/mlm65.html

Equipment

Projection

1 Brainstorm SR-26 time code generator/buffer
16 Christie Digital Roadie HD30+K 2K, 30K lumen projectors w/Twist Image Warping Module, 1.25-1.45:1 high contrast lens, Isco matched 1.26x anamorphic lens
16 Custom anamorphic lens mounts, twisted to stretch image vertically
8 Custom projection stands
8 Custom polarizing filter holders
16 Custom exhaust ducting manifolds
16 Custom dual link DVI video cables
1 Dell Media Loading PC
16 DVS Pronto3 video servers, 2K, 60P, RGB 444 output, w/AES audio out
2 G-Tech GRAID3 Portable ESATA drives used for delivery and media loading
6 HP network switches
2 LA Propoint custom approx.180'x38' custom compound curve screens
5 Leibert GXT2-1500RT120 rackmount UPS
1 Medialon Show Control Machine, including Ethernet, RS232 control
5 Middle Atlantic equipment racks

Audio

1 Anchor AN-1000X rackmounted powered audio monitor
2 APC SUA3000RMXL3U uninterruptible power supplies
1 Cisco 24-port switch
1 Crestron CP2E integrated central controller
1 Crestron TPS-6L 5.7" touchpanel
10 Custom floor stands
1 Dell Optiplex general-purpose computer
20 L-Acoustics KIVA line-array cabinets, high/mid
10 L-Acoustics KILO line-array cabinets, low
4 L-Acoustics SB28 dual 18" subwoofers
5 L-Acoustics LA4 4-channel amps
1 L-Acoustics LA8 4-channel amp (subwoofer)
1 MediaMatrix N3 DSP
2 MediaMatrix NIO-AES 8-channel AES input cards
1 MediaMatrix NIO-8MLII 8-channel mic/line input card
1 MediaMatrix NIO-8o 8-channel output card
2 MediaMatrix CAB16o configurable audio bridges
16 Meyer Sound MM-4XP self-powered speakers
2 Meyer Sound MPS-488P power supplies
2 Middle Atlantic equipment racks
1 NETGEAR FS726T 24-port Ethernet switch
1 RSS by Roland AR-200S digital audio repeater RS232C control w/rackmount kit
2 Shure 514B push-to-talk paging mics

Lighting

24 Color Kinetics ColorBlast LED fixtures
8 Diversitronics strobe lamp sockets
ETC plugboxes
2 ETC Sensor 48 module dimmer racks
2 ETC 24-circuit DMX controlled relay panel
72 ETC 36° ellipsoidal spotlights
48 ETC 28° ellipsoidal spotlights
1 ETC Mosaic control system
64 Rosco gobo rotators
8 Vari-Lite VL-2500 spots

List is edited from information supplied by Universal Studios, Inc.

Analog Way has developped a new series of 6 powerful products dedicated to your integration:

- ► Smart MatriX - Ref. SMX200
- ► Smart MatriX LE - Ref. SMX100
- ► Smart Vu - Ref. SVU300
- ► Smart Vu LE - Ref. SVU200
- ► Smart Quad - Ref. SQD200
- ► Smart Edge - Ref. STE100

From US, Canada, South America & the Caribbean

Analog Way Inc. - New York
Phone: +1 212 269 1902

ANALOG WAY®

Email : salesusa@analogway.com
www.analogway.com

system design & installation, www.prosound.net/Home.aspx), LA ProPoint (screen fabrication & install, www.lapropoint.com), Visual Terrain (lighting design & programming, www.visualterrain.net), AET (special effects, www.aetfx.com) and Visible Sound (Peter Lehman, Onsite Mixer).

Paul Cuoco And The AV Team

A primary concern facing Cuoco was determining the screen shape that would deliver proper light return to guests. 3D presentation is always challenging in terms of illumination, and this was a unique situation, not only in terms of off-axis sightlines, but also screen size and cross-reflection. Several CAD constructions in 3D were produced. "We came up with what we called the French Curve screen: a compound curved screen that delivers an acceptable amount of light to guests' eyes and keeps falloff to a minimum, ensuring that the projected world appears uniformly lit no matter where you are sitting on the tram," Cuoco said.

Electrosonic's Project Manager Linda Danet said, "Like all attractions, this one went through iterations and, originally, wasn't planned as 3D. We did some design work for 2D—which is complicated enough when it's a surround environment—and I first thought the suggestion of 3D was a joke. Honestly, this hadn't been done before."

Cuoco added, "Once we figured out the screen shape, we also had to figure out its size. The creatives didn't ever want to see the edges of the screen, so we had to make them as tall as possible given the throw constraints." In order to achieve enough height with the 16 Christie projectors, edge blended across the screen, they used anamorphic adapters, deployed vertically along the lens to stretch the image taller.

Uncompressed RGB Frames

Cuoco described the content as "uncompressed RGB frames running at 60 frames per second (fps)," which some readers will recognize as the signature frame rate of a promising but ultimately unsuccessful special-venue cinema format, Showscan, with which Douglas Trumbull was closely concerned—and Cuoco reported having recently given Trumbull a backstage tour of the show. As a further side note, The Simpsons Ride at Universal also runs at 60fps with 4K projection, similar to Kong 3-D. Cuoco explained that "the projectors are 2K but, with edge blending, you get a total resolution of 8K per side, per eye."

"The 3D filter cuts light, and the 3D glasses cut it again," said Danet. "There's not a huge market for a 30K lumen projector: Most would never need that kind of light. A conference room would never need that kind of light. But you do need it in a very large venue and, luckily, there are companies like Christie that recognize that."

Cuoco, who also employed Anderson's services earlier on Shrek 4D, described him as "a joy to work with" and noted Anderson's rich background: "He started out years ago, shooting some of the first 3D films. He has so much

knowledge. We wanted to bring him in right away once we determined King Kong would be 3D projection-based, in order to leverage his expertise and figure out how we could break the rules of 3D to make this show work. He was instrumental in helping to develop the curved screen design."

©2011 Universal Studios. All Rights Reserved.

"One of the things Peter Anderson helped with was, in a broad sense, how to make the 3D effect realistic...so King Kong and T. Rex didn't come out too far in the viewer's range and hit the tram, for instance," said Electrosonic Services Solutions Manager Pete Tinari. "There were dozens of experiments to find out just how far out the content could go into the 3D cone of vision."

Used His Calculator

We asked Cuoco to parse Universal's statement that "Guests see and experience an amount of media equivalent to one hour of a feature film." He pulled out his calculator and responded, "The show is roughly 90 seconds. Take each of the servers: 16 servers each running a 90-second show at 60fps and compare to an equivalent 24fps show. That's 86,400 frames, which comes to about 60 minutes' worth of 24P content in 90 seconds. So, yes, they had to produce an hour's worth of CG in order to develop this show: 30 minutes per eye."

The entire projection system was mocked up to scale and tested extensively in the former Spruce Goose hangar at Playa Vista Studios. "We bought all the projectors early, built mockups of the screens, and used the mockup to test the 3D and view dailies. There was no way you could look at the material on a monitor and know the 3D was working," said Cuoco. "Once we had rebuilt the system in the attraction, the production crew came out to tweak color and contrast."

A Medialon control system monitors all the AV equipment. It initiates the play functions and stop and cue functions, and sends back timecode to the rest of the system. Said Tinari: "When the operator hits Play, everything—lighting, smell, tram mover—is distributed from the video servers and is listening to the same timecode. The Medialon reports back to the main system about projector temperatures, maintenance issues and readiness of the system."

Tinari continued, "Every projector has its own DVS Pronto 3, a robust, reliable server. What made it a very good choice for this attraction is that it is PC based, with tremendous processing power. It gave us a lot of freedom creating timelines and proper resolution. It runs on a 16-drive Raid Five, which has all the audio (and video) info stored on 16 hard drives for each channel. Every ounce of information is stored on a discreet drive so, if one fails, the others step in, and the failed drive can rebuild itself. That minimizes the possibility of downtime."

Custom Screen

"The full-size mockup at Playa Vista Studios was up almost a year," recounted Mark Riddlesperger, Founder and President of LA ProPoint. "And they played around with that mockup to finalize the geometry of the screen, do projection studies and sightline studies from the tram, and basically look at all aspects of what the show was going to be. The next step was to actually design, engineer and build the final

THE AWARD-WINNING PIANOMIC™ IS NOW READY FOR THE ROAD!
(OR THE AIR)

EARTHWORKS® INTRODUCES THE PM40T, TOURING MODEL VERSION OF OUR POPULAR PM40 PIANO MIKING SYSTEM

The Earthworks® PianoMic™ has forever changed the way we mic the grand piano. It's simple to install and sounds incredible! But now we've gone a step further in creating a more collapsible model PianoMic™ in a smaller case, for those on the go.

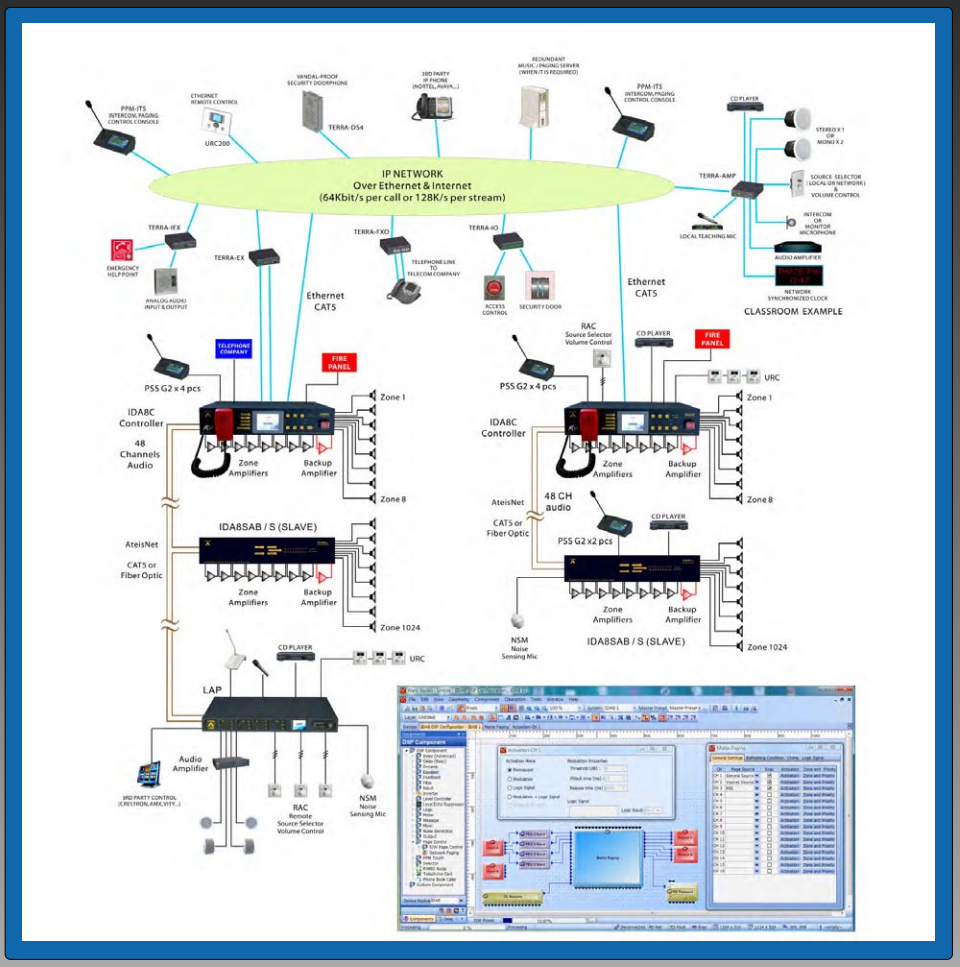
The PM40T and case were designed for the traveling artist or engineer, for whom size and space are always a consideration.

The PM40T conforms to all airline safety and carry-on specifications.

Earthworks® HIGH DEFINITION MICROPHONES™
Made in the U.S.A.
Contact Earthworks at sales@earthworksaudio.com, or visit us on the web at www.EarthworksAudio.com

NFPA 2010 COMPLIANT
EN54-16 TESTED AND APPROVED

Our IDA8 System, from a World Leader in Voice Evacuation, is a true example of how modern technology combines with 30 years of experience!!!



- The IDA8-Master system controller has 8 analogue audio inputs and 8 analogue audio outputs with end-of-line monitoring.
- 8 alarm control inputs and 8 output relays.
- Optional 8 microphone/line input card can be added.
- The Ateis-Net network allows for additional audio break in and out boxes, TCP/IP call stations, etc.
- The IDA8 network is fully redundant.
- LOCAL Network: 256 zones (512 AB).
- GLOBAL Network: The system can connect up to 32 IDA8-Masters over the Global Network allowing a system configuration of up to 32 x 256 zones.
- The IDA8-Master can work independently without a PC connected to it. The PC can be disconnected after configuring the system.
- The front panel color touch-screen display and corresponding push buttons allows for simple navigation through the various system menus.
- Automatic messaging is included in the Master and Slave units with a capacity of up to 4 hours of WAV format audio files. The audio messages can be uploaded via Ethernet link.
- 8 audio streams can be activated at the same time.
- The message player and messages are monitored.
- Full monitoring is provided starting at the capsule of a call station microphone to the end of a loudspeaker line. The external cables connected to the control inputs are monitored for short and open circuit.
- Standard test, alarm and chime-tones are stored in the Master and Slave unit(s).
- The Master and Slave devices have an internal real time clock for automatic scheduled activities such as: playback of messages, automatic volume changes during day and night or background music settings
- All IDA-units have extensive audio pre- and post processing possibilities for audio inputs and audio outputs.

*UL PENDING

Delivering Your Message

PENTON AUDIO USA

Penton Audio USA
21 Sabin Street, Pawtucket, RI 02960
Phone: (888) 883-8383
Fax: (888) 821-2121
Website: www.penton-usa.com

ATEÏS BY PENTON

structure."

The underlying structure for the custom screens is an aluminum frame supported by steel jacks and covered with luan substrate (lightweight plywood) that was seamed, drywall-mudded and skim coated with a level 5 finish. "Basically, the whole screen is plastered and sanded," said LA ProPoint Project Manager Andy Hanlen. "It's a complex toroidal shape, which curves in two directions and makes you wish you paid more attention in geometry class."

The screen is in two halves, on either side of the tramway. Once the plaster finish had been applied and sanded smooth, two coats of latex primer were applied, and the surface was finished off with Screen Goo. "It was a tricky application," noted Riddlesperger. "You can't let an edge of it dry as you go along or you will get a joint. We had two people in the basket of the lift applying the Screen Goo, and two more down on the ground mixing the paint, keeping it mixed and flowing through airlifts, in order to move things along so the people in the lift could remain mobile and fluid and not have to stop. It's water-based and very metallic; it dries fast. It is critical that the person applying it understands how to do so evenly, consistently and without blotches during the entire application."

Natural expansion and contraction from temperature swings presented a different challenge. "We couldn't put in any expansion joints, because Universal required a completely solid, uniform surface," said Hanlen. "This required that we design provisions into the frame that allow it to move."

"What we built for the final was seven degrees different from the mockup because of crosstalk issues observed by Universal," said Riddlesperger. "The mockup, which included an elevated platform and a mockup of four tram cars down the middle, was worth its weight in gold. We rigged all the projectors there; we built platforms to give a good approximation of where they would be positioned in the actual venue."

The screen was built right into the building structure on either side of the tramway. "We laid out the whole thing with SolidWorks design and engineering software, which allows you to manipulate the image in three dimensions," said Hanlen. "There was also a lot of handwork, and a lot of trial and error and headscratching. Universal built something that has never been built before."

Sound System Design

"Because we couldn't have a perforated screen," noted Cuoco, "we couldn't hide speakers behind it at guests' ear height. A system of line arrays was deployed to create the sound field: eight line arrays per side. There are five line arrays along the base of the screen per side, and three line arrays above the screen per side. There are additional speakers embedded into the tram bridge walls to allow for near-field effects like gravel. Two subwoofers per side supply

A little extra for good measure

The combination of MR-PRO and XL2 offers you extra flexibility and extra performance providing a complete and easy-to-use audio measurement solution.

MR-PRO

The MR-PRO is a versatile reference grade analog audio source generating both standard and user-stored signals at extremely low distortion. It also includes some remarkable additional features including readout of the impedance and phantom voltage of connected devices, as well as a cable test/signal balance function.

- Sine waves, Pink & White Noise
- Sweeps, both stepped and continuous; programmable
- User stored signals and signals for polarity and delay testing
- +18 dBu output at -96 dB distortion

MR-PRO XL2 (with M4260 microphone)

XL2

A high performance audio analyzer and acoustics analyzer together in one efficient battery-powered package. Designed to close the gap between handheld and benchtop instruments in performance and features, it functions as an audio/distortion analyzer, with frequency counter; octave and 1/3 octave real time analyzer, sound level meter, FFT spectrum analyzer, RT60 reverberation analyzer, polarity tester, delay time analyzer and optionally, as an STI-PA speech intelligibility analyzer.

- Live Sound Solutions
- Installations and Venues
- Broadcast and Studios
- Environmental and Community Noise Measurements

Incorporating:

- High (-100 dB) audio performance
- Ergonometric package with brilliant hi-res backlit display
- Multi-parameter Sound Pressure Level Meter
- RTA and high resolution FFT spectrum analyzers
- Balanced and unbalanced audio inputs
- Monitor speaker, headphone output, tripod mount and shock jacket
- WAV file recording for later reference or post-analysis
- Data & setup memory storage and recall on microSD card

NTi AMERICAS INC.
PO Box 231027
Tigard, Oregon 97281 USA
503-684-7050
www.minstruments.com
info@ntiam.com

substantial bass. There are 22 discreet channels of audio. We are very happy with the performance of the line arrays: The show sounds really great."

"It is a fairly straightforward PA system: a pseudo-surround situation with horizontal panning," said Arron Szabo, Operations Manager of Pro Sound. "The challenge wasn't just distance—40 to 60 feet—but also the narrow, vertical area to cover. Line arrays with a shallow vertical pattern were the best way. The L-Acoustics arrays were selected based on their modeling info, and because we wanted passive speakers for ease of maintenance. They have the ability to reproduce the desired fidelity at the levels needed. The subwoofers work well in the giant concrete facility. The near field speakers—Meyer Sound MM4s, four-inch powered speakers, two per car—add in some incidental environmental background sounds: screams, birds, offscreen animals. The L-Acoustics dual 18 subwoofers work well in the giant concrete facility. It is a big square building with a lot of hard surfaces. We positioned the subwoofers off axis to the corners of the building, and this created a robust sound field."

The upper arrays are hung with wire rope, and the lower arrays are mounted onto four-foot custom-fabricated speaker stands. Each array consists of two high-mid-frequency cabinets and one low-mid cabinet. The L-Acoustics amps, said Szabo, "have a certain amount of DSP in them and interact with their cabinets in a specific way." There is a simple Crestron control touchpanel for basic maintenance. The sound equipment racks share space in the projection booth. Audio resides on the video servers in the booth. "It was an onsite mix," said Szabo. "The trams have plastic roofs; there were a lot of challenges getting certain sounds to stand out. And the solid screens caused some unanticipated reflections that the mix engineers had to overcome."

Sound design was provided by Park Road Post, Peter Jackson's audio company. "It took about a week to mix the sound," said Cuoco. "They came in with close to 500 tracks of sound to mix down to 22 tracks. There are a lot of interesting little sounds and nuances to make the audience believe they are on Skull Island: even mosquitoes flying around in 3D that you can hear. This level of detail is provided with the knowledge that people will ride the tram more than once, sitting in a different place each time. We give them something to study, something unique each time."

©2011 Universal Studios. All Rights Reserved.

Show Action Equipment

The pneumatic Kong motion base was custom built to Universal's specs by theme-park special-effects pioneer Ron Griffin's The Attraction Services Company (TASC). "It met all the criteria," said Sheldon. "It really shines. It is a fabulous design that meets safety, reliability, operations and maintenance standards, and also provides the wonderful creative experience." The tram enters Skull Island in the course of the first third of the 90-minute Universal Studios Hollywood backlot tour, which is designed to maneuver in and out of attractions and interact with motion bases: not just Kong, but also Earthquake and Jaws.

An engineers' powwow led to initial diagrams and models. "We wanted to go with clean power, not have to deal with hydraulics, and TASC had a lot of experience with airbag technology," remarked Sheldon. TASC built an initial mockup that laid the foundation for the full-scale design that incorporates a separate three-axis, airbag motion base for each of the tram's four cars. "Each motion base can heave, pitch and roll individually or in combination, via the Allen Bradley control system from Anitech Systems," explained Sheldon. "There are four little mini-control systems hooked to the primary control system," said Sheldon. "Those tie into a master ride show supervisor. The ride show supervisor also controls the subcontrollers that run the show doors, the AV and the special effects."

Air—10,000 gallons' worth—is pumped in and out continuously for each show cycle. It called for an impressive set of compressors and a sizable air storage tank. A separate storage building is devoted to air compressors. For sound isolation, the pressurized pump and exhaust lines are buried underground. To block the sound of the air whooshing through valves and mechanical linkages, in and out of the airbags underneath the tram, there is a system of solid steel plates on top of the entire motion base, combined with a thick rubber skirt. The air compressors themselves are powered by electric motors, with an energy-efficient configuration.

(continued on page 61)

(Continued from 43)

Universal also called on TASC to provide the show exit and entry doors. The doors operate automatically to facilitate entry and exit of trams. They seal the theater off to contain the sound during the show and preserve the element of surprise for the audience in the next tram, and block light to furnish a dark environment for the 3D visuals.

Theatrical Lighting

Following the show storyline, the lighting designed by Visual Terrain and installed by ELS (www.elslights.com) provides a variety of environmental enhancements to make the experience more convincing and immersive, such as when the tram seems to be swinging from vines. "We change the light from one side to the other to accentuate the effect, getting the light where people least expect it, from positions on the floor of the attraction and at the base of the screens," said Lisa Passamonte Green of Visual Terrain. "ELS created custom mounts for them. The hard part is that, in an attraction with projection—especially projection of this size and scale—the projector is the brightest light source in the room. We work to complement that but not compete with it."

The theatrical lighting rig is deadhung mostly with fixtures manufactured by ETC, enhanced with ETC dimmers, effects wheels, gobo rotators and strobes. The controller, an ETC Unison Mosaic, lives in the projection booth. "I think Universal was pleased by how much we were able to add with that subtle layer," said Green. "Chip Largman was trained in lighting design and is a great client to work for."

Ordinary Equipment, Amazing Configuration

"One of the things that really amazed me," observed Electrosonic's Pete Tinari, "is what Universal created from very simple elements by thinking differently about those elements. Nothing like Kong has ever been done before and, even though the project is cutting edge, the technology it is based on is not...and it has brought us to a new place."

"There were a lot of interesting logistics," remarked Dale Mason, Universal's Vice President of Creative Design. "There's a series of experiences the tram takes you through, and they all have to be about the same length, like a show scene in a dark ride. There's the time it takes to drive into the building and out, and the time it takes to run the experience. All that goes into making up a show cycle and determining how much time you have to work with. A few seconds become very important, and affect throughput and balance issues."

Mason concluded, "We were very concerned at the beginning whether there was going to be enough time in 92 seconds to tell the story. We got so much more than we thought we were going to get. It feels immersive and complete."

To see a video, go to www.universalstudioshollywood.com/attraction_king_kong.html. ■

MARKETPLACE
Your Source for employment, services and suppliers.

Sam Mitrani
516.767.2500 x514
smitrani@testa.com

MEDIALON
Show Control Solutions

- Ferrari World Abu Dhabi
- Hershey Park
- Shedd Aquarium
- Universal Orlando
- More than 35 Pavilions at Shanghai World Expo
- Universal Studios Singapore
- Alton Towers
- World War II Museum
- NASCAR Hall of Fame
- SeaWorld San Diego
- NASA Kennedy Space Center

The Magic behind the Magic

www.medialon.com