

ELECTROSONIC

ISSUE NO.

19

WORLD



FLYING HIGH

AT THE ONE WORLD OBSERVATORY

EXHIBITIONISM
The Rolling Stones

VIDEO WALLS
in Reception

KENNEDY SPACE
CENTER

EVERSHEDS
New Look Auditorium

Welcome

to the 19th edition of ELECTROSONIC WORLD, the biennial publication which provides a record of representative activities of Electrosonic.

When ELECTROSONIC WORLD first appeared nearly 40 years ago in 1980 not only was technology different, but it was also much easier to report the company's activities. Customers were pleased to have their case histories reported and there was little difficulty in gathering lots of content.

Now, ironically in the age of mass electronic communication, it is much more difficult, many significant customers in the corporate and premium theme park markets do not permit mention of their projects, which inevitably leads to a less representative selection of stories.

Nonetheless it is hoped that, with stories from the USA, UK, Turkey, Bulgaria, Kuwait, and Dubai, covering subjects as various as Spam (the edible variety), Cowgirls, Space Exploration and Scotch Whisky, and technologies ranging from 3D high resolution LED displays to networked media distribution, there will be something of interest to all readers.

The 18th edition had an extensive description of the National September 11 Memorial & Museum. This new edition reports on the spectacular One World Observatory which was later opened on an adjacent site.

Also, notable for their use of the latest appropriate technology, the reports on two travelling entertainment exhibitions

(The Rolling Stones-Exhibitionism and Liongate's The Hunger Games - the Exhibition) represent a new take on an old idea.

Changes at Electrosonic

For most of its history ELECTROSONIC WORLD has been a record of the company's activities round the world and its application of evolving technologies. Other than in photo captions, it has rarely mentioned individuals or discussed Electrosonic's own corporate structure.

In the period 2015 – 2017 some significant changes were made to the governance and line management of the Electrosonic Group so it is appropriate to give a summary of the situation as at mid 2017.

The Electrosonic Group is owned by the Aminoff family of Finland. It has a supervisory board of directors, made up from representatives of the family and independent members. Philip Aminoff, who has a long association with Electrosonic going back to 1993, was Chairman of the Board from 2002 until 2016.

While Electrosonic Ltd was founded in 1964, the current Electrosonic Group, with principal operating companies Electrosonic Inc (USA) and Electrosonic Ltd (UK) was established in 2002 and domiciled in Finland. In mid 2017 the domicile was changed to the UK and Electrosonic Group Limited was formed.

New Chairman

In 2015 Steve Leyland, a technology industry veteran who has held senior

appointments with, among others, Polycorn and Barco was appointed to the Electrosonic Board, and in 2016 was appointed Chairman to succeed Philip Aminoff (who remains a director).

Change in Executive Management

Electrosonic specialises in AV systems integration and support services. While the underlying aim has been to have similar offerings on both sides of the Atlantic, reality has been that in recent years the Burbank (ES Inc) operation has primarily offered "design and build" services to the attractions market, and the UK operation (ES Ltd) has provided a similar service but with a greater emphasis on corporate work.

In February 2017 Jim Bowie, who had been CEO of the group since 2008, announced that he would step down from this position at the end of June 2017, the date being the 30th anniversary of his joining the company. In his 30 years with Electrosonic Jim made significant contributions to the business especially in respect of the introduction of new technology and the success of the Burbank based operation. Jim will stay involved with the company after June 2017 as Senior Advisor to the Electrosonic Board.

This change resulted in the appointment of Bryan Hinckley as President of Electrosonic Inc, while Sarah Joyce continued as Managing Director of Electrosonic Ltd; both reporting to Steve Leyland as Executive Chairman of the Group.

THEA Awards

The Themed Entertainment Association presents its coveted annual THEA Awards to outstanding themed attractions.



The awards are given to the attractions themselves, not to their creators, but naturally the creative teams involved are proud of their contribution. Since the last issue of ELECTROSONIC WORLD, the following attractions to which Electrosonic made a significant contribution have won THEAs.

2016

IEMS (Integrated Environmental Media System) at the Tom Bradley International Terminal at Los Angeles International Airport.

Award for Outstanding Achievement (Environmental Media Experience). The project was described on Page 12 of ELECTROSONIC WORLD No 18.

One World Observatory.

Award for Outstanding Achievement (Attraction). This project is described on Pages 16 & 17 of this issue.

2017

Senate Immersion Module at the Edward M Kennedy Institute.

Award for Outstanding Achievement (Connected Immersion in Education). The project was described on Page 40 of ELECTROSONIC WORLD No 18.

Minneapolis Move

From June 1, 2017 Electrosonic's Minneapolis office has been at 12400 Whitewater Drive, Suite 140, Minnetonka, MN 55343 - USA. The building is shown below.

Electrosonic has had an office in Minneapolis since 1972, and since then has occupied premises at five different addresses in the area. For many years the office was the USA Headquarters of the company (before moving to Burbank in 2008) and was at its largest in the videowall "cube" era in the 1990s. Now it provides regional and back office support for the Group.



Recognition



Jim Bowie receiving the Mackey Barron Distinguished Achievement Award at InfoComm 2017 in Orlando FL. Jim is flanked by Gary Hall, President InfoComm Board of Directors 2017 (left in picture) and David Labuskes, Executive Director and CEO at InfoComm International (right in picture). Photo credit JohnStaleyPhoto.com.

On Page 2 some changes in the management of Electrosonic are recorded. These include the announcement that Jim Bowie, CEO of Electrosonic was stepping down in June 2017 after 30 years with the company. Jim has made major contributions to both Electrosonic and the wider AV industry and this was recognized by InfoComm who presented Jim with its highest honor at InfoComm 2017; in their words:

"This award's overall purpose is to call out an individual recognized by association members and the industry as worthy of a lifetime achievement award. Two major criteria are applied - the career accomplishments and the individual's contribution to the AV industry through InfoComm International. The Mackey Barron Distinguished Achievement Award is the highest honor bestowed on an industry member by the association."



On the other side of the Atlantic, Electrosonic's co-founder and Board Director Robert Simpson was awarded an MBE in HM the Queen's 2017 New Year Honours.

After 55 years in the business Bob was particularly pleased that the citation for the award recognized both the AV industry and Electrosonic.

Bob has now retired from the Electrosonic board, but is still retained as an adviser and is recognized as "Director Emeritus."



Philip Aminoff



Steve Leyland



Jim Bowie



Bryan Hinckley



Sarah Joyce



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Control Centre

AT HAWLEY MILL

ELECTROSONIC
Resource & Operations Control Centre



Faster more efficient
deployment on both Project
Delivery & Service Delivery
commitments & ad hoc
requirements.

Electrosonic has made substantial changes to its Hawley Mill (UK) based business. Until recently "operations," embracing engineering, purchasing, and project delivery was based in one part of the building, and "service" had a separate existence in another part. Now there is one unified team and it is supported by a new Resource & Operations Control Centre (ROCC). Its aim is to monitor, track and control all available delivery resources in one place and as one team - to allow for a faster more efficient deployment on both Project Delivery and Service Delivery commitments and ad hoc requirements.

Electrosonic also has a dedicated 24/7 VNOC (Video Network Operations Center) operating out of Canary Wharf (London) and Manhattan (New York City). The new ROCC offers technical support and an immediate failover point for the VNOC when required. ■

Videowalls and Control Room Displays have long been part of Electrosonic's repertoire so it was natural that the new ROCC should be properly equipped with a suitable overview display that could show a range of real time information including the location and commitments of service and installation personnel, traffic information, project status etc.

The principal display installed in the ROCC is a 4x2 array of Samsung narrow bezel videowall LCDs supplied by Medium and mounted on Peerless brackets. The image sources are a mixture of broadcast video, codecs, computers, networked images and internet. For this reason a network friendly videowall image processor is an essential component. Following good experience of the product in several critical large scale 24/7 videowall installations, Electrosonic selected the Eyevis Netpix videowall controller to be the heart of the installation.

EVERSHEDS

bring a new look to the law



↑ The “top table” section of the auditorium. Notice the color changing wall at the left of the picture.

A common perception is that Law Offices have a touch of the Dickensian about them, with leather bound volumes, quill pens and high stools, but while all these were abandoned years ago, there has remained an air of the conventional in the look and functioning of such establishments. International Lawyers; Eversheds have recently upgraded their auditorium facility and built a new boardroom at their UK Headquarters in the City of London, and in doing so they have created exciting and colorful environments which encourage participation and are certainly not “conventional.” Interior design was by Action Workspace, and AV Systems design and integration was by Electrosonic.



↑ The Eversheds Boardroom seats 21 people and has splendid rooftop views. Notice the built-in table top microphones.

The Auditorium has seating for 124 people, with presentations possible either from a top table seated panel or from two lectern positions. A separate “breakout room” can be opened up to provide an additional 50 seats and the AV system allows the two spaces to be used either combined or independently.

To ensure speech intelligibility, a Polycom “Sound Structure” system is installed with 32 ceiling loudspeakers and both wired and wireless microphones. The system is programmed to deal with multiple room layouts.

The Auditorium includes a 4K capable Digital Media routing system which feeds the main displays. A 3x3 videowall made up from nine LCDs provides a “brand backdrop”; while for viewing detailed content, 98-inch LCDs are installed either side of the videowall. These are augmented by three 65-inch LCDs installed in the breakout area.

Ceiling lighting and LED color-changing light walls are integrated via a DMX interface to allow the room ambience to be changed using illumination levels, color washes and moving color patterns. Such “scenes” can be stored as presets and selected by the Crestron room control system. An iPad is provided as a user interface.

↓ A single UHD (“4K”) C-TOUCH 98-inch touchscreen LCD provides a high quality image for all participants in the Eversheds Boardroom.



The Auditorium has become a popular venue for a variety of Eversheds and client events, indeed it is usually fully booked, testifying to the success of its imaginative design.

The Eversheds Boardroom is a quite different space to the auditorium, but shares its fresh approach. It is a formal space with fixed facilities catering for multi-participant meetings.

One challenge was the “long, narrow” shape of the room, resulting in potential audio intelligibility and viewing distance problems. Another was “participant connectivity,” catering for both legacy and current connection methods whilst allowing for the “Bring Your Own Device” culture. Finally it was important that room control, (including routing of sources etc), was kept as simple and as intuitive as possible, ensuring participants have the ability to start meetings on time with minimal fuss.

A single C-TOUCH 98-inch LCD provides a high quality image for all participants. It includes “whiteboard” software which allows up to six participants to view and share presentation material and annotate documents wirelessly from the main display or their own devices. Multiple overhead loudspeakers are designed to improve the audio experience within the room and for remote participants. The 20 table-top microphones can identify the position of the active speaker and help select the correct PTZ camera and lens settings.

Conferencing equipment includes a Polycom codec, provision for software codecs and a VoIP connection for telephone conferences. Most participant connectivity is wireless using the Kramer “Collage” system.

Electrosonic designed the user-friendly control interface which is presented on both an iPad and a 10-inch LCD.

The new Boardroom, equipped with collaboration technology, allows Eversheds to meet clients and colleagues “in person,” in real time; enhancing business relationships, productivity and efficiency. Eversheds can be certain that all participants enjoy a first-class meeting experience, regardless of their device, location or network. ■



High Resolution in Reception

The Reception area for one of Electrosonic's clients, a London-based bank, now features two high resolution LED displays which show corporate and event related information. Each display is a massive 5.76m x 3.24m (18.9ft x 10.6ft) of 1.5mm fine pitch LED to achieve QHD (3840 x 2160) resolution. The display system, based on SiliconCore LED technology, was engineered and installed by Electrosonic in close co-operation with the client's Corporate Communications and Corporate Real Estate Services teams.

A Fast Track Project

Practical and business considerations meant that the project needed to be completed quickly. The client approached Electrosonic in early December 2016 and the project specification was developed during that month. From the client's point of view an ideal completion date was to have been towards the end of February 2017. Reality meant that the system specification was completed, and an order placed, in early January 2017, and the project was completed on 8 March 2017, in the remarkably short time of eight weeks.

Electrosonic's partnership with the client's internal facilities teams was crucial to the success of the project. Given the timeframe, VIP involvement and high visibility nature of the

project, there were many critical and supporting enabling works that had to be carried out before and during Electrosonic's work on-site. This would never have been possible in such a short period were it not for the excellent program and project management by the client and the associated Corporate Communications and Corporate Real Estate Services (CRES) teams.

Also critical to the success of the project was Electrosonic's partnership with SiliconCore, the manufacturer of the LED displays. The physical installation was completed outside working hours over six days, which required immense effort (and many late nights!) from both SiliconCore and Electrosonic.

A unique benefit that Electrosonic brings to this type of project is the provision of a project team with experience of deploying large, technically demanding, AV videowall systems. The project itself was delivered by the delivery team based at the Electrosonic Newquay (UK) office. This team provides complete end to end AV integration solutions and possesses a wealth of experience of engineering and deploying AV systems for the client. The close knit project management and engineering team offered the client an exceptionally high standard of engineering, CAD and project management expertise which proved vital in ensuring smooth delivery of the project.



↑ The Events Reception Desk

← The high resolution displays in the Reception area.

The Display Technology

The main reception displays are two SiliconCore "Magnolia" displays with 1.5mm pixel pitch, meaning that the practical minimum viewing distance is only 1.5m (5ft). The displays are 5.76m x 3.24m (18.9ft x 10.6ft) providing a 16:9 aspect ratio image with QHD (3840 x 2160) resolution. This means that conventional media production processes can be applied and that the whole display can be made compatible with the client's global digital signage standard (OneLAN).

SiliconCore displays have some significant advantages for continuous running displays. Their LED architecture is based on the "common cathode" principle which means in practical terms they can run brighter, and use less power than alternatives. The displays could run at an eye-blistering 1700 Nits (Candelas per square meter) if required.

QHD stands for "Quad HD," so it is no surprise that the simplest method of sourcing the displays is a processor which can deliver four simultaneous 1080p HD streams. Datapath FX4 processors are used to convert incoming QHD to the required format. A Crestron DM-MD16x16 DigitalMedia matrix with redundant power supply is used to select the incoming sources and provide the QHD feeds. Inputs include a house "Presentation" channel, IPTV, a studio feed, three OneLAN 4K digital signage players, two codecs, and three computer inputs. Sources providing 1080p HD signals are routed to a maximum size of one quarter of the display.

To provide information for the separate Events Reception desk, an existing 2x2 Planar LCD videowall has been re-deployed. It is fed from another FX4 processor receiving a QHD input from the matrix.

Audio and Control

The display system is supported by a stereo audio system which provides high quality program audio in close proximity to the displays. The audio system is based on a BiAmp Tesira DSP.

Control of the complete audio-video system is by a Crestron control system. This has two touchscreen user interfaces. One is portable but normally sited in a docking station at Reception, and the other is fixed in the Corporate Communications office.

The control concept is that of display "scenes" which consist of pre-programmed display layouts and source allocations which can be assigned to appropriate events or times. Only authorized users can create scenes. Other users have conditional access to scene selection only.

Pixel Pitch Perfect

The main story on these pages is a demonstration of how far direct view LED display technology has come in recent years. Initially such displays were associated with sports events, advertising and arena shows, but the arrival of fine pitch variants has opened up new opportunities where previously tiled LCDs or projection might have been used. Now they are to be found in corporate installations where the highest quality is demanded. Electrosonic is involved with several such projects, being installed in cities around the world. This has required the development of new skills, and a commitment to the factory training of project engineering staff. Recent developments include improved color and contrast, the ability to display HDR (High Dynamic Range) content and ever finer pixel pitches.

The big advantage of LED is that in theory displays of any size can be constructed. An obvious question is "What pixel pitch do I need?" given that the range now offered varies from less than 1mm to 100mm or more. A good way to start is to understand visual acuity – the ability of the human eye to resolve small detail. This is generally accepted to be our ability to resolve detail down to one minute of arc (one sixtieth of a degree). Clearly the aim should be that, at the intended viewing distance, it should not be possible to see individual pixels. ■

↓ The “Heroes of Fire” show is a highlight of the exhibition.



Ahmed Al Jaber



Motorized LCDs rise up in front of the main screen at appropriate points in the show



The exhibition shows how and where oil is produced in Kuwait, its importance to the economy and the products derived from oil and gas. Imaginative use is made of audio-visual techniques and interactive exhibits to support the story. Besides Event as designer, other creative input came from English & Co for linear media, New Angle for interactive media and DHA Lighting Design for lighting design.

One orientation exhibit consists of a large table top map of Kuwait. Above the table are two short throw projectors providing an image onto the map. At six points around the table there are custom designed control panels that have a rotating knob which controls a selection line that moves across the table. When it reaches a point of interest (denoted by a marker on the map) the user can select the installation by pushing the knob. There is a local sound system around the table to provide supporting audio where required.

The Heroes of Fire Immersive Show

This highlight of the exhibition gives the public an understanding of how the wellhead fires were put out in Kuwait after the first Gulf War. A three projector panoramic display is the backdrop and five motorized 47-inch LCD displays move up and down into view at key points within the show. The AV control system synchronizes the lighting and video systems and also provides outputs to the life safety system that triggers real flame and smoke effects (by Back Stage Technologies) at key points within the show.

In the final stages Beck Interiors was in charge of Construction Management and The Hub did the exhibit fabrication; however earlier in the project Hypsos, who left in 2014, was involved with both aspects.

The audio-visual components of the exhibition are both complex and a vital part of the visitor experience. For this reason Electrosonic was also contracted to provide on-site support after completion.

The long duration of the project had significant side effects. Electrosonic’s task was made more difficult by the fact that overall project management and exhibition fit out contracting changed while the project was in progress, and much of the original equipment specifications had to be updated during the project. ■

All photographs courtesy of Event Communications.

Oil & Gas Exhibition Centre

IN KUWAIT

The Ahmed Al Jaber Oil & Gas Exhibition Centre in Kuwait is an example of both a spectacular exhibition, and a project which demonstrates Electrosonic’s ability to support projects in distant locations over long periods of time. For Electrosonic the project officially started in 2013, and was completed in 2016. However, this disguises the fact that Electrosonic was involved with preliminary design work and technical demonstrations related to the project nearly ten years ago. The exhibition’s designer, Event Communications, for whom Electrosonic did the preliminary work, had to wait a long time to see its creative ideas become reality.



Projected images in the background of part of the “Oil Installations” exhibit.
Real flame effects are used in the “Heroes of Fire” show.



Part of the “Products” exhibit.
The “Drilling Scene” exhibit.



The Kuwait Map exhibit.

Dynamic Displays with Remote Monitoring at Atlanta Airport



↑ The near-seamless main videowall shows Georgia at its best.



Photo taken at the opening of the Welcome Center showing the banner videowall above, 4x4 videowall center, and one of the 3x3 Videowalls to the right.

The Atlanta Convention & Visitors Bureau (ACVB) in partnership with the state of Georgia, has opened a new welcome center in the heart of Hartsfield-Jackson Atlanta International Airport (HJIA). Boasting four 4K videowalls that operate 24/7, the welcome center captures the attention of new arrivals with dynamic visual content and information designed to make their stay a success.

Electrosonic installed four videowalls in the welcome center using a total of 40 55-inch Samsung UD55E-P ultra-narrow bezel LED monitors. A 6x1 wall tops the entrance, a pair of 3x3 walls lines the sides and a 4x4 wall fills the rear of the new center.

Green Media Works Inc. of Atlanta managed all the content displayed and created much of the original programming.

Located adjacent to the domestic baggage claim and local transportation, the new welcome center replaces a small booth equipped only with overhead monitors and offers greater visibility to passengers arriving in Atlanta.

Four BrightSign 4K video players are the sources for the four videowalls. The players are located behind each of the walls eliminating the need for a central equipment rack. Electrosonic provided a Crestron control system whose operator interface at the site offers individual monitor control and the ability to bring up test patterns on the videowalls for color balance and monitor alignment.

Electrosonic also installed a remote camera viewing system, featuring a 24/7 Internet connection to facilitate off-site maintenance and content updates. Ceiling-mounted confidence cameras are pointed toward the videowalls so if there are any technical issues, Electrosonic's full-time service technicians can use the TeamViewer app to look at the cameras and check the network connections as if they were on the job site. Green Media Works also can use TeamViewer to upload new content and see what it looks like on the videowalls without actually being there. ■



↑ One of the historical sequences makes reference to the suffragettes.



↑ The Discovery Space at The Houses of Parliament Education centre.



360° Projection at the UK Parliament EDUCATION CENTRE



↑ A portable control panel allows a supervisor to select shows for different age groups.

The first edition of ELECTROSONIC WORLD came out in September 1980 (every edition can be accessed at electrosonic.com). It included an item on an AV system installed in the UK Houses of Parliament that used multi-image (slide) technology to introduce the workings of Parliament to young people.

35 years later, in a new building in the Parliament grounds, the Parliamentary Education Centre opened its doors as an addition to the education facilities at the Palace of Westminster. Consisting of five classrooms, staff room, lunchroom and cloakroom, the facility has been designed to introduce students between 5 and 18 years of age to Parliament. Electrosonic was responsible for designing, installing and commissioning the AV installation in "The Discovery Space," an immersive space that recreates virtual House of Lords and House of Commons Chambers using 360 degree projection technology.

Eight Optoma projectors are ceiling mounted on a custom built grid to deliver a 360 degree continuous video display around the four walls of the room. Edge blending software is employed to ensure that the projected images join together seamlessly, so it feels like you are actually standing in Parliament. The projection is accompanied by six powered loudspeakers to provide immersive sound.

Centrescreen Productions produced the show content which consists of shows describing how Parliament works, and historical sequences; both are in versions suitable for different age groups. ■

Heroes & Legends



AT KENNEDY SPACE CENTER

The Kennedy Space Center (KSC) Visitor Complex in Florida recently opened the new Heroes & Legends attraction featuring the U.S. Astronaut Hall of Fame® presented by Boeing. Electrosonic provided AV installation, integration and show programming for the new attraction. This continued a long standing relationship, Electrosonic first worked for KSC thirty years ago, and ELECTROSONIC WORLD No 18 (every edition can be accessed at electrosonic.com) carried a full report on its recent work on the Atlantis Shuttle exhibit.

As before the end customer was Delaware North Companies Parks and Resorts which runs the KSC Visitor Complex; however Electrosonic worked closely with attraction designer Falcon's Treehouse on this latest project, which includes a 4D multi-sensory theater and a host of interactive exhibits and show areas.

Heroes & Legends gives visitors a sense of what it was like to embark on the first human journeys into space. By focusing

on the pioneering efforts of the Mercury and Gemini astronauts, it enriches the guest experience across the entire visitor complex.

Visitors enter the building and ascend a ramp where "What is a Hero?" unfolds. The seven-minute multimedia presentation addresses what makes a hero – not only astronauts but greats like Martin Luther King Jr. and author Mark Twain. A pair of ceiling-mounted Christie DWU851-Q projectors display live-action footage on two asymmetrical widescreens. Diamond-shaped tiles around the room feature graphic imagery and hero portraits; models of rockets fill the center of the room. During the show lighting effects reveal hidden features.

Next, visitors see space exploration "Through the Eyes of a Hero" in the 4D multi-sensory theater. Fourteen Christie Boxer 4K30 projectors with custom designed short throw lenses, in stereo pairs, project a star field onto a 220° screen before the show begins. Then the seven-and-a-half-

The "What is a hero?" show space.

The suspended Mercury-Redstone rocket with the "A hero is..." exhibit below.

The U.S. Astronaut Hall of Fame completes the attraction. A large bronze statue of Alan Shepard, the first American in space, is a focal point at the entrance. The room's walls are covered with plaques recognizing the 93 inductees to date.



minute show, complete with wind effects, gives visitors a sense of the danger and excitement of the first manned space missions through the spoken-word experiences of astronauts Alan Shepard, Neil Armstrong, John Glenn and Jim Lovell.

Visitors exit onto a mezzanine to see a Mercury-Redstone rocket suspended from the ceiling. They descend to the first floor to "A Hero Is..." featuring a host of interactive exhibits and space program artifacts.

Nine stand-alone pods detail the attributes of a hero: Inspired, Curious, Passionate, Tenacious, Disciplined, Confident, Courageous, Principled and Selfless. Visitors entering a pod trigger an IR camera and IR emitter, which prompt a touchscreen where they can call up video related to the attribute.

Before leaving the area visitors see the actual Gemini IX-A capsule, offering two distinct views of the vehicle. On one

side they look through an acrylic window to the interior designed for two astronauts. On the other side they peer through a custom viewing portal to see a holographic Pepper's ghost effect showing astronaut Gene Cernan on a dramatic spacewalk. Electrosonic achieved the impressive effect with a Christie DWU851-Q projector and MirrorView angled, mirrored glass. The projection looks like an astronaut tethered and floating by the capsule. In addition, archival footage and other media is mapped to the contour of the capsule and reflected off the glass.

Falcon's Treehouse was also the media producer for the attraction. Nassal was the exhibit fabricator, Interactivity software was provided by Monster Media and the architect was BRPH. MetalMaster provided custom metalwork such as projector stands and giant mirror frames. ■

ONE WORLD OBSERVATORY

The One World Observatory is located at the top of One World Trade Center, the tallest building in the Western Hemisphere. The attraction, which opened in 2015, celebrates the dynamics of Manhattan, its surroundings, and the resilient vitality of New York City. It is operated by Legends.

The attraction was designed and produced by The Hettema Group who hired Electrosonic to engineer the main audio-video systems, including video displays, projection, program audio, background audio/paging and show control. Electrosonic met the challenges of a tight schedule and rigorous site requirements.

Visitors enter The One World Observatory through a dedicated lobby and proceed to The Global Welcome Center which includes a projected display showing real time data and images relating to the arriving visitors who then proceed through two “pre-show” exhibits.

Photographs are courtesy of Legends and the Hettema Group.



The display in “Voices of the Building” based on 145 square LCDs.



The “Voices of the Building” exhibit features several displays that tell the stories of the people who built the new One World Trade Center. A two projector edge-blended video has a pair of Christie HD10K-M projectors; a nine-monitor videowall is configured with Samsung 55-inch displays; and a unique video wall is constructed from 145 Planar LCD panels driven by 73 synchronized Alcorn McBride HD video players.

This is followed by an informative themed re-creation of the bedrock beneath the structure in an area called “Foundations.”

When visitors board one of five Sky Pod elevators dedicated to making the 102-floor trip to the observatory, they begin a thrilling time travel journey across the centuries glimpsing Manhattan as a woodland habitat, thriving seaport, colonial town, industrial hub and international city of commerce – all in 47 seconds.

Each elevator cab is completely immersive: Three of the walls are covered with Samsung 75-inch LCDs running 1920 × 1080 feeds from Alcorn McBride A/V Binloop playback systems. Visitors are surrounded by Blur Studio’s virtual, time-lapse recreation of the city skyline from the 1600s to the 21st century, including the silhouette of the Twin Towers and the girders of the new One World Trade as they are erected on the site. Sky Pod audio gear includes four Meyer MM-4XP speakers in each cab plus a Meyer MM10-XP subwoofer.

Upon their arrival at the observatory, visitors watch a two-minute video presentation produced by Realisations in the “See Forever” Theater. Aerial and time-lapse footage combine with abstract textures and patterns to present the rhythms of life in New York City. The show is displayed on eight motorized panels covered with a stylized cityscape relief designed, manufactured and installed by LA Propoint. 28 Christie DWU600-G projectors and seven 7thSense servers map the video to the relief; the video image is programmed to follow the panels as they rise up at the conclusion to reveal the northern skyline of Manhattan.

After the impressive “reveal” of Manhattan (by the way there is a “cloudy weather” option which presents a projected scene should there be adverse conditions) visitors are free to explore the main viewing levels. Two diversions are “City Pulse” and “Sky Portal.”



Entrance to one of the elevator cabs. The elevator ride is illustrated on the front cover.

(left) The “City Pulse” exhibit.

(right) “Foundations” exhibit.



“Sky Portal” is a floor-mounted videowall that visitors can walk over giving them the feeling of walking over a glass floor 100 stories above the ground. The 14-foot wide disc shows real-time Dual UHD footage of the streets below captured by two Blackmagic Design 4K Digital Cinema cameras mounted on top of the building in custom weatherproof housings by Tempest. The cameras are fed through a tvONE CORIOmaster for processing and displayed on 24 DynaScan DS55LT6 high-brightness monitors in the floor.

“City Pulse” is a circular vertical array of ten DynaScan DS55LT6 high-brightness monitors in a ring controlled by gesture-recognition technology. It is manned by “global ambassadors” who offer close up tours of neighborhoods and recommend sights to see once visitors leave the observatory. Media is by Local Projects and is sourced from an Apple Mac Pro computer.

Electrosonic configured three control rooms over three floors: the basement, 100th floor and 102nd floor. All are connected via fiber for system control and the distribution of background and paging audio.

Additional equipment used throughout the One World Observatory includes Alcorn McBride A/V Binloop synchronized audio and video players, QSC audio DSP and AMX system control. ■

INTERACTIVE 4K 3D

The National Holocaust Centre and Museum in Laxton, near Newark in the UK has launched the "Forever Project" which makes use of the very latest presentation and interactive technology.

Twice a day, audiences gather at the Holocaust Centre to hear the personal story of a Holocaust survivor. Their story lasts about an hour, after which the floor is opened to questions. Research has shown that this interaction - the ability to find out answers to 'my' question, raises engagement levels significantly for this subject. The youngest survivors are in their mid-eighties today (2017), and all too soon they will not be able to share their story and interact in this way. The project aims to preserve, or conserve, the question answering experience through digital means.

Ten survivors have been chosen. Their stories were unique. The project team devised ways to generate every question that could feasibly be asked of the survivor, and capture the answer using the latest stereoscopic filming techniques. Each survivor was asked around 1,000 questions, taking an entire week of filming. One of the main reasons for selecting 10 survivors is the age-appropriate nature of the Holocaust as a subject - although secondary school students typically hear a camp survivor speak, the primary school audience always hear the story of a Kindertransportee, who were refugees that escaped the Nazis before the slaughter began, and were by definition of a very young age when they escaped to the UK without their parents. The production team's work involved determining the questions that audiences of all ages may ask each individual survivor.

In parallel to the complex question generating process, a computer program was developed that understands spoken word audience questions, finds a matching answer, and cues the audiovisual response.

The survivor appears life size seated on stage in 3D. The audience view the stereoscopic image through passive glasses. The project was produced by Bright White Ltd of York, the innovative and creative design consultancy who developed and produced the spectacular 3D attraction at Bannockburn (described in detail in ELECTROSONIC WORLD No. 18, which can be accessed at electrosonic.com).

Bright White was responsible for the high resolution stereoscopic filming, software development and integration into one package. The specialist interactive developer D3t was subcontracted to Bright White to develop the speech recognition and answer-matching element of the system, and Electrosonic was contracted to engineer, deliver and install the presentation system.

at the National Holocaust Centre



↑ The audience view the stereoscopic image through passive glasses.



↑ The filming of answered questions using the latest stereoscopic filming techniques.



THE SHOW TECHNOLOGY

The requirement to present a life size high resolution stereoscopic image within an existing room with limited space resulted in a system based on the installation of a 1700mm × 1700mm ScreenTech SX-Pro-X polarization preserving rear projection screen.

The projector installed to show the 3D presentation was selected after extensive proof of concept tests at the manufacturer's factory near Manchester. The Digital Projection Insight Laser 4K projector is a true 4K projector with long life laser-phosphor light source. In this case it is fitted with a 0.93:1 lens, in front of which is a DepthQ® polarization modulator. This device (from Lightspeed Design Inc of the USA and LC-Tec Displays AB of Sweden) converts the 100 frames per second images from the projector to two separate 50 frame per second images of alternate polarization for left and right eye viewing.

This arrangement allows the use of passive viewing glasses, which is both simpler for the audience and minimizes ongoing running costs. The huge "library" of audio-video sequences is stored on a DVS HYDRA 4 GTX980 server supported by La Cie 24TB additional storage linked by Thunderbolt 2™.

AV INTEGRATION

The AV installation at the National Holocaust Centre embodies many "conventional" elements besides the specialist 3D system, so Electrosonic's work also included equipment designed for flexibility and ease of use.

As shown in the photo there is a conventional front projection screen above the 3D display. This screen is used both to support the main presentation and for when the room is used for other events. It is sourced by a Panasonic PT-RZ670BEJ projector with laser-phosphor illumination mounted at the other end of the room.

A high quality sound system is essential, both to give absolute clarity to the presentations and to reliably capture the audience questions. Bose "Panarray" loudspeakers and BSS DSP equipment are the basis of the audio system and the all-wireless microphone system is the Shure SLX system with a variety of microphones.

Additional video equipment includes Extron 4K extenders and a Crestron media switcher. Room control is also by Crestron, but the main user interface is an i-Pad with the Crestron app.

The "Forever Project" is unique. Making imaginative use of the very latest technology it will keep the Holocaust story alive as those who can still bear witness depart. ■

Sense of Scotland

AT THE SCOTCH WHISKY EXPERIENCE

ELECTROSONIC WORLD No 16 described an innovative dark ride that opened at the Scotch Whisky Experience in Edinburgh in 2009. Eight years later “The Sense of Scotland” project is an upgrade to the existing attraction. It consists of two new rooms (East and West) that replace two previous sensory rooms and comes after the barrel ride.

Projection is by five Epson laser-phosphor projectors EBL1100U blended to form a 12.6m wide by 2.2m high screen that wraps around the left and right walls creating an immersive high definition space. The projectors are fed from a Delta Nucleus 6 channel 7thSense server via video over HDBase-T. A BSS soundweb BLU100 takes care of audio routing and DSP to provide 5.1 surround sound through Tannoy loudspeakers.

The second (West) room takes the form of a traditional sample room, where master blenders worked their magic to produce blended whisky. The guide narrates the history of blended whisky, and what goes into its makeup. The room has a horseshoe seating arrangement around a traditional blenders table. Under the table there are six back to back Dreamoc POP3 holographic units arranged 3x2, and a larger Dreamoc XL3 three sided

holographic unit at the end. All of these units are dark and each hold an under and over lit real bottle of whisky, unlabeled. The effect is that during the main presentation at certain points the bottles subtly come alive with various colors and swirl effects relating to the different makeup of blended whisky.

A central projection screen at one end uses an Epson EBL1100U with ultra short throw lens. In addition a 65-inch portrait LCD display is on the right-hand side and there is a further ultra short throw rear projection onto electric twin glass doors sited behind the main screen.

The main screen also consists of twin electric doors and they open at the end of the show to reveal the rear projection of a large safe door unlocking and opening. This short animation then fades to black and the electric glass doors open to reveal the start of the Diagio collection behind. The room features a 7thSense Delta Proton 3 channel video server, and a similar audio system to that used in the East Room.

Both rooms have show control by an Alcorn McBride V4 show controller and a 7-inch touch panel. The tour guides use TOA infra-red wireless microphones. ■



“Holographic” bottle.

At certain points throughout the film the audience is prompted to try and get a sense of each area flavor by the use of “scratch and sniff” cards.

The West Room. Notice the “holographic” units under the center table.



World Market exhibit.



The start of the museum tour.



“You CAN make SPAM®” interactive exhibit.



The World War II exhibit.



Kids CAN play exhibit.



THE NEW SPAM® MUSEUM

Even after more than 50 years of providing AV services to museums, Electrosonic continues to be surprised and delighted by the variety of themes and subject matter they cover. A recent example is that of the iconic Hormel Foods SPAM® canned pork product – known and loved around the world – which has a new museum in Austin, Minnesota. Electrosonic worked closely with exhibit fabricator Universal Services Associates, Inc. (USA) to provide interactive AV support for the museum’s fun and informative exhibits.

The new 14,000-square-foot SPAM® Museum, designed by Jack Rouse Associates (JRA) of Cincinnati, replaces the original museum at the Hormel Foods headquarters, which closed in 2014. The new space explores the SPAM® brand’s global popularity, its place in

regional recipes, its history with the U.S. military and the many innovative things people have made from the famous blue cans. UK readers of ELECTROSONIC WORLD will be pleased to know that one exhibit features a Monty Python Café and a “Spamalot” game.

Visitors begin their tour in a circular area where columns of SPAM® product cans form a colonnade around Apple iPad Air 2s playing SPAM® brand quizzes, a 95-inch Samsung display showing TV clips, and multiple interactive counters based on Planar touchscreens.

A World War II section examines the key role that SPAM® products played in keeping GIs well fed. A wartime newsreel plays on a Planar 24-inch display housed in a wooden crate. A proximity sensor or a push-button trigger the SPAM™ville story inside a tent where a Panasonic

laser projector projects portrait-video of a soldier walking to the entry of the open tent to tell his story of SPAM® products while overseas.

Electrosonic supplied an AMX 3200 control system and AMX MSD 701L touch panel to start up and shut down exhibits and manage audio levels as crowds increase during weekends. Experi-Tech custom software drives the interactive computer content and iPad apps, which are updated over WiFi in the museum. Remote content updates are handled via TeamViewer on an administration laptop.

BrightSign media players and computers in the control room use Adderlink and Kramer KVM extenders to transmit signals to the displays on the floor. Electrosonic also supplied the Dell Optiplex 9020 small form-factor computers throughout the museum. ■

Stunning

Mobile

AT THE COWGIRL MUSEUM

Electrosonic recently provided audio-visual equipment and integration services for the National Cowgirl Museum and Hall of Fame when it remodeled its first-floor gallery and added a stunning interactive mobile in the Grand Rotunda. Exhibit design was by Projectiles of France, and exhibit fabrication was by Goppion of Italy.



Located in Fort Worth, Texas, the National Cowgirl Museum and Hall of Fame is the only museum in the world dedicated to honoring women of the American West, past and present. Its archives house more than 4,000 artifacts and the Hall of Fame has 220 honorees, including author Laura Ingalls Wilder, and Lewis and Clark's guide Sacagawea. The 33,000 square-foot museum is part of the Will Rogers Memorial Complex in the heart of the city's cultural district.

The museum's new signature piece is an interactive mobile, a hanging sculpture held in equilibrium by rods and weighted objects that balance each other. The mobile, suspended in the Grand Rotunda's towering atrium, grabs the attention of visitors entering the museum.

Engineered by Goppion, the mobile includes rotating graphic panels and a dozen rotating projection screens, all hanging from rods suspended from the ceiling. Electrosonic provided NEC projectors to display video clips onto the 12 screens. The projectors, mounted on their sides in double-sided casings are part of the mobile itself. Slip rings on the roof of the museum supply power and Ethernet through the rods.

The new permanent first-floor gallery highlights cowgirls in Wild West shows and the legendary sharpshooter, Annie Oakley. One large and four small Pepper's ghost exhibits are triggered by motion detectors buried in the walls. Visitors



approach a viewport-style hole where they can view the images formed by pairs of 20-inch video monitors and half-silvered mirrors. A life-size Pepper's ghost of Annie Oakley is created with a ceiling-mounted Panasonic projector.

Electrosonic also provided five double-sided hanging glass screens, each illuminated by a Panasonic projector. Five 48-inch Samsung monitors are hung in portrait orientation, and five wall-mounted interactive displays are driven by Dell computers and feature Elo 32-inch touchscreens. A Crestron system controls the 31 BrightSign video players, all the projectors, computers, and video displays installed in the gallery and rotunda. ■



WORLD WAR I MUSEUM Marches Forward



Ten years ago ELECTROSONIC WORLD No 14 reported on the opening of the National World War I Museum and Memorial in Kansas City, Missouri, and described its comprehensive audio-visual installation engineered by Electrosonic. Since that time there have been significant advances in display and image source technology. As the world continued to mark the centennial of World War I, it was timely and appropriate that nine years after the original installation, Electrosonic returned to the museum to upgrade the main systems in a way that would be seamless to visitors, but which would both replace time expired equipment and bring the benefits of improved technology to the museum. The upgrade work was primarily the replacement of displays and their associated source equipment.

At the core of the museum is the Horizon Theater, which features a life-sized diorama and 100-foot wide panoramic screen. A video presentation tells visitors about the events leading to America's entry into the war while the No Man's Land diorama in front of the screen depicts a British patrol moving across a barren landscape littered with authentic objects from the conflict.

To deliver the video, six 5700 ANSI lumen projectors are edge blended to fill the screen with seamless images. Previously, the projectors were fed and synchronized by individual players, with separate warp and blend processing. Now, video playback and edge blending are done in a Dataton WATCHOUT video server, replacing eight pieces of hardware with one unit.

In the main museum galleries there are many video playback and interactive exhibits. These have benefited from a move to solid state operation, for example video playback by Brightsign players with solid state drives, and 30 interactive computers all fitted with solid state drives.

In respect of audio, while the museum's amplifiers and loudspeakers remain the same, QSC's Q-Sys now handles audio routing and processing throughout the museum; it includes the audio playback option to further simplify the system. This change has led to the elimination of two full racks of equipment. ■



The “See with Sound” exhibit explains ultrasonic scanning.



HUMAN HEALTH Gallery

AT TURKEY’S KONYA SCIENCE CENTER

The Konya Science Center, in Turkey’s third largest city, and the country’s first large interactive institution dedicated to informal learning about science and technology, has added a gallery on human health. Exhibit fabrication was by Maltbie (a Kubik Company) with audio-visual equipment, installation and programming by Electrosonic, and AV content by Blue Telescope.

Maltbie, which creates experiences for museums, visitor centers and specialty projects, hired Electrosonic to provide AV support for the new gallery. Electrosonic built all the racks and configured the equipment in the USA and sent it to Maltbie’s headquarters in Mount Laurel, New Jersey, which shipped the units to Turkey. Electrosonic personnel then worked on site with museum staff to install, program and commission the AV based exhibits.

The new gallery offers a wide range of exhibits designed to inform and engage visitors. Three exhibits; “Cells of Your Body,” “Immune Cell Army” and “Reduce Your Risk,” have game formats played out on Ideum Pro 55-inch touch tables, customized by Maltbie and connected by Electrosonic to network control. “Immune Cell Army,” for instance, begins with a slide show about the body’s cells and what they fight, and then offers advice to the player about how to use the cells in his or her arsenal. The touch table launches the game, pitting good cells against harmful cells and keeping score for the player.

BrightSign HD media players drive eight exhibits, and seventeen Dell PCs supply PC-driven content throughout the gallery. An AMX system provides overall and individual control of all the exhibits in the new gallery. ■



A hemispherical rear projection screen served by a Panasonic short throw projector is the basis of the “Embryonic Fetal Development” exhibit.



Muzeiko Children's Museum

OPENS IN BULGARIA

Bulgaria’s first children’s museum, Muzeiko (“Little Museum”), opened in 2016 in Sofia with audio, video and AV control equipment integration by Electrosonic. The Muzeiko project ran concurrent with Electrosonic’s Konya Science Center project in Turkey, marking an expanding roster of international museum installations for the company. Both projects were performed under contract to Kubik Maltbie, Inc. (Maltbie) based in Mount Laurel, New Jersey.

The 35,000 square-foot Muzeiko was designed by American architect Lee H. Skolnick and funded primarily by the US-based nonprofit, America for Bulgaria Foundation. Skolnick and his team worked with Sofia-based A&A Architects to adapt a former university laboratory building to Bulgaria’s first museum tailored for kids. Muzeiko won the Bulgarian Building of the Year Award in the Educational category.

The museum’s centerpiece is a three-story tree scenic element, which rises at the center of the building and represents the past, present and future of the region. At the roots of the tree, the lowest level of the museum features exhibits on geology and paleontology. The heart of the tree is at ground-floor level where there are displays of habitats and modern architecture. The tree canopy, capping the top floor, looks to future technologies and space travel. Muzeiko has the feel of a science center with its science-oriented exhibits for children.

To meet the budgetary needs of the museum and ensure easy operation and maintenance by the staff, Electrosonic selected “tried and true equipment” for the exhibits which would provide robust, reliable service. Samsung monitors of various sizes act as the primary displays; Christie and Barco projectors are deployed in several exhibits. Elo Touch Solutions touchscreens are the major interactive video components with Dell PCs behind the scenes.

Leading-edge technology plays a role in the visitor experience, too. An Ideum 55-inch touchtable is at the center of an exhibit on astronomical discoveries. Two 46-inch CyberTouch multi-monitors guide visitors through the farm-to-table food area and an exhibit on adapting atmospheres. A GestureTek reactive system captures visitors’ movements for the “Connect 4” exhibit. RFID interfaces from RFID, Inc. help visitors make healthy menu choices in the “What’s for Lunch?” exhibit.

A Peavey MediaMatrix DSP is at the center of the audio equipment complement. An AMX NX-2200 master control system handles all show control, start-up and shut-down tasks. Electrosonic networked together three control rooms, one located on each floor of the museum.

After commissioning and training by Electrosonic, the AV systems are maintained by Muzeiko staff. ■



Hurricane Delays at Ellis Island

Hurricane Sandy had flooded the basement level of the building and destroyed the electrical, communications, IT, and HVAC systems which supported the building's operations.

The newly-renamed Ellis Island National Museum of Immigration has opened new galleries in the former Kitchen and Laundry Building of the immigrant processing and detention station, which operated from 1892 to 1954 in New York Harbor. Electrosonic helped the museum overcome the problems created by Hurricane Sandy.

Dedicated to the story of immigration in the years following Ellis Island's closure, the galleries mark phase two of the Peopling of America Center®. The Statue of Liberty-Ellis Island Foundation raised the funds, oversaw the project, and engaged ESI Design as the exhibition designer, with Michael Schneider as technical lead.

Electrosonic provided AV support for phase one, opened in 2011, which covers immigrant arrival in the Pre-Ellis era, and returned to complete phase two following a long delay caused by Hurricane Sandy, which struck Northeast USA in October 2012.

For phase two, Electrosonic's task was to install all the racks of equipment, install the displays and audio peripherals in the interactive kiosks, and run all the wiring and fiber optic cabling. However, Hurricane Sandy had flooded the basement level of the building and destroyed



One of the "Citizenship Test" kiosks. / The "World Migration" Globe exhibit. / "Threads of Migration".



the electrical, communications, IT, and HVAC systems, which supported the building's operations - including the Electrosonic racks that contained the exhibit equipment. All of these infrastructure systems have now been relocated above future projected flood level. Entire mechanical, electrical and computer systems had to be replaced forcing a two-year delay in the project; the project did not ramp up again until late 2014.

In the meantime, some of the original team members from Hadley Exhibits (exhibit fabricator), media content providers including History Channel, software vendors and Electrosonic were no longer available. Some equipment had been in storage and some additional equipment was required, reassembling the team and bringing a project like this back online, while being careful not to incur 'starting from scratch' costs, was a challenge but done cost-effectively.

Visitors first encounter "The Journey: New Eras of Immigration" gallery where a Billboard of Greetings features a looped soundtrack of greetings in world languages and fragments of immigrants' stories. The track is driven by a stereo audio feed from an Alcorn McBride AM-4 Digital Audio Machine.

The museum's entrance area also showcases the World Migration Globe. Two projectors housed inside the 5-foot radiant globe, display images on the sphere.

The "Threads of Migration" exhibit graphically shows the connections between visitors' countries of origin and their current homes in the US. These

threads build up on a 65-inch Samsung monitor as more and more visitors enter their data on three 17-inch Elo Touch Solutions touchscreens.

The majority of the interactive kiosks in the Citizenship Gallery are portrait-mounted 23-inch Samsung monitors with interactive push buttons and BrightSign playback. Two Citizenship Test kiosks feature I-Tech displays and a keyboard emulator, which sends commands to a solid state drive computer in the control room.

Among the most compelling kiosks in this gallery are four Citizenship Narratives featuring portrait-mounted 46-inch Samsung monitors. These life-size conversations with new Americans tell often dramatic stories about how they came to American shores in recent years.

A rear-projection system supplied by Electrosonic displays a looped video of the Citizenship Oath. A short-throw Panasonic PT-EW640U projector with fixed-focus lens is mounted vertically with a mirror bounce. Content is driven by a BrightSign player.

The Population Map asks visitors to enter their ethnicity to see the density of their ethnic groups across the US. The kiosk features a 70-inch Sharp monitor, a 22-inch Elo Touch Solutions touchscreen immediately in front of the screen and three more mounted on the corner wall.

Equipment is not localized to the exhibits; all exhibits use CAT5 HDMI extenders. The 23-inch kiosks are controlled by relay control power units; the Citizenship Narratives and

Citizenship Tests have Dataprobe iBoot network power controllers.

Electrosonic provided Stewart amplifiers and all the exhibit loudspeakers, including highly-directional units. Equipment includes Radius and Innovox loudspeakers and TOA loudspeakers and line arrays. Each exhibit has an induction loop amplifier for the hearing impaired.

An AMX system controls, monitors, starts and stops the exhibits individually in both new galleries; it also controls five Peavey DSP units to bump up audio from normal to louder mode when visitor traffic builds up in the galleries.

All phase two source hardware is housed within an Electronic Equipment Room closet. Administrative computers are connected to the Internet and the isolated local LAN, so remote access, updates and control can be achieved via TeamViewer.



The "Becoming American" exhibit in the Citizenship gallery, behind it are island displays carrying the "Citizenship Narratives."



Museum of TOLERANCE



Touchscreen in use at the Appeasement exhibit.

The Museum of Tolerance in Los Angeles opened in 1993 and **Electrosonic** was responsible for the complex AV installation that supported this ground-breaking museum. Since that time, nearly 25 years ago, the Museum has remained a loyal customer of **Electrosonic**, and in turn Electrosonic has engineered many new exhibits and updated the technology related to the earlier installations.



The Relief Map is also the projection "screen."

In that time many, if not most, of the exhibition themes have remained the same, but technology has made dramatic advances; slide projection has given way to video projection or large LCDs, video discs have yielded to video servers, and standard definition video has moved to at least HD or even 4K. Working together, the Museum of Tolerance and Electrosonic have ensured that appropriate updates have taken place in a timely manner.

Upon entering the museum, each visitor receives a photo passport card with the story of a person whose life was changed by the events of the Holocaust. At another location on the museum tour, the card is "read" and provides additional information about that person as the war progressed, and at a final station a printout is produced. The original installation used eight CRT monitors at each station. Only in 2016 did Electrosonic replace all 24 monitors by NEC 21.5 inch LCDs.

Also in 2016, the Museum of Tolerance installed a new permanent exhibit exploring Allied appeasement prior to World War II. The dynamic new

multimedia presentation uses letters, archival footage, speeches and interactive displays to explore how the political decisions made by Allied leaders in the years leading up to the war made Hitler's rise to power possible.

The Appeasement exhibit is housed in the main exhibition space at the museum opposite the display containing the original Vienna office of Simon Wiesenthal. Yazdani Studio of Cannon Design was the architect for the new exhibit, Cortina Productions was the film and interactive producer, and Coastal was the general contractor. Electrosonic engineered and installed the AV elements of the project working to a tight schedule since part of the work had to be completed while the museum was open to the public.

The Appeasement exhibit's main feature is a giant relief map of Europe, which spans a curved wall. A Panasonic PT-DZ870LK ultra-short throw projector makes the map come alive with video images of the war's progression as it highlights how territories and borders morphed when World War II got underway and armies advanced.

The projector is mounted on the ceiling about two feet (60cm) away from the map, which is covered with a slightly reflective projection surface. A 7thSense server warps the images onto the map which was created by Cortina Productions. A Dakota Audio ceiling speaker is mounted above the map to provide a narrowly directed audio field.

Adjacent to the map is a single Planar 70-inch multi-touch monitor, which enables up to four visitors to drill down and learn more about the subject. Headphones by the monitor allows visitors to listen to the specific content they are viewing. NLE computers drive the interactive content.

The museum has a service contract with Electrosonic for technical maintenance, and this includes remote monitoring from off-site using Electrosonic's ESCAN system. Electrosonic added hardware to the equipment rack in the Wiesenthal office and added programming for the new show to its ESCAN control software profile without disrupting existing playback for the other exhibits in the main space. ■

The museum has a service contract with Electrosonic for technical maintenance, and this includes remote monitoring from off-site.



3D LED for MASS EFFECT

View of the theater
Attraction exterior & queuing area.



3D Live, specialists in immersion and 3D, partnered with Electrosonic to create **Mass Effect: New Earth**, a theater based attraction at California's Great America theme park in Santa Clara, California.



The 4.5-minute ride is based on Electronic Arts' "Mass Effect" sci-fi videogame franchise developed by BioWare. **Mass Effect: New Earth** takes visitors on a journey to the faraway lands of the Terra Nova, immersing them in the sights, sounds and scents that intergalactic space travel can offer. The show employs the highest resolution, 3D LED screen in the world, based on 3D Live's patented high-resolution 3D LED panel.

"Mass Effect: New Earth" was custom designed for California's Great America by 3D Live and Cedar Fair. 3D Live brought in Halon Entertainment to manage the game engine animation portion of the ride. Guests, wearing passive 3D glasses, sit in an 80-seat Action Theater with 3D Live's 60-foot, 4K 3D LED screen in front of them and 80-channel surround sound enveloping them. An actor playing Conrad Verner captains the audience's ship, which travels alongside the main starship, Normandy, through a mass relay to the planet Terra Nova. Guests' motion seats, from MediaMation, are fitted with leg pokers and neck ticklers as well as wind, water, smell and vibration effects.

The challenge faced by 3D Live, was to convert an existing motion-based theater space. In order to realize the new show concept and accommodate its LED screen technology, all to be delivered as a turnkey project. However, by their own admission they had not completed such a large turnkey project of this kind before.

The solution was for 3D Live to appoint Electrosonic as its AV systems design and integration partner. Electrosonic Design Consulting expedited the concept - schematic design with a focus on facility impact, system control and audio distribution design. The engineering and operations teams then provided project support through to completion.

Among Electrosonic's tasks was installing a full-range audio system with a QSC Q-SYS Core and QSC loudspeakers, to provide the surround sound control that 3D Live required. Electrosonic also supported the implementation of custom seat railing loudspeaker arrays.

Electrosonic installed and programmed a 7th Sense Delta Infinity II server to support 3D Live's content, media processors and proprietary 3D LED screen. Overall show control is by Medialon Showmaster. ■

EXHIBITIONISM

- The Rolling Stones

Exhibitionism - The Rolling Stones was at the Saatchi Gallery in London from 5 April - 4 September 2016 prior to embarking on a world tour planned to take in 11 cities over a period of four years. DHL was "presenting and official logistics partner".



The "recording studio" with interactive stations in the foreground.



The logo exhibit uses projection mapping.



The amazing 50 screen show.



Highlights on display at Exhibitionism explore every facet of the band, dating back to the sixties right up until 2016. They include artwork from across the decades, onstage and off stage clothes, performances, instruments, recordings, unseen films and photos, and entire rooms of rare objects that have been assembled to tell the story as never before.

Exhibitionism was originated and produced by Australian company iEC (International Entertainment Consulting). The exhibition makes extensive use of video support both to show archive material and to enhance the displays. London based Fray Studio produced the video content, and specified the show system. Electrosonic was appointed to engineer the AV system and to complete the London AV installation under a direct contract with iEC.

In London, Exhibitionism was presented in nine galleries (the layout was being adapted to fit the various venues). One of the galleries consists of a spectacular display of 50 LCD screens, of different orientation and sizes, which immerse visitors in a fast paced film exploring significant moments in the Stones' history. Guests see a variety of absorbing film footage and images from concerts, news clips and newspapers, shown on individual or over a range of screens. Overall, Electrosonic installed nearly 70 LCDs, from 32-inch to 95-inch, and mostly from Samsung, throughout Exhibitionism. In addition LED walls are used as a backdrop for an extensive range of sensational designer clothes in the "Style" Gallery.

The Rolling Stones' iconic tongue and lips logo is recreated into a 98-inch, three-dimensional model for a projection mapped presentation. The giant sculpture, created by Paragon Creative is transformed into an entrancing display of flags and mesmerising colours and images. Four Panasonic 3000 Lumen 'Solid Shine' projectors and one 6500 Lumen single chip projector are required to give complete coverage of the model, along with a 7thSense 6-channel server.

The "Recording" gallery shows a studio set-up and makes effective use of floor to ceiling projection. One viewpoint is

served by ten interactive stations equipped with BlackBox headphones and Apple iPads to allow visitors to select and listen to recordings of the time. A second interactive exhibit "Music and Lyrics" with eight stations allows visitors to experiment with the way classic Rolling Stones tracks were mixed. Visitors can adjust the levels of vocals, drums and other instrumental elements that construct their songs.

The exhibition ends with a recreation of the band's backstage environment which then leads visitors into a highly immersive 3D experience. Visitors are engulfed with excitement as they see the Rolling Stones perform '(I can't get no) satisfaction' live in Hyde Park. The 3D show, never seen before, makes visitors feel as though they are actually in the audience watching the Stones perform, making for an impressive climax to the exhibition.

The 3D production is run from a 7thSense Delta Duo server and utilises 3-chip, 12,000 Lumen DLP projectors from Panasonic, fitted with polarizing filters and mounted in a custom rigging frame to allow double stacking. The polarization preserving screen is from Harkness Hall and viewing glasses are from RealD.

CONTINUED

Exhibitionism is a great show and also an example of how Electrosonic's AV Engineering and project management skills can help creative designers realise their exciting projects.

TECHNOLOGY

Apart from the logo and finale exhibits, the technology behind Exhibitionism follows digital signage practice as opposed to that of more conventional exhibition gallery practice; the arrangement yields advantages in respect of meeting the needs of a touring exhibition and in reducing the need for infrastructure.

A total of 85 Brightsign HD222 High Definition players, located next to their display device, serve the main parts of the exhibition. In the case of LCDs, they are fixed to the display itself, and for projectors they are mounted on the projector support. This arrangement minimises the connection distance between player and display and eliminates the need for extenders.

Each player is connected to a network through a standard Netgear switch. A computer on the same network is used to download content to each player. The same network is used to control the players in respect of the playback requirements, for example in respect of keeping displays running in sync. The connection between each display element and its overall control is limited to a single CAT 5e/6 network cable; when the exhibition moves on to other locations, the new wiring requirements are kept to the absolute minimum.

In addition to the computer used for overall media control, a Crestron control system is provided for day-to-day operation. This provides a convenient user interface for the exhibition staff, and simplifies start up and shut down procedures.



Part of the "Style" gallery. In the background an exhibit featuring LED displays as the backdrop. Close-up of the studio with effective projected images.

All photos are courtesy of Exhibitionism and iEC.



CHALLENGES

From Electrosonic's point of view **Exhibitionism** was a stimulating and interesting project. Not surprisingly some of the concepts had to be tested prior to installation. In particular the complex opening show with its 50 separate displays required a full scale mock-up to be built, time spent on this was well rewarded because it led to a smooth final installation. Similarly the Logo projection mapping display was fully prototyped.

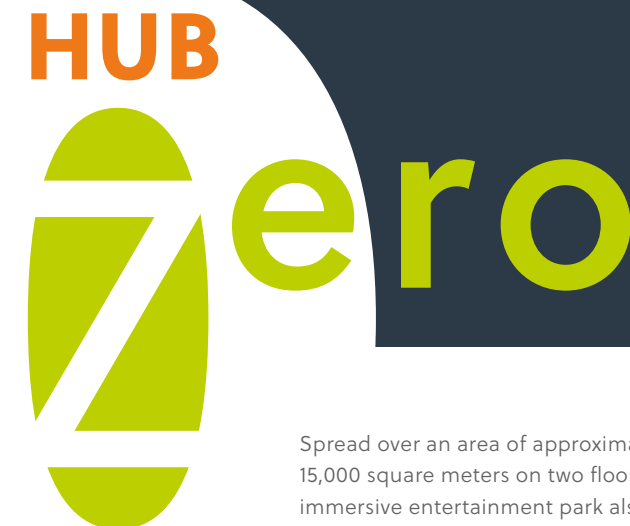
The whole project had a tight installation schedule of only three weeks so close co-operation between the various contractors and specialist suppliers was essential. Also it always had to be borne in mind that the exhibition would be moving on to other venues. ■



In early 2016 Meraas, a Dubai-based holding company, announced the launch of Hub Zero, the region's first immersive entertainment park set to offer innovative experiences created in association with world-famous video game developers including Electronic Arts, Capcom, KONAMI, Microsoft and Square Enix. Located at CITY WALK, a premier urban lifestyle destination in Dubai, it opened in the summer of 2016.



The Network Arena. Two groups of 20 gamers each face three 5m wide screens served by Panasonic projectors installed by Electrosonic. Any of the gamers' screens can be routed onto the projection screens using an Adderlink Infinity switching solution.



Spread over an area of approximately 15,000 square meters on two floors, the immersive entertainment park also features an extensive e-Sports LAN gaming zone and a children's play area. The state-of-the-art indoor entertainment destination consists of a total of 18 thrilling attractions, rides and experiential zones, with a substantial number exclusively developed for Hub Zero.

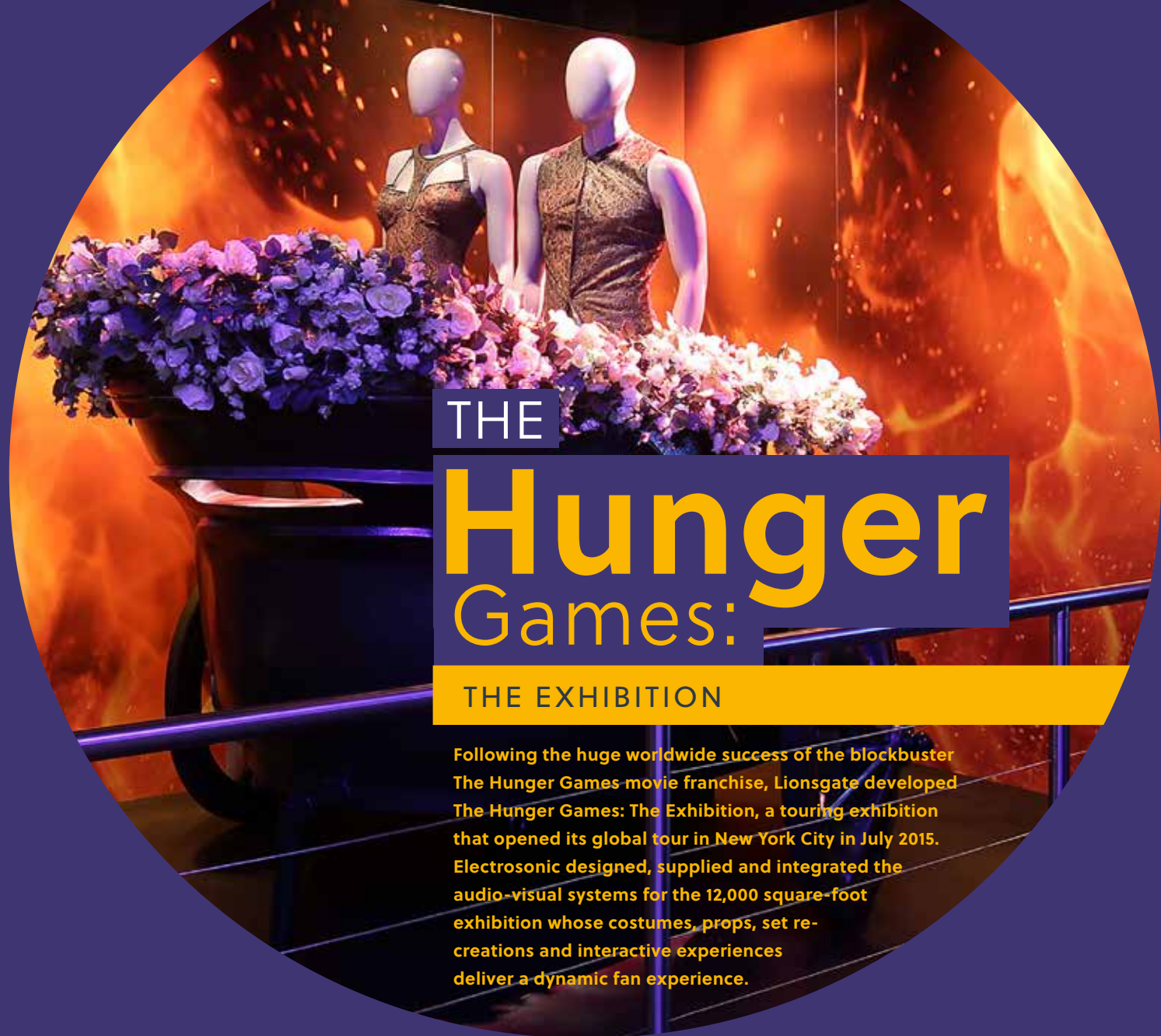
Many of the attractions were delivered to Hub Zero as complete packages, and Pico was appointed design & build fit out contractor. Riva Parks was main contractor for the project. Riva Parks determined that there was a need for an overall AV infrastructure to support the different areas, and appointed Electrosonic to carry out the required design consulting and system integration. The work was carried out by the Electrosonic Dartford (UK) based delivery team supported by Dubai based staff. ■



One of the many attractions at Hub Zero with external digital signage and ambient audio distributed by cobranet®.

In essence there are approximately 20 separate installations supporting the different areas, primarily providing external signage and dedicated audio. Source and control equipment is sited in 11 racks in nine Electronic Equipment rooms. The principal equipment involved was:

- Medialon MAS Pro Sound Stores
- Biamp AudiaFlex Audio Systems with MCA8150 amplifiers and Cobranet® distribution.
- JBL Loudspeakers; a mixture of cabinet, pendant and ceiling loudspeakers. More than 150 in all.
- NEC Displays; a total of more than 45 LCDs in sizes of 40, 46, 55, 70 and 80 inches.
- TV Tools Digital Signage
- AMX Control system



THE Hunger Games:

THE EXHIBITION

Following the huge worldwide success of the blockbuster **The Hunger Games** movie franchise, Lionsgate developed **The Hunger Games: The Exhibition**, a touring exhibition that opened its global tour in New York City in July 2015. Electrosonic designed, supplied and integrated the audio-visual systems for the 12,000 square-foot exhibition whose costumes, props, set recreations and interactive experiences deliver a dynamic fan experience.



The "Tribute Train" exhibit where visitors see numerous props and artifacts from the films. Electrosonic engineered a multi-channel audio system to create a "soundscape" within the space. A QSC Q-LAN system performs digital audio playback; QSC speakers are mounted in an overhead truss and in the train car's set pieces.

BACKGROUND

The Hunger Games films are based on the phenomenally successful The Hunger Games book trilogy by author Suzanne Collins. In what was once North America, the Capitol of Panem maintains its hold on its 12 districts by forcing them each to select a boy and a girl, called Tributes, to compete in a nationally televised event called the Hunger Games. Every citizen must watch as the youths fight until only one remains. District 12 Tribute Katniss Everdeen (Jennifer Lawrence) has little to rely on, other than her hunting skills and sharp instincts, in an arena where she must weigh survival against love. The Hunger Games series, produced by Lionsgate, grossed a remarkable \$3 Billion in worldwide box office.

The exhibition consists of seven galleries telling the story of Katniss's epic journey from tribute to revolutionary hero. Lionsgate created the exhibition in close collaboration with the Thinkwell Group and produced it in partnership with Imagine Exhibitions.

Electrosonic met the dual challenges of a rapid production schedule coupled with the need to engineer and fabricate the exhibition as a touring system to be set up in multiple venues. The complete AV system travels in 18 rolling equipment rack road cases and 40 standard rolling road cases. Everything is designed and packaged for quick set up and tear down while maintaining simple and reliable connectivity.

Following six months in New York the exhibition traveled to San Francisco and Sydney. At the time of writing (April 2017) it has taken up residence at the Frazier History Museum in Louisville.

A variety of AV presentation techniques are used in the exhibition, including projection, LCDs and touchscreens, all are carefully integrated within exhibit structure.

Electrosonic's involvement in the exhibition begins with the preshow queue area where the Hall of Justice façade is projection-mapped onto a set piece, which becomes the entry to the District 12 gallery. Panasonic projectors with ultra short-throw reverse lenses sit side by side to warp the architectural imagery onto the set piece. A 7thSense server, in mesh mode, aligns 3D CAD files of the architecture onto the dimensional surface of the set. Electrosonic provided mock-ups and consultation for the projection mapping system prior to installation.

In The Capitol gallery, Electrosonic facilitated the magic of the interactive Cinna's Sketchbook. A Panasonic projector pointing straight down onto the pages of the book displays illustrations, text and video content that appear and disappear as visitors turn the pages. ■



Stunt Choreography



A stylized interactive map, presented on a 55-inch CyberTouch touchtable introduces Panem to visitors in the District 12 gallery.



"Entering Rebel Territory in District 13" includes video support.

"Making the Games"

explores the art and science behind The Hunger Games. Visitors get to test their stunt skills in front of a centrally-placed 40-inch Samsung monitor, with two 65-inch Samsung monitors on either side, hung in portrait mode. Sam Hargrave, a stunt coordinator from the film series, performs a move seen on screen and then visitors try to replicate it; Microsoft Kinect compares an image of the visitors' movements to those of the stunt coordinator. The exhibit is powered by custom NLE Systems computers.

Also in the gallery, a large interactive Gamemakers' Table offers eight positions featuring touchscreen monitors powered by small form factor Polywell computers.

Welcome To FUSION

Fusion

NEW YORK & BURBANK

Fusion explores the possibilities of media and technology in branded environments and showcases how storytelling can work in concert with technology. The invitation-only event illustrates the magic behind some of today's most innovative technology.

The series was launched at the LED LAB, TriBeCa, in New York City in December 2014 and has been held subsequently in San Francisco, San Jose and then back at LED LAB in New York in June 2016 in collaboration with The Brand Experience, IC Technologies, and Stimulant. In January 2017 it was held at Electrosonic's Headquarters in Burbank CA.

At the 2017 event Christie Digital demonstrated its projection mapping expertise with Christie Boxer 4K projectors, Coolux Pandora's Box video servers and Mystique 3D auto-mapping software. Super78, a design and media production studio, showcased its Geppetto Animation Control System and VR pre-visualization.

Other participants included 3D Live, with its 6mm 3D LED displays; Dimenco, with its 4K autostereoscopic 3D LCD monitors, which use lenticular overlay technology to eliminate the need for cumbersome 3D glasses; and Planar, with its LookThru transparent OLED glass display surface.

Guests spent an enjoyable evening sampling cocktails and hors d'oeuvres and enjoying a live jazz band while industry innovators showcased their latest products and set creative minds thinking about cool ways to implement them.



ELECTROSONIC

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