ELECTROSONIC

ISSUE NO. 16

WORLD

The **Big Picture**

The main show in the Information and Communications Pavilion at EXPO 2010 - *See Page 44*

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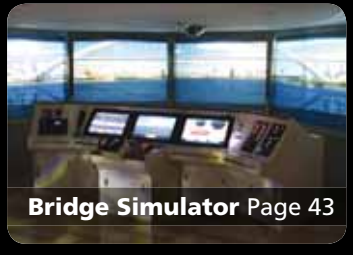

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ELECTROSONIC WORLD
ISSUE NO. 16

Editorial

Welcome to the 16th Edition of ELECTROSONIC WORLD. This edition sees a change in format. For 30 years it has appeared tabloid style, but it is hoped that the new A4 format will make it more convenient for filing and reference. The wide range of exciting projects that Electrosonic has completed recently has resulted in a "bumper edition".

The new format also marks a landmark in Electrosonic's development. Since the last edition Electrosonic has made several major changes including the sale of its products division and significant investment in expanding the scope of the overall business. The company's 450 employees are now totally focused on providing the highest standard of service in the support of complex AV installations right through their life cycle.

The role of ELECTROSONIC WORLD has always been to share the company's experience amongst its staff, customers, suppliers and friends. As a by-product it has become both a potted history of AV and a valuable resource. Back numbers are often trawled for ideas or for reminders of "how it was done"! Electrosonic always acknowledges that it cannot succeed in isolation, and that all its best opportunities arise from a vibrant creative and consultant community. ELECTROSONIC WORLD provides an opportunity for the company to recognize the team basis on which most work is undertaken. Mention of particular products recognizes the importance of the industry at large and the amazing technical progress that has been made over the years – but it must be emphasized that Electrosonic is "vendor neutral", and always seeks to supply the most appropriate products for the job in hand.

Parting Ways

In early 2010 Electrosonic withdrew from manufacturing its own products, marking the end of 46 years of innovative product development. It truly was a "parting of the ways".

When Electrosonic started in 1964 all its work could be classed as "systems and service", consisting as it did of providing special solutions for sound, lighting and the projected image; supported by service and rental.

But these were the days before electronic lighting control, integrated circuits and low cost video. Very often there were no products to realize a project and everything was custom built. So Electrosonic entered the products business, both to meet new needs and to level out the uneven nature of projects work.

The first product was an automatic electronic dimmer, based on the then new silicon controlled rectifier (later called a thyristor). This was the foundation of a highly successful lighting control business with many notable contributions to the art; in particular the practical realization of "scene setting" products for the architectural market.

In 1990 majority ownership of Electrosonic passed to Helvar of Finland, and during the 1990s the lighting control products were taken over by Helvar, where their successors still thrive (see www.helvar.com). Note that today Electrosonic Group is entirely independent of Helvar, although having individual shareholders in common.

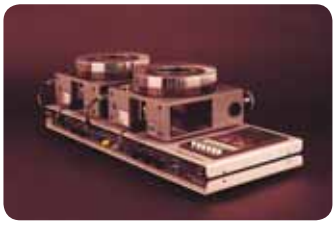
Expertise in electronic lighting control led to the development of "dissolve units" for controlling automatic slide projectors (particularly the Kodak Carousel™). Such devices formed the basis of professional AV for many years, and led to a range of "multi-image" and "show control" products.

The arrival of the laser disc in the mid 1980s was the key to Electrosonic's entry to the video world, and for 20 years it had a strong position in the "videowall" market with innovative products such as PICBLOC™ and VECTOR™.

These in turn led to image processing and source products being the focus of development, with, latterly, an emphasis on image transport over networks. However this niche business raised a major problem. Its products went to market through systems integrators, and Electrosonic as a major systems integrator found itself competing with its customers (apart from itself wanting to be seen to be independent of particular products when engineering systems).

So while in the "old days" it proved possible to simultaneously run a products and a systems business, new technology and the current market structure make it very difficult. Electrosonic was, therefore, very pleased that Extron Electronics acquired the Electrosonic products business, since this ensured the continued availability of some exciting products, and retained the talented individuals responsible for them.

It is important to understand that the transaction was a simple asset sale. There is no connection between Electrosonic and Extron Electronics other than by way of normal trade, and Electrosonic has the same status as any other Extron reseller.



The ES3601 AV presentation unit from the 1970s

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Corporate Solutions
Expansion

In the period 2009-2011 Electrosonic made some significant changes to the way it operates. These were all designed to focus the business, both in terms of activities and markets. One major change was to withdraw from the products business, as explained on page 2. Another was to introduce a market led approach with the idea that wherever in the world a customer required the company's services, the customer could expect to receive a consistent high level of service.

The principal markets now served by Electrosonic are for convenience labeled "Corporate Solutions", "Entertainment" and "Control Rooms", and of these it is "Corporate Solutions" that has seen some of the biggest changes, involving a considerable increase in resources.

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Corporate Solutions specializes in the communications needs of the Financial and Professional Services "industry", but also undertakes work in the medical, commercial and academic fields. The technologies deployed include all types of electronic image displays, audio and video conferencing equipment, room control systems, source and distribution systems, and network control and content distribution.

Many of these systems are "state-of-the-art", using the latest technology whether it be in 4K projection or sophisticated audio DSP. Unfortunately it is not possible to describe much of this work in ELECTROSONIC WORLD for reasons of customer confidentiality.

In April 2010 Electrosonic acquired the Multimedia Group, a company trading under the name DRV. Its prime business was the support of corporate installations in the United Kingdom, and its activities were complementary to those of Electrosonic in the same market. The acquisition has resulted in a much enlarged presence in the UK corporate market, and has allowed the company to offer new services. The merger of operations has been based on best practice within both companies.

The strengthening of the corporate market offering has also involved the location of support closer to the customer base. DRV had a useful base in the London Docklands area, within walking distance of many important customers. This facility now supports all Electrosonic customers in the Canary Wharf "cluster". At the same time Electrosonic's City of London office has been relocated from Queen Victoria Street to Clements Lane. The new location has good meeting and "hot desk" facilities and is a valuable resource for all divisions of Electrosonic.

In April 2011 Electrosonic announced that it had acquired Excel Media of New York City. Excel Media came with an excellent reputation for providing system integration and support services to New York based clients, and this strategic acquisition furthers Electrosonic's aim to provide global clients with experienced local support.

Photograph 1: Imposing entrance to the New York office. 2: The building in Clements Lane that houses Electrosonic's City of London office. 3: Inside the City of London office.

The DRV Story

DRV started as a partnership between David Roffey and Roger Vinton who had been to school together in Newquay (Cornwall, UK). While there they had provided lighting and sound for school and community shows. Roger Vinton himself went on to be a trainee technician at the National Youth Theatre followed by attachments to Sadler's Wells and the Young Vic. This solid grounding helped define the company's initial objectives when Roger Vinton returned to Cornwall; from then on Roger Vinton would be principal "front man" and David Roffey would be in charge of operations.


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Early business was in Public Address, providing both a hire service and design consultancy. This soon led to permanent installation work for clients such as the Theatre Royal in Plymouth.

For some years DRV consisted of two companies, one a hire business, the other for permanent installations, however in 1991 the hire business was closed. The 1990s were to see considerable expansion in both the size and scope of the company, with highlights being the completion of the audio systems for the Bridgewater Hall in Manchester in 1996, and work in medical teaching installations at Imperial College around the same time.

The same period saw DRV's first work at the National Exhibition Centre, near Birmingham, which led to a permanent on site presence, and also the company's first entry into the financial services market. This activity was to grow into a business employing more than 100 people with many blue-chip clients sited in various locations, but primarily based in the City of London and the London Docklands.

DRV developed a number of innovative offerings, including 24/7 "real" (not telephone) support for its customers; these are now being extended to the enlarged Electrosonic client base.

Main Photograph: The Cannon Workshops listed buildings on Canary Wharf; DRV's (and now Electrosonic's) base for providing support service to Docklands customers. 1: The Newquay offices, set in glorious Cornish countryside. 2: The Bridgewater Hall, one of DRV's major audio installations in 1996. Photo P. Mackinven © Arup.

Excel Media

The company Excel Media was founded in 1995 by AV industry veteran Robert Menell. It specialized in the design and installation of meeting room systems, video conferencing systems, and digital signage. Its location meant that it could provide support for clients in the New York tri-state area, with particular emphasis on Manhattan.

For some time Electrosonic had been looking for ways to introduce its corporate market offering to the New York market. The company realized that to provide a credible offering it was essential to base it on a team already experienced at working in New York, and was delighted when the opportunity to purchase Excel Media arose - especially since the Excel approach to customers was so similar to that of Electrosonic.

Excel Media (now Electrosonic) has an impressive range of regular customers, including media companies, financial service companies and universities. Electrosonic's existing staff in the New York area have joined the operation and the combined team totals 25 people in mid 2011.

Photograph: The building housing Excel Media (now Electrosonic) offices in Manhattan.

TAQA Meetings

TAQA Bratani is becoming a leading exploration and production company working in the oilfields of the United Kingdom Continental Shelf. Its rapid expansion has led to its occupation of three new buildings in the Arnhall Business Park just outside Aberdeen in Scotland, all of which have needed AV facilities. Electrosonic has been the systems integrator for much of this work, supplying a digital signage system and fitting out 20 meeting rooms, a complete conference suite, an emergency control room, and a video conferencing suite.

The installation in the conference suite is of particular interest since it provides great flexibility with ease of use in a difficult building layout.

The installation has to provide for six independent meeting rooms that can be set up in boardroom style for groups of between eight and twenty people. A system of movable partitions allows the rooms to be linked to cater for larger groups. At the extreme the whole suite becomes one large room suitable for "Town Hall" meetings where up to 150 people can be addressed.

An early decision was to provide only the largest space with full control facilities, which also acts as "master" control when rooms are combined. All the other spaces have relatively simple facilities.

The largest space is "Gleneagles" and this is equipped with an AMX wireless touch panel that can control this space, and also set up linked spaces.

The photo of the control panel below, shows the room set-up page. The six spaces are clearly presented, as is the facility to "join" rooms together, achieved by simply selecting the "join" function and touching the rooms that are to be joined. The principal function of "joining" is to link both lighting control and audio in the combined space.

Both the Gleneagles and Glenroyal rooms are fitted with ceiling mounted NEC NP4100W WXGA projectors and motorized ceiling mounted screens. The smaller rooms are served by trolley mounted NEC 46 inch LCD displays, which can also be used as repeater screens when rooms are combined.

A mobile video conferencing trolley, based on LifeSize equipment and fitted with an NEC 52 inch LCD display can be used in any room but normally "lives" in the Gleneagles room. The audio system is based on the use of Tannoy CMS501BM ceiling loudspeakers fed by either Crown or Australian Monitor amplifiers at 100V. Audio mixing and routing is by a Polycom C16 Soundstructure. Conference microphones are Polycom HDX ceiling arrays, but for presentations wireless microphones (lapel and handheld) are available.

The central equipment is housed in a compact mobile rack sited in the Gleneagles room. Each room is fitted with a hard wired control panel for the simple control facilities required, but because these cannot be mounted on the movable partition walls, they are necessarily mounted on the outside walls.

The AV and control system is proving effective in use, aided particularly by the excellent programming of the control panel. The rooms are intensively used, with frequent re-arrangement of the space. Electrosonic's Edinburgh office was responsible for the main installation and continues to provide support service.

Main photograph: The entire suite opens up as a single meeting space for a "Town Hall" meeting. The partitions can be seen in their storage position in the left and right corners. Photo courtesy TAQA Bratani Ltd, 1: The TAQA building housing the conference suite. 2: The conference suite center corridor when all partitions are in place. 3: The Gleneagles room. The VC trolley shown to the left of the main screen can be moved to other rooms when required. The central equipment rack can also be seen. 4: The wireless touch panel room set-up page.

Main photograph: The control room of the simulated operating theatre. 1: The simulated ward. 2: External view of The Horizon Centre. 3: The reception area includes wayfinding screens.

Medical Teaching in Torbay

The South Devon Healthcare NHS Trust recently opened The Horizon Centre - Centre for Innovation, Education & Research at Torbay District Hospital in the UK. DRV (now part of Electrosonic) was appointed audio visual systems integrator for the new centre.


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The facilities provide a completely integrated system consisting of eighteen linked interactive teaching spaces, centred around a simulated operating theatre and simulated ward.

DRV (now Electrosonic) has a long relationship with Torbay Hospital, having installed and maintained teaching facilities at the site for over ten years. DRV was involved from the early stages of planning for the new centre, working with medical teaching consultants MedicVision to develop a design for the leading edge AV systems within the centre.

The scope of work included digital signage, a room booking system, and fully integrated multimedia systems for teaching and presentation within a central technician-operated AV Control Room, a Simulated Operating Theatre, a Simulated Ward, a Lecture Theatre, a Briefing Room, Procedural Skills Rooms, and Tutorial and Meeting Rooms.

The system allows fully interactive anaesthetist training scenarios to be run and recorded, and then played back for debriefing. Users have the ability to monitor, interact with, record and replay training sessions throughout the building, to link to outside sites via video conferencing, and to master recordings of these events to Windows Media for webcasting and video-on-demand.

The systems installed at the Horizon Centre are tailored to the special needs of medical training. The main task of the system is to record the simulation activities in a digital format from multiple camera locations as well as any biometric information derived from high fidelity mannequins. Recordings are synchronized to allow common event stamping of the recording media by the operator.

The recordings can be played back in the debriefing room and other rooms as selected by touch screen operation, and displayed via a video projector or LCD monitor.

The system is capable of displaying multiple simultaneous images (up to four) from each of the recorded camera locations. The instructor can replay the activities using either conventional video control (start, stop, play, rewind, fast forward, cue and review) or by selecting an event stamp.

Wireless headsets provide intercom between the control room and the instructors in the training rooms. Ceiling loudspeakers are provided in the rooms for operator's announcements and audio accompanying video.

On the ground floor there are training rooms that are more conventional. These all have audio visual connectivity to the main system. The seminar rooms and lecture room are fitted with cameras and video conferencing capabilities. All video conferencing is IP based.


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1: Seven Panasonic 4000 lumen projectors are normally directed at rear projection screens in the windows, but can also be used to provide front projected images on any of the space's white surfaces. 2: Inspace is on the ground floor of the rather austere building housing the School of Informatics. 3: An experimental set-up. 4: A big screen wall is served by a 7000 lumen Panasonic projector. Local company Pufferfish provides 360° spherical displays for particular projects.

Main photograph and photos 1 and 3 courtesy NewMedia Scotland.


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Edinburgh **Inspace**

Inspace is a joint research partnership between the University of Edinburgh's School of Informatics and New Media Scotland. It is a combination of a laboratory used by students for their projects and research, and a gallery for hosting screenings, musical events and workshops. Its flexible AV infrastructure was installed by Electrosonic.

The Inspace Laboratory is designed to help gain a better understanding of "informational phenomena", including computation, cognition and communication. The space has to offer complete flexibility to accommodate the wide ranging research projects.

To this end Electrosonic installed a system that allows flexibility in projector positioning and allows any source to appear on any screen. Similarly any audio source can be fed to all or part of the augmented 5:1 audio system, which is based on Denon, KEF, Apart and Audio-Technica equipment. Beyerdynamic wireless microphones are used for events.

Video and SPDIF digital audio signals are distributed over CAT5 cabling. An Extron MTPX twisted pair matrix handles all switching and routing.

Digital Video @ at Sea

The main fleet of Princess Cruises consists of 14 vessels, each of which is like a small town with thousands of passengers and crew aboard. Every suite and cabin in the ship is fitted with multi-channel TVs, and there are many displays in public areas. It is a significant broadcast engineering project to provide the source and signal distribution system to serve so many displays.


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ELECTROSONIC SCOPE OF WORK FOR THE PRINCESS FLEET

- Provide and maintain fleet wide digital video play out servers.
- Provide and maintain fleet wide digital video editing workstations.
- Provide and maintain fleet wide RF television network distribution systems.
- Provide technical support and maintenance of all Electrosonic installed and supplied systems.
- Provide specialized AMX control systems programming and maintenance.
- Provide consulting for implementation of specialized digital video needs, such as implementation of closed captioning over existing RF networks and play-out systems.
- Provide technical support to vessel staff for specialized digital video issues, such as compression, formatting, media finishing, etc.

Electrosonic has a continuing relationship with Princess Cruises which involves the provision of system engineering, specialist programming, and system maintenance. A major recent project was to implement a complete transition from analog to digital video playout across the entire fleet, and there is a continuing program to upgrade the RF distribution systems.

The digital playout systems altogether required the supply of more than 100 servers, playing out more than 300 channels. The 360 Systems "Imageserver 2000" 3-channel MPEG broadcast servers are based on RAID-5 disc arrays to provide redundancy and to allow easy replacement of failed drives.

The broadcast systems components are contained in a line of rack cabinets installed in each ship's "Communications Center". There is a need to configure, and even create content on the spot, so the same area is equipped with a digital editing suite and NAS (Network Attached Storage) equipment. Both Adobe® and Final Cut® based systems have been supplied.

The systems are engineered to withstand the rigors of a marine environment and to occupy the smallest practicable space. Budget pressures mean that new systems must deliver greater system capacity for less money. Practical considerations mean that it must be possible for the vessel's crew to carry out front line service with simple hot swap procedures. This "Digital Video at Sea" project is an excellent example of where close co-operation between the client, Princess Cruises, and solutions provider, Electrosonic, ensures a high standard of service for the end customers (guests/crew) combined with a low cost of ownership.


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Photograph 1: One of the suites aboard the Golden Princess. 2: The Golden Princess, one of 14 vessels in the main fleet. 3: Space is at a premium on board the ship. Part of the Communications Center of the Sapphire Princess.

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The Kaiser Permanente Center
for Total Health

In April 2011 Kaiser Permanente opened a "Center for Total Health" in Washington DC. Located next to the new Kaiser Permanente Capitol Hill Medical Center, the Center for Total Health is at 700 2nd St NE, and is accessible via Union Station. It is an interesting combination of corporate communications facility and visitor center that features an amazing 80ft (24.4m) long interactive screen.

The purpose of the Center is best explained by Kaiser Permanente itself. At its opening Philip Fasano, Chief Information Officer and Executive Vice President, said "The idea for the Center for Total Health was born as a compelling way to share what Kaiser Permanente continues to learn about the kinds of health improvements we can make in this country. The center will be the first place that leaders and the general public can go to see the real-world convergence of health, health care technology and innovation. It is a place where industry and business leaders can fully embrace a vision for total health, see it in action, and be able to engage other leaders in how to potentially shape health care over the years to come."

From a visitor's point of view there are various elements of the Center which embody AV and interactive support. A short documentary introduces the history of Kaiser Permanente and its founders, Henry J. Kaiser and Sidney Garfield, MD. This is presented in the Introduction Theater, which features a Panasonic 103 inch plasma screen and which can also be used as a presentation and meeting space.

The first of two major interactive elements consists of six pairs of Displaywerks 55 inch LCD touch screens. These allow visitors to explore the concept of "total health" how people define total health, challenges to achieving it and solutions that are working.

The highlight of the Center is a magnificent interactive videowall that is over 80ft (24.4m) long and nearly 9ft (2.7m) high. It can fairly claim to be one of the world's largest multi-touch displays, and it is designed to teach visitors about the health benefits of walking, how easy it can be to

integrate walking thirty minutes, five days a week, into their own lives, and help them understand how to build walker-friendly communities.

The computer driven wall is based on the use of eight Christie DS+10KM projectors mounted in custom built mirror rigs, and projecting onto Stewart StarGlas 100 rear projection screens. Interactivity is provided by a Gesturetek multi camera gesture recognition system. Sixteen Dakota FA-602 directional loudspeakers are fitted to provide localized sound.

Electrosonic's Design Consulting team was responsible for the AV design for the majority of the Center, and Electrosonic completed the final systems integration. In addition to the main elements already described, Electrosonic equipped two meeting rooms with conventional AV facilities, and provided infra-structure cabling for a series of demonstration alcoves.

The architect of the Center for Total Health was Hawley Paterson Snyder of Mountain View, CA. The general contractor was DPR Construction, and the exhibition designer was Ralph Appelbaum Associates. Content production was, and is, by Brand New School. Because of the need to provide updated content on an ongoing basis, Electrosonic also delivered a twin touch screen system, and a scaled down "single section" of videowall complete with gesture input system to Brand New School's studio in New York to facilitate content development.

Main Photograph: The Introduction Theater. 1: The projector and mirror assemblies for the videowall. 2: The videowall seen from the street. Photo courtesy Kaiser Permanente. 3: The twin screen interactive displays.

Port of Los Angeles

Electrosonic's ability to handle large scale projects, and its familiarity with the procedures required on sites where many different contractors may be working, has meant that it is often asked to undertake large digital signage and signal distribution projects. These have included such projects as hanging over 1,000 LCD screens at a major international airport and major retail display "roll outs".

A more modest installation, but one with close links to existing important clients, was recently completed for the Port of Los Angeles. Here the port was upgrading the facilities at Berth 93, a berth for large cruise liners such as those of Princess Cruises (see story on page 9). The catalyst for the upgrade was the fact that Disney Cruise Line is now also using Los Angeles as a West Coast "home port".

The upgrade required a complete new audio system and new digital signage. The signage system uses a small videowall (a 2×2 array of Planar 64 inch narrow bezel LCDs) and 35 single LCD panels from Samsung and LG in 65 inch, 52 inch and 29 inch sizes. The displays are fed from 31 Harris INCS – DS500 Infocaster players. The audio system is based on Peavey Nion N6 processing and QSC amplifiers. 24 Renkus Heinz IC-8R loudspeakers were installed throughout the terminal, augmented by 22 Soundtube 6M 600i loudspeakers for localized sound.

An AMX touch screen controller is used for overall system control.

Photograph 1: Main paging station. 2: Assembly area with LCD panels above the desks.

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Control Rooms

As a leading supplier of equipment and systems Electrosonic has been involved with the Control Room market ever since it started to make use of electronic image displays in the 1980s. As a systems integrator the company has always been "product agnostic", however there is no doubt that the sale of its products business now makes this absolutely clear.

Electrosonic is committed to supporting users of control room overview displays by providing lifetime support (including "green" lamp replacement programs and guaranteed service levels) and by installing new and upgraded systems. Many major projects undertaken in the last few years have been for security applications and it is not possible to describe them in ELECTROSONIC WORLD.

In order to provide potential customers with guidance as to the most suitable technologies to use, Electrosonic is opening demonstration rooms that allow different approaches to control room display design to be discussed and evaluated. The first of these, shown in the photograph above, is in Dartford, Electrosonic's UK headquarters.

The room is equipped with a regularly changing exhibition of different display technologies (primarily DLP™ rear projection "cubes" and large LCD panels) and image processing equipment from leading manufacturers.

Burbank Studio

Electrosonic's Burbank office has a well equipped studio dedicated to digital video (mostly High Definition). It provides a service to both outside clients and "internal" customers. The work is primarily that of "conforming" digital media to ensure trouble free playback on site, whether this is a digital signage application or a "big show". Original files can be compressed to the appropriate variant of MPEG or JPEG2000. A speciality is "synchronized" files for multi-projector playback.

At work in the Burbank digital video studio.

FATS &

Modern commerce is strewn with acronyms, and the AV engineering business is no exception. Two of the most important are the FAT (Factory Acceptance Test) and the SAT (Site Acceptance Test).

As a general rule complex AV systems should never be built on site, especially if the building they are going into is itself new. Electrosonic endeavors to build all systems in a factory environment, since this helps ensure that quality control procedures can be properly followed. The great majority of system construction is carried out either at the Burbank office in California, or at the Dartford office in the United Kingdom.

As far as practicable every completed system is set up in its entirety at the factory (including all peripherals and cables forming part of the supply). It is then subjected to a full test, referred to as the FAT. In many cases such tests are "witness tests" in that the client or client's representative may be present. The test procedures may be those devised by Electrosonic, or may be in accordance with a schedule provided by a consultant.

Thus in principle it will be the case that any system delivered to a site will work - any failure on site will be either due to equipment failure in transit or to problems with the site cable plant (which in most cases will have been separately tested). A big issue arises with systems that require programming. As far as possible system programming should be done prior to the FAT, so that a fully operational system is delivered; with only items like timing tweaks being left until the SAT. When this is not possible it is vital to allow enough time to complete programming on site – this will usually take at least five times longer than expected.

It is clear that the FAT procedure can present a space problem. Some of the corporate projects undertaken by Electrosonic have involved the supply of between fifty and one hundred racks; while some of the entertainment systems require big staging spaces to give proof of projector performance.

A specific problem related to the entertainment and leisure markets is ensuring that the content has been correctly formatted. Electrosonic has a studio facility in Burbank that assists customers with encoding and formatting issues, thus ensuring that media content plays correctly when delivered to site. (See "Burbank Studio" left).

SATS

Photograph 1: A big entertainment system undergoing FAT at the Burbank facility in the USA. 2: A large number of compact racks, destined for a major accountancy firm's new building, under test at Hawley Mill in the UK. 3: Part of a media production center for a London based Financial Services customer being prepared for witness test at Hawley Mill.

Signal Training on the Victoria Line

The Victoria Line on London's Underground is currently being upgraded with new Rolling Stock, a new Signaling System and new Line Management System under the direction of the Victoria Line Upgrade Team (BCV Upgrades, part of Transport for London).

There is a dedicated facility for training Operational Staff in the operation of the new systems. Invensys Rail (Signaling) and Siemens (Line Management System) have supplied training simulator hardware and applications, Electrosonic was contracted by BCV Upgrades to supply overhead displays and a system by which training sessions could be recorded.

The training space is set up in a manner identical to that of the actual control room. Two consoles are provided for trainees, one for the "north end" of the line, and the other for the "south end". Both face a display consisting of eight 32 inch LCD monitors (from NEC) that shows the simulated status of the line. Below the display is the instructors' console, facing towards the trainees. The instructors set up the scenarios (such as incidents on the line) and monitor how the trainees react. Another set of monitors is mounted on the opposite wall, behind the trainees, and these displays repeat images of each trainees' workstation monitors.

With simulator training of this kind it can be difficult to analyze what went wrong if a trainee takes inappropriate action. However, a simple way to overcome the problem is to record what is shown on the workstation screens in real time. This approach has the great merit that it is non-invasive and does not involve access to the simulator application itself. The potential problem is that the amount of data to be stored is huge, since each display screen needs around two Gigabits per second.

Electrosonic offered an effective solution to the problem by equipping each of the trainee workstation monitors (four per trainee) with an Extron VN-MATRIX™ codec. This device captures the screen images in real time and converts them to an IP format of modest bit rate, with a highly efficient and robust compression system based on the wavelet transform and novel methods of coding and temporal compression.

The system is completed by a VN-MATRIX Recorder installation. This records the IP streams for subsequent review. In the initial installation the recorder is in the same room as the simulator which uses a local network; however if connected to the WAN the images could in theory be made available anywhere on the London Underground system, either in real time, or as played back by the recorder.

In the initial installation eight synchronous SXGA+ image streams are recorded, but this is not a technical limitation, the system can easily be expanded. Nominal capacity of the storage system is eight hours, but this depends on bit rate. The bit rate is adjustable over a wide range; currently rates in the 10 - 20Mb/s are being used, ensuring that fine detail is captured.

Photograph: Trainees face a display showing the status of all signaling and trains on the Victoria Line. The instructors' desk faces the other way.

Derbyshire Police

In 2010 Electrosonic installed a video wall and image processing system at the Derbyshire Constabulary's new purpose built control center. Along with other police forces across the UK, Derbyshire's security cameras and surveillance control rooms are increasingly central to crime prevention and monitoring of terrorist threats.

The new control center, located at Butterley Hall, Ripley in Derbyshire rivals some of the best facilities in the country. It is here that multiple images sent from local authorities, site cameras and a helicopter link are received and reviewed on the video wall, enabling the police to monitor and respond to incidents effectively. The system gives incident commanders the capability to view all of the CCTV images of an incident on a single, highly flexible platform.

The display consists of a 5×2 array of Mitsubishi 50" rear projection cubes fed from an Extron Quantum Elite multi-image display processor with 24 CCTV and ten high resolution RGB sources. Electrosonic worked with Tyco Fire and Security, who supplied the CCTV control system for the control room project. Control and placement of the sources is achieved using Tyco's Mosaic software that was integrated into the Commander control software supplied with the Quantum processor.

The image processor also feeds images to four smaller rooms in the new control center, so that images that are on the main display wall can be shared for collaboration on larger operations.

The entire system was assembled and tested at Hawley Mill prior to installation on site. This procedure, which the client can witness, ensures that systems perform correctly to the agreed specifications. It also minimizes the on site installation time.

Electrosonic's service team is supporting the equipment to ensure the continuity of control room operations, with both regular preventative maintenance visits and the provision of a 24/7 on call service.

Even those at the back get a good view of the display!

SOC at Hawley Mill

Electrosonic has opened a new Service Operations Center in Hawley Mill, its UK and Europe headquarters. Such a facility has become necessary because of the large number of sites now supported, either by service contracts or by permanent on site staff, and the corresponding large number of staff involved.

Running a service operation is very much a "real time" business, and there can be problems in ensuring that obligations are met and resources correctly accounted for. Electrosonic uses a call logging system called Solarvista to help ensure that Service Level Agreement (SLA) response times are met. Service engineers and technicians are equipped with PDAs so they can receive instructions and report progress in real time. Clients have specific web portals so they can track the status of any service task relevant to them.

The new SOC has a big overview display so everyone in the room can share information. The display uses LCD panels, which are suitable for this application since the room is not used 24/7, and there is a high level of ambient light.

Images on the display can include maps, the Solarvista information, PDA data, video conferencing images, and other relevant video and graphic images.

The new Service Operations Center takes advantage of Electrosonic's expertise in control room displays.

TAQA's

Emergency Response

TAQA Bratani is a leading exploration and production company working in the oilfields of the United Kingdom Continental Shelf. One of its facilities is an Emergency Response Centre in Aberdeen for which Electrosonic engineered the visual display system. The visual display is designed for collaborative working and is based on a Barco XDS Display Management System.

Oil companies with offshore sites have to be ready for any emergency, and TAQA Bratani is no exception. Should there be an emergency, a team of experts work together in an Emergency Response Centre (ERC) to assist the offshore site and to organize the required external support.

This is an important example of collaborative working, where everyone must be able to share the same information, but where the source of key information may be continually changing.

TAQA's emergency response centre in Aberdeen consists of an incident room, a control room and a Relatives' Support suite. Every position in the incident room has a workstation. The primary software used is Ultra Electronics Atlas AIMS™, an industry standard Incident Management System. But specialists also have their own applications relevant to their responsibility, and participants must have access to outside information sources such as off-air and satellite broadcasts.

To enable participants to get the "big picture", rather than only the information on their own workstations, such rooms use some form of overview display. In this case Electrosonic proposed that the most economical and effective solution would be to install the largest practicable front projection screen. (Rear projection, either single projector or "cube", was ruled out on the grounds of space and cost, and also was not really necessary since the facility, although available at all times, does not operate 24/7.) The resulting screen is approximately 3.6m × 2m; it was completed by the fit-out contractor, Space Solutions, using a medium gain screen paint.

The projector, a Barco RLM-W6 with 1920×1200 resolution, is fed from a Barco XDS Display Management System configured to receive images directly from two computer sources and a Freeview receiver, and to receive images from all the participants via the LAN. In fact any computer, anywhere, carrying the appropriate XDS license can contribute images. XDS allows anyone in a collaboration group to configure the display and prioritize the information to meet the needs of the moment. In the ERC one control position for the display is equipped with a 22 inch Smart Podium touch screen.

In theory the room would only be used for real emergencies, but clearly this would depend on everyone knowing what to do. For this reason the room is used for a one hour training session every week, for full day training sessions at frequent intervals, and to train Offshore Installation Managers on emergency management techniques.

All events in the incident room are monitored from the adjacent control room. A two camera surveillance system with full PTZ control is installed with a Datavideo DN400 hard disc digital video recorder.

The ERC is under the control of an AMX room controller. An audio system, based on Tannoy full range ceiling loudspeakers, provides speech reinforcement for the team leader, and playback for external program sources.

Main Photograph: The TAQA Bratani Emergency Response Centre. In the foreground a 22 inch touch screen which can be used for manipulating the main display. 1: The control room is next to the incident room, separated by a security mirror. 2: The Barco RLM-W6 projector is quiet enough to be ceiling mounted in the ERC itself.

SHOC in Africa

The Strategic Health Operations Centre or "SHOC Room" of the World Health Organization (WHO) is a command and control centre for crisis management and the co-ordination of responses to major disasters and outbreaks of diseases.

AV AWARDS '10
WINNER
Business Installation of the year 2010

Back in 2004 Electrosonic provided the complete video/data display, audio visual and video conferencing system for the Geneva operations centre under a direct design and build contract with the WHO.

The completed installation was put to an early test on 26 December 2004 just three weeks after final commissioning. The tsunami in Asia caused an immediate 24/7 deployment of the facility due to the region's potential health risks. Subsequently the WHO installed another SHOC facility in Cairo. Electrosonic completed the AV installation for this facility as well.

Continuing the policy of getting response facilities closer to likely health trouble spots the WHO decided to build another SHOC facility in Africa, this time in Brazzaville in the Democratic Republic of Congo, completed in 2010.

Electrosonic was again chosen as the AV systems integrator based both on its long relationship with the WHO, and on its proven ability to manage contracts of this kind anywhere in the world.

The Brazzaville SHOC rooms

This is a suite of four rooms. The principal room is the "Operations Space". There are two "Breakaway Rooms", and a "Control Room" that overlooks the Operations Space but is able to control the technical operation of all rooms.

The aim is that it is possible for both individuals and groups to review graphic and video images generated locally or at remote sites, and that it is possible to conduct multi-point conferences with other WHO locations.

The Operations Room is arranged as a conference room for ten participants. It has two display systems, a main videowall display capable of showing multiple images and a 52 inch touchscreen display with integral computer. It is equipped with a comprehensive conference audio system and with a High Definition video conference facility.

The two breakaway rooms are small rooms accommodating four people, centered around a 52 inch touchscreen display with integral computer. The rooms are fully equipped for videoconferencing.

The Control Room overlooks the Operations Room. From here all facilities within the rooms can be controlled, and all main displays monitored. It is also equipped with videoconferencing facilities and provides an extension to the overall capabilities of the SHOC complex.

The whole project benefited from previous experience. However, two factors had to be taken into account. The first was that of technological progress; any system had to take advantage of any advances in technology.


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Photograph 1: View from the Control Room. 2: Handing over the equipment rack. 3: The Operations Space. 4: Setting up the complete cabling system for the factory test in Dartford.

the parameters of the installation and confirmed arrangements for the logistics of the installation.

The procedure that was agreed was that the entire installation, including all connecting cables, would be set up at Electrosonic's Hawley Mill facility for complete acceptance testing prior to dispatch to the Democratic Republic of the Congo.


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The second, more difficult, aspect was that of managing a project that was to be installed in a "difficult" location in respect of access, logistics and security.

This was addressed first by making a visit to the site before any significant work was started. The site visit, undertaken by Electrosonic and WHO staff, established


4

Expedition Health

in

Denver Colorado

The Denver Museum of Nature & Science's newest exhibition, "Expedition Health", is a 10,000 square foot health-science exhibit about how the human body constantly changes and adapts in ways you can see, measure, and optimize. The experience is framed by the story of a Rocky Mountain expedition organized by the museum as a keystone of its Health Science Initiative. Expedition "buddies," a diverse group of residents of the region, become virtual companions who accompany visitors through the exhibition.

Electrosonic delivered the AV and interactive systems to "Expedition Health" under sub-contract to Art Guild, the main exhibit fabricator.


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Upon entry visitors sign in electronically, select a virtual "buddy," and receive a Peak Pass card to activate key components of the exhibition. These components recognize visitors, recall their personal data, and enable them to record their own performance . At the exit visitors can print out a personal profile with data and images as a take-home souvenir.

In one exhibit, visitors can place their hands on sensors to see and hear their own EKG (electro cardiogram). More feedback about heart rates is generated at the Bio Ride, featuring exercise bikes where visitor-cyclists can keep an animated rider moving.

One of the exhibition's coolest components is "Wind Chill". Visitors place their hands in the glass-fronted device to activate temperature-controlled air that demonstrates the effect of windchill on body temperature.

Electrosonic provided a control system for the Full Body Viewer developed by Scott Snibbe. When visitors stand in front of a camera and mirror system, the Viewer displays a generic full-size CG image of the body that reveals its muscle and skeletal structure and vascular and cardiopulmonary systems.

A touchscreen tells visitors about the nutritional value of foods as they play the "Feed a Hungry Hiker" game. Visitors can then move on to "Measure Up", where they stand in front of a camera system and green screen, spread their arms, and see their image displayed on a 46 inch LCD monitor below the camera. The "Height & Arm Span Investigator" graphically demonstrates how a person's arm span compares to their height.

In the "Cross The Stream" exhibit an eight foot long balance beam, bevelled on each side to catch visitors who misstep, divides the "stream" in half. Two ceiling-mounted projectors project synchronized images onto floor screens that flank the balance beam and give visitors the impression of crossing a moving stream.

As visitors explore "Size Up Your Stride" and the "Walk Investigator", a camera system records them walking along a length of wall as they try to increase their energy output. Each visitor's unique walk is displayed in silhouette on three contiguous 46 inch monitors in banner mode. A touchscreen delivers feedback about the visitors' gaits and energy scores.

Electrosonic furnished more stations for "Top 10 Traumas on the Trail", an interactive about injuries and the body's healing processes, and "UV and You", about skin types and UV effects. Nearby visitors can dab sunblock on the back of their hands and place them under a UV camera, with images showing how sunscreen blocks UV displayed on special portrait mode screens.

Mindball™ is a biofeedback game in which two visitors, with sensors strapped around their foreheads, try to control a ping pong-sized ball on a track. The calmest player wins. Electrosonic supplied a 30 inch LCD monitor that displays both sets of brain waves; a 46 inch widescreen monitor in portrait mode provides core information about the brain.

Main Photograph: The "Protect your skin" exhibit. 1: The EKG Monitor, exercise bikes in the background. 2: The "Cross the Stream" balance activity.

NMAJH in Philadelphia

The National Museum of American Jewish History (NMAJH) first opened in a relatively modest 15,000 square foot location in Philadelphia in 1976. In November 2010 it opened a new 100,000 square foot building on Independence Mall, designed by Polshek Partnership Architects (now Ennead Architects). 25,000 square feet are devoted to the core exhibition, designed by Gallagher & Associates, which makes extensive use of audio visual support. Electrosonic was the audio visual systems integrator.

The core exhibition is the first major exhibit devoted solely to the experiences of Jews in North America, from the 1654 arrival of Jewish refugees from Recife, Brazil, to today. The museum visit starts on the fourth floor with an exhibition entitled "Foundations of Freedom, 1654-1880", which profiles the earliest Jewish communities and captures the flavor of everyday Jewish life in America from the colonial era through the late 1800s.

This section is introduced by the Foundations of Freedom Theater, an open space with two walls serving as projection screens. Five projectors are used to create one continuous image. Entering the exhibition, visitors encounter exhibits with themes such as "Establishing Communities", "The Constitution" and "Innovation and Expansion".

"Innovation and Expansion" is based on an impressive projected "map table". It uses two projectors to present different animated sequences which can be selected on an adjacent touch screen.

The Foundations of Freedom floor of the exhibition raises questions about what it meant to be a small minority in a young and still-evolving nation. The issues are raised in the "Choices and Challenges" section where the effects of unprecedented liberty are explored. Here effective use is made of projection within a "ballroom" setting.

Visitors now descend to the third floor, and are introduced to "Dreams of Freedom", 1880-1945. A presentation is given by three projectors on to an intriguing screen surface apparently made of a number of random sheets of paper. Careful projection masking makes for a nice illusion.

The first section considers events and themes related to immigration and integration: getting to America, making a home, the reception immigrant Jews received, and learning to negotiate American society. Interactive displays include "Moving to America", and an excellent video in the "Schoolroom" where the chalkboard's projected writing looks uncannily real.

The second section takes up American Jewish life after the end of free and open immigration in 1924. Through the lenses of the fine and performing arts, political activism, and religious expression, it explores how Jews defined, for themselves and their neighbors, what it meant to be an American Jew during an insecure period of American, and world history.

AV based exhibits in this section include the "Entertainment Theater" that reprises early Hollywood, a "Competing Visions" interactive display using a 52 inch touchscreen, and World War II newsreels presented on twin overhead screens.




TEAM and **TECHNOLOGY**

The NMAJH was realized by an experienced team. Besides Polshek Partnership and Gallagher & Associates, other members included Design & Production (exhibit fabricator) and RomeAntics (Media and AV Consultant). AV and interactive content was provided by a team consisting of Local Projects, David Grubin Productions and Donna Lawrence Productions. Electrosonic was the audio visual systems integrator.

The AV technology was largely specified by RomeAntics, with some exhibits being specified by Local Projects. However, Electrosonic was able to deliver a system that used a consistent approach and a minimum of different equipment types.

The larger projection screens, and those requiring edge blending, use Christie DS+750 projectors; the smaller screens use Projectiondesign products (F22SX, F12SX and F32-1080). Flat panel displays include 46 inch LCD from Samsung, and 19 inch LCD from Dell. Touch screens include Elo 19 inch touch LCD, Dynamic Displays 12 inch LCD with Dawar overlay, a Sony 52 inch LCD with Visual Planet overlay and Primeview 24 inch touch LCD.

Shows requiring simple single and multi screen HD playback use Adtec Signedge players; complex multi projector shows use Dataton Watchout running on PC platforms. The Contemporary Issues Forum multiscreen interactive is based on Apple Mac with Apple Mac Pro video processing.

Most audio is sourced from the associated video source (HD player or Watchout) but where exhibits require audio only, the audio is delivered by Medialon Audio Server. Audio equalization is handled by BSS Soundweb London Blu equipment. The majority of the loudspeakers are from Tannoy (IW6, DI-6, DI-8). The exhibit "Establishing Communities", requiring localized directional sound, uses Dakota FA-501 arrays and the "Competing Visions" interactive display uses an Innovox Sound Bar.

Overall system control is by Medialon, and features a wireless control panel that allows service staff to monitor and control individual exhibits anywhere within the building.

Visitors next move to the second floor to see "Choices and Challenges of Freedom" covering the period from 1945 to today. In this case the introductory show is given on five 46 inch LCDs.

Within the exhibition, topics include the Jews' role in the fight for civil rights, and new demographic trends as Jews moved into suburbs, illustrated by "TV" and "Family Movies" exhibits. Suburban moves and professional advancement were accompanied by a period of synagogue building, illustrated by a small interactive theater "Synagogue Experience". Choices and Challenges of Freedom concludes by offering museum visitors a chance to share their personal views and reactions in two high-tech, interactive experiences.

Finally visitors reach the Museum's first floor, and here the "Only in America®" Gallery/Hall of Fame illustrates the choices, challenges and opportunities eighteen Jewish Americans encountered on their path to remarkable achievement.

The Only in America Gallery combines artifacts with a large projected image display shown on two curved screens. These use five projectors with edge blended images. The whole display makes a great impact on the space.

Main Photograph: The "Innovation and Expansion" exhibit. The touch screen to the right selects the sequences on the main display, above impressive projection in the "Only in America" gallery. Bottom: Museum exterior. (Photo by Barry Halkin, and courtesy of the NMAJH). Foundations of Freedom Theater. "Choices and Challenges" exhibit. Introduction to "Dreams of Freedom". The "Schoolroom" exhibit with projected writing on the chalkboard. The "Entertainment Theater". Multi-screen show on Civil Rights.




Museum of London

The Museum of London opened its new Galleries of Modern London at the end of May 2010. This spectacular new development covers the years from 1666 to the present day. The galleries exploit the rich collection of artifacts in the museum's collection, and make intelligent use of AV techniques. The £20 million project also included the provision of learning centers and a multi-purpose auditorium.

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The new galleries tell the story of London from the devastation of the Great Fire of 1666 to the wonders of the Great Exhibition in 1851, from the Suffragettes' fight for voting rights to the fashions which made the sixties swing. The galleries are an experience of rebirth and renewal, of excess and of struggle. Every artifact tells a personal story as Londoners reinvent their city, and are changed by it.

Unusually, the interior design of the new Galleries of Modern London was led by a specialist in-house team, with an intimate knowledge of the museum's collections. Visitors can step inside a real 18th Century prison, see an original printing press leap into life, and encounter London's wells bubbling up. Each gallery was separately curated, and in all over 7,000 objects are on display. These are augmented by interactive exhibits, films and evocative sound tracks.

Interactive content, film and audio production was by a team consisting of New Angle Productions, Elbow Productions and ISO Design. Electrosonic was appointed principal audio visual systems integrator.

Projection

Throughout the galleries the AV and interactive support is there to tell a story, and is an integral part of the design. Projection is used in several different ways, to set a scene, to tell a story, to present historical footage, and as the basis for novel interactive displays.

An example is the exhibit devoted to the Vauxhall Pleasure Gardens. These were outside the built-up city and were famous in the 18th and early 19th century as a place for entertainment and assignation. The new galleries include a reconstruction of the gardens, which provides a setting for the display of elaborate contemporary costumes. This is combined with two projection screens which show a dramatization of a typical evening of around 1780.


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Interactive displays

There are many computer interactive displays built in to the exhibition. These are both in "quiz" and "information search" formats. Some use large LCD touch screens, mounted both vertically and horizontally. An outstanding example here is the Charles Booth Poverty Map of London. In a cubic space, wallpapered with examples from the map, a large LCD touch screen allows visitors to search the map in respect of both time and place. Charles Booth carried out surveys of "Life and Labour in London" in the period 1886 - 1903, and presented the information in graphical form, with the houses in different streets being color coded as to the occupants' wealth or lack of it.

Several of the interactive exhibits use projected images as their display. The most ambitious is in the up-to-date "Capital Concerns" gallery. Here five large horizontal surfaces, three at table height, and two at floor level, create a giant "River of Ideas", emphasized by striking models of icons such as the Gherkin, The London Eye and St Paul's Cathedral. The table screens each incorporate ten touch sensors, and the floor screens use cameras as sensors. In the case of the touch sensors, audible "click" feedback is provided by overhead loudspeakers.

Video support

Many other exhibits use video support to help tell the story; using both projection and flat screen displays. For example as visitors enter the galleries, one of the first things they see is an old printing press with paper apparently flying off it. This clever exhibit appears to have more than 30 "screens" of different sizes, but actually it only uses three high resolution projectors with the images masked in the software to match the screen layout.

Exhibits with audio commentary are equipped with induction loops for the hard-of-hearing. While most audio accompanies video, there are some "audio only" exhibits, particularly effective is the Wellclose Prison Cell. This real 18th century cell is complete with prisoners' graffiti, and now has their voices too.

Main Photograph: The "Capital Concerns" exhibit. 1: In the "Expanding City" exhibit, papers appear to be flying off the old printing press. 2: The Pleasure Gardens exhibit includes examples of contemporary costumes. 3: Within a walk-through setting that includes two big projection screens. 4: The Charles Booth Poverty Map.

Museum of The Order of St John

The Museum of the Order of St John in Clerkenwell, London, tells the story of the Order of St John - from its origins in eleventh century Jerusalem, through to its role today with St John Ambulance and the St John Eye Hospital in Jerusalem.

The main museum is housed in St John's Gate, the entrance to the former Priory of the Knights of St John dating back to 1504. In a development supported by the Heritage Lottery Fund the museum was completely redesigned in a project managed by Cultural Innovations, designed by Metaphor and built by main contractor Mivan. It opened to the public in November 2010.

The new museum makes intelligent use of audio-visual support to help interpret the exhibits and tell the story. AV production was by New Angle, and the AV hardware installation was by Electrosonic, under sub-contract to Mivan.

The main museum displays are in three areas. The "Order" gallery tells the story of the Order of the Knights of St John through artifacts and paintings augmented by three short video presentations on subjects such as "The Siege of Malta".

The "Link" gallery features a "Time Line" exhibit based on four 46 inch LCD screens, each one telling the St John story in a particular era.

The "St John Ambulance" gallery follows the modern Order of St John in England, granted a Royal Charter by Queen Victoria in 1888. Humanitarian in its aims, the modern Order recognized the need for public First Aid and ambulance transport services. In addition, the Order established an eye hospital in Jerusalem, following the principles of the Order's first hospital, treating all those in need regardless of faith or wealth. The gallery includes a presentation on St John Ambulance shown on a 46 inch LCD screen, and another on "War" shown on a 20 inch display.

Photographs (left to right): St John's Gate, home to the Museum of the Order of St John, A view of the Order Gallery; one of the 24 inch video screens can be seen straight ahead, The Link Gallery, showing the Time Line video displays in the distance. The isolated 24 inch display on the right shows a "virtual tour" of other rooms in St John's Gate for those unable to take the guided tour through those rooms.

Interior photos courtesy The Museum of the Order of St John

Beyond All Boundaries at the

In November 2009 the National World War II Museum in New Orleans opened a new building housing the Solomon Victory Theater, a $60 million addition to the museum built specifically to house "Beyond All Boundaries", a hugely impressive cinematic experience that tells the tale of America's victory in the "War that changed the world". The show was designed and produced by the Hettema Group, and Electrosonic was responsible for the design and integration of the audio visual and show control system.


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Every hour visitors enter a holding area which shows the life of World War II troops on a continuous eight minute attraction loop displayed on eight portrait format 58 inch plasma screens. On the hour a six minute pre-show is run on the same screens.

Visitors then move into the main theater, a raked auditorium with 250 comfortable seats. At first all that can be seen are massive stage curtains that seem to embrace nearly a 180° field of view, and indeed when they part to their full extent they reveal an enormous 115ft × 28ft (35m × 8.5m) screen.

The show explores the origins of the two main conflicts, in Europe and the Pacific, and how America became involved in them. It shows how America fought the war, and particularly emphasizes the experiences of the American troops. The thirty-seven minute show draws applause at its conclusion, but, significantly, only after a thoughtful pause.

The Team

The whole idea of having a major theater based immersive experience at the museum was that of the museum's president, Nick Mueller. The project was directed for the museum by Bob Farnsworth.

The concept, design and production of "Beyond All Boundaries" was the responsibility of the Hettema Group, with their principal, Phil Hettema, former Senior Vice President Attraction Development at Universal, being creative director.

Tom Hanks is credited as executive producer and narrator; besides his own contribution to the show, his connections ensured that the voiceover parts were all taken by top flight talent. Much of the show is narrated in the words of actual participants, voiced by these actors. One of the pit screens is used to provide a sub-title that identifies the participant's name - one of the most interesting being that of David Hettema, Phil's father, who flew B17 bombers over Germany.

Mousetrappe Inc was responsible for media production. This complex task was considerably helped by the fact that the combination of modern electronic projection and the latest production tools meant that the final stages of post production could take place in the auditorium itself.

The combination of special effects, scenic construction and overall technical complexity led the Hettema Group to appoint the It's Alive Co to the role of Technical Director and Co-ordinator.

Electrosonic was appointed designer of the audio, video and show control systems, and also systems integrator for this part of the project. In order to take advantage of local resources, Electrosonic sub-contracted the

Photographs: (left) The bombing raid. The lead bomber's nose cone is a giant model in front of the projection screen, (right) The "Dresden" scene, with words from Kurt Vonnegut, makes particularly effective use of the scrim.

World War II Museum

audio installation to SoundWorks of New Orleans.

Visual Terrain was the lighting designer, complemented by Bandit Lites who carried out the lighting and lighting control installation.

LA ProPoint was responsible for the main set construction, complemented by Rando Productions who devised the special effects.

Audio

It goes without saying that the mighty image presentation system is accompanied by an equally impressive audio system, with 32kW of power amplification installed.

Main show playback is from an Alesis HD24XR 24 channel hard disc player, the outputs of which are fed into a Peavey Nion-6 digital matrix mixer. Outputs from the mixer are delivered by Cobranet to three QSC Basis amplifier controllers and thence to 19 QSC amplifiers of four different ratings from 2-channel 200W up to mono 2400W.

Principal loudspeakers are six Renkus-Heinz PNX151 two-way loudspeakers augmented by four Renkus-Heinz PNX212 dual sub-woofers.

Photographs 1: The Solomon Victory Theater at the World War II Museum. 2: The scene depicting the bombing of Japan exploits the depth effect provided by the scrim and double screen arrangement, and is augmented with lighting and smoke effects.

Projection

The projection system in the Victory Theater is more complex than it first appears. The main screen is, in fact, a "scrim" or gauze. In front of it is a pit, similar to an orchestra pit, from which various artifacts emerge at appropriate moments in the show. Such artifacts include a giant radio set, a concentration camp watch tower and the gun turret of a warship. Also included are three small front projection screens which are used to provide captions and other supporting images for the main screen.

Behind the scrim various objects, such as tank traps, can be illuminated; but the main item is yet another giant projection screen set about 20ft (6m) back from the main screen. For certain scenes in the show this is used to help create overall images of great depth and complexity - the audience is aware of a "3D" effect without being made aware of how it is achieved. The effect is especially effective in scenes such as the bombing of Japan, and fighting in the jungle.

The main screen image is achieved using three Christie Roadster S+ 20K DLP™ projectors. These give a nominal 20,000 lumens light output, and are equipped for edge blending and image warping to achieve the huge seamless image on the curved screen.

Because the second screen is relatively close to the main screen, five projectors are needed to achieve full coverage. For this screen nominal 10,000 lumen projectors (Christie DS+10K-M) are used, again with blending and warping built-in, this time to contend with the steep projection angle (the second screen also uses front projection).

A ninth projector, a Christie HD10KM also 10,000 lumens nominal, is used to cover the three pit screens, with the images being masked to match the screens in use at any time. This projector has an HD aspect ratio (1920 × 1080) as opposed to all the other projectors which are SXGA+ (1400 × 1050).

For the main show all image playback is by Extron JMP9600 JPEG2000 playback appliances. In this installation they are configured as two-channel units, so five are needed to serve the nine projectors. A Horita video sync generator and associated distribution amplifier system is used to provide a genlock facility to keep all the sources in sync.

MUSEUMS + HERITAGE 2011 AWARDS

Award for Permanent Exhibition

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Robert Burns Birthplace

The National Trust for Scotland recently completed a £21 million development in Alloway, Scotland, that brings together all the Burns related sites in Alloway. Principal among these is the Burns Cottage, which for many years has been the nucleus of a museum, and a brand new museum building, together representing the Robert Burns Birthplace Museum. The museum exhibition was designed by Event Communications, and includes subtle use of audio visual support. Electrosonic was the AV systems integrator.

On 21 January 2011 Liz Lochhead, newly appointed Makar of Scotland, officially opened the new museum saying, "It is a huge pleasure to officially open the Robert Burns Birthplace Museum, which is such an asset to the further popular enjoyment of our so well-loved National Poet. His work is, was, and ever shall be, the greatest monument to him; but his life of passion, pleasure, poverty and contradiction will never fail to fascinate, infuriate, challenge and engage with us, whether we're young or old, scholar or ordinary enthusiast, Scot or citizen of somewhere else."

Electrosonic was first involved with the project as AV systems designer, working directly for Event Communications. After a tender process it was appointed AV systems integrator, working for the National Trust for Scotland. The project was carried out in two phases, the first being the upgrade of the Burns Cottage.

The first room in the cottage features a model of the cottage which depicts how the rooms were used in Burns' time. Each room in the model is fitted with an LCD panel in its floor showing a dramatization of the room in use. The rooms themselves are equipped with low level ambient audio that both animates and helps interpret the different spaces.

The second phase of the project was the equipping of the new museum building. The 500 sq.m. exhibition space is divided into four distinct areas - Identity, Inspiration, Fame and Creative Work - that cover every aspect of Burns' life through an innovative and thought-provoking interpretation. The displayed collection includes more than 5,000 historical artifacts, original manuscripts and pieces of memorabilia.

The National Trust for Scotland was keen to ensure that the Scots language would feature throughout the museum - from Scots words engraved on the wall of the museum exterior to the descriptions of artifacts given in Scots - making it the first museum to feature the language in this way. Encouraging visitors to actively participate in learning about Burns was also a key driver for the project and there are seventeen unique interactive exhibits to fire visitors' imaginations. Every hour the lights in the museum dim, and six projection screens sited above the exhibition displays show appropriate images to accompany readings from Burns' works.

One of the interactive displays is a "Burns Jukebox" that presents his popular tunes. A contemporary slant is provided by dividing these into "Floor Fillers", "Power Ballads", "Tear Jerkers" and "Punk".

Many exhibits are supported by audio programming, either through loudspeakers or through listening points with handsets. One of the most amusing is the "Cutty Stool", evidently the Scots equivalent of the "Naughty Step", where one is subjected to a suitably fire and brimstone sermon from a pulpit above the stool.

Another popular exhibit is "Shadow Portraits". Here visitors line themselves up with a camera that is set up to create a shadow portrait of the visitor's profile. This is then e-mailed to the visitor's home or phone. The accompanying "Usual Suspect" interactive exhibit allows visitors to create their own design for a shortbread tin.

The team that realized the new museum was led by the National Trust for Scotland, and included Event Communications as exhibit designer and producer, Paragon Creative as fit-out contractor and Spiral Productions as AV content producer. Construction manager was Capita Symonds, and David Hurst was the lighting designer. Electrosonic was the AV systems integrator, and its work was a joint effort between its Dartford and Edinburgh offices.

Photograph 1: Every hour there are readings from Burns' works heard throughout the museum and accompanied by images on the big screens overhead. 2: Many display cases are augmented by listening posts that provide interpretive commentary or readings. 3: The Burns Cottage is a short walking distance from the new museum. 4: The "Shadow Portraits" interactive exhibit. 5: One of the rooms in the cottage. 6: The new museum, 7: The "Burns Jukebox" exhibit presents Burns' popular tunes.

Infinity of Nations in **Manhattan**

Visitors to the National Museum of the American Indian (NMAI) at the George Gustav Heye Center in the Old Customs House in Lower Manhattan are discovering the beauty of Native American artifacts, and the stories behind those stunning objects, in the new permanent exhibition, "Infinity of Nations: Art and History in the Collections of the National Museum of the American Indian".

The new permanent collection reflects the geographic and chronological scope of the museum's collection, and includes magnificent headdresses, robes, beadwork, baskets and vessels, and works by contemporary Native American artists.

The 700 artifacts on display, arranged by geographical region from the tip of South America to the Canadian Arctic, are supplemented by ten linear video stations that display video clips, short texts and brief interviews with historians who help relate their stories. The stations comprise 15 inch Boland monitors with Alcorn McBride Binloop solid-state players.

Ten more interactive workstations highlight focal-point objects representing each region, including a Mayan bas-relief depicting a ball player, an elaborately-beaded Inuit woman's inner parka, a Chumash basket with a Spanish-coin motif and a Mapuche hand drum illustrating the cosmos. The interactive stations consist of Dell workstations, ELO 22 inch touchscreens and Dakota loudspeakers.

Playback equipment for the linear video stations and computers for the interactive workstations are housed in the museum's basement control room. Magenta Cat 5 video extenders feed signals more than 500 feet to the second-floor gallery. The control room also includes signal monitoring, DSP processing and a new AMX control system.

Electrosonic engineered the twenty AV based exhibits for "Infinity of Nations", working to a design by PPI Consulting.

Main Photograph: General view of the Infinity of Nations exhibition. Photo David Sundberg© Smithsonian NMAI. 1: The NMAI building in Manhattan. 2: Overhead directional loudspeaker, color matched to blend into the ceiling.

Museum of the Moving Image

Museum of the Moving Image in Astoria, New York, re-opened in January 2011 after a $67 million, three year remodeling and expansion project that doubled its size. Highlights include a 267 seat main auditorium equipped to show everything from early silent films to the latest digital 3D offerings, a completely reinstalled and upgraded core exhibition "Behind the Screen," a 68 seat screening room, an education center, a temporary exhibition gallery and much more. Electrosonic was the principal AV systems integrator.

Museum of the Moving Image opened in 1988 on the site of the historic Astoria Studio, Paramount's East Coast production facility in the 1920s. For the "new" museum Architect Thomas Leeser has completely re-ordered the ground floor with a series of cool white spaces, and added three floors to allow more activities. The museum is now, at 100,000 square feet, about double the size of the original.

Because the technical work was a mixture of "cinema" and "AV presentation", two consultants were appointed: Josh Weisberg was AV/video consultant and Michael diCosimo was cinema consultant. A similar approach was taken on the installation. The client required one overall contractor, and appointed Electrosonic to this role, however the "cinema" part of the project was subcontracted to Digital Media Services Inc (DMS) of New York City.

Electrosonic's contribution starts in the entrance hallway. Beside two 65 inch LCD screens showing scheduling information, a 50ft (15.2m) long projected mural animates the space. It is realized by five Barco RLM-W6 edge blended projectors, running from Dataton Watchout™.

At opening time the artwork presented was "City Glow" (2005), a seven minute video by Chiho Aoshima, in collaboration with Bruce Ferguson.

The ground floor of the museum is home to the Ann R. and Andrew H. Tisch Education Center that consists of flexible teaching spaces for which Electrosonic provided projectors, roll down screens and basic audio and control equipment.

The first floor landing is an informal space, the video screening amphitheater. Here video works are screened continuously and are viewed from bench seating.

The museum has two spaces for formal presentation. The 68 seat Celeste and Armand Bartos Screening Room is used for professional presentations of moving picture material. It is equipped with two reconditioned Century JJ 35mm film projectors and a Barco RLM-W8 video projector. The screen is multi format and can extend to 22ft × 9.5ft (6.7m × 2.9m).

The room is equipped with a multi-channel audio system that includes both a speech reinforcement facility and an assisted listening system. An AMX control system allows room control from the rack, from a docking touch panel that can be used at the front of the theater, and from push button

Main Photograph: The 267 seat main theater (Photo Peter Aaron/Esto. Courtesy of Museum of the Moving Image). 1: The ADR interactive exhibit. (Photo Peter Aaron/Esto. Courtesy of Museum of the Moving Image). 2: The video screening amphitheater (Photo Peter Aaron/Esto. Courtesy of Museum of the Moving Image). 3: The stop-motion animation interactive exhibit. 4: Historic exhibits in the "Behind the Screen" exhibition. 5: The entrance videowall. 6: The Celeste and Armand Bartos Screening Room.

panels sited next to the projection room viewing ports. The racks in this projection room also contain the control and source equipment for the entrance, amphitheater and classrooms.

The museum's main theater is an amazing space. The museum's press release said: "Conceived as a capsule for the imaginary voyage of moviegoing, the theater has a wraparound ceiling and walls made of 1,136 fabric panels in vibrant Yves Klein blue, altering the viewer's depth perception and encouraging a sensation of being suspended in the space. The triangular fabric panels are fitted together with open joints, with the lighting integrated into the panel system. With a screen of classic proportions and projection equipment for every format from 16mm to 70mm and high-definition digital 3D, the theater will provide an unsurpassed filmgoing experience. A stage accommodates the museum's ongoing series of discussions and other live events, while a mini-orchestra pit provides space for musical accompaniment of silent films."

The theater seats 267 people. The screen has a maximum size of 34ft × 18ft (10.4m × 5.5m) and motorized masking allows it to present all formats. The main film projectors are reconditioned Century 35mm/70mm machines from the original museum. The theater is equipped with a complete cinema audio system with Dolby® front end and JBL loudspeakers. For Digital Cinema, the theater is equipped with a Dolby® server and a Christie CP2230 cinema projector, fitted with the Dolby® 3D system.

For alternative video content a scaling switcher is provided, with new and legacy video sources. Overall room control is by an AMX system, optimized for both projectionist and presenter use.

The realization of the screening spaces required close co-operation between Electrosonic and DMS. DMS provided the "Cinema" equipment, including screen, refurbished 16/35/70mm projectors, digital cinema projector and Dolby® equipment; while Electrosonic looked after the rack build, AMX control and "AV" elements.

A centerpiece of the museum is the exhibition "Behind the Screen". (Electrosonic was involved with the AV installations for the original exhibition back in the early 1990s.) This integrates more than 1,400 artifacts from the Museum's collection, nearly four hours of AV materials, and interactive experiences that allow visitors to try their hand at creative processes used in making films and TV programs. As part of the expansion, "Behind the Screen" was redesigned with the assistance of Ali Hocek Architecture.

Exhibits of artifacts are supported by video displays of various sizes showing clips from related films and archival material. The popular "Automated Dialogue Replacement" booth, which shows how existing dialog can be replaced, invites visitors to, for example, "dub" their voices over the lines spoken by Tony Curtis or Marilyn Monroe in "Some like It Hot". At another exhibit, multiple stations allow visitors to create their own stop-motion animations.

Museum of the Moving Image has the flexibility to adapt nearly every wall as a potential canvas for digital art work. The AV design provides connections between every main space in the museum allowing for multifunctional use. The museum also houses a 4000 square foot (370 sq.m.) temporary exhibition space for video art installations, for which Electrosonic provided infrastructure components.

Great North Museum: *Hancock*

The Great North Museum: Hancock, in Newcastle upon Tyne, UK, re-opened under its new branding in May 2009 after a £26million investment in restoration and expansion. The museum's galleries cover such diverse subjects as Hadrian's Wall, the Ancient Egyptians and the Dinosaurs. Electrosonic delivered the AV systems within the museum galleries, including the equipment for a "build your own Hadrian's Wall" interactive, and a giant projected Egyptian frieze.

The public face of the museum is the original Hancock Museum building, which has been restored and expanded as part of the project. Farrells was the architect for the building renovation, and Casson Mann the designer for the exhibits. Becks was the fit-out contractor. Lighting design was by DHA Design, and AV consultancy by Phil Hartley Associates. AV and interactive content providers were Cogapp, Heritage Media, Art + Tek and Newcastle University. Principal IT and hardware contractor was Computacenter. Electrosonic was subcontracted to Computacenter in respect of the AV systems integration within the exhibit areas.

The audio visual content of the museum is characterized by being very well integrated into the exhibit design. So the interactive displays seem a natural part of the exhibit and are not obtrusive.

In the Fossil Stories Gallery visitors are invited to learn how fossils can help us discover the Earth's past, and in particular the strange creatures that have lived before us. A full size T. Rex skeleton is one of many exhibits supported by interactive information displays.

Main Photograph: The Diversity of Life display in the Living Planet Gallery includes several AV elements. 1: The imposing entrance to the Great North Museum: Hancock. 2: Interactive display and ambient projection screen supporting exhibits in the Fossil Stories Gallery. 3: The "wall building" display dominates the gallery. Part of the wall model is in the foreground, 4: Visitors can leave their mark.


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Hadrian's Wall

A whole gallery is devoted to Hadrian's Wall; not surprising since the wall itself is not far away, and the museum's collection includes many relevant artifacts. Two striking exhibits help interpret the Wall. First is a 22m long model of the wall that shows its topology and identifies the main geographical and archaeological sites.

Touch screen interactive displays are installed either side of the model to give more information about the most important sites.

A 6m high screen dominates the gallery. This shows a computer generated life size image of the wall being built, and is part of a "build your own wall" interactive exhibit.


3

Using a touch screen sited opposite the big screen visitors can put "another brick in the wall", and can inscribe the brick with their initials. The giant image is generated in real time using two computers and two projectors with butted images.

4

Scotch Whisky

The Scotch Whisky Experience, sited right next to Edinburgh Castle, opened for business in 1988. During the winter of 2008-2009 the visitor attraction was completely revamped and the "new" experience opened in May 2009. Electrosonic completed the AV installation for the attraction, which included synchronized lighting, sound and video for a dark ride.

AV AWARDS '10
WINNER
Consumer Installation of the year 2010

Main Photograph: The Barrel Ride at the Scotch Whisky Experience. Here visitors are passing a copper pot still. The tunnel of animated lights represents the cooling of the wash in a copper coil referred to as the "worm". Photo Adrian Ray. 1: The ghostly presence of Douglas McIntyre appears through a curtain of "raindrops". 2: The Mash Tun section of the ride is based on five 46 inch LCD displays.

While waiting to enter the Experience, visitors can look at a wall of historic photographs. One of them is a portrait of distillery manager Douglas McIntyre. The portrait is a little disconcerting, every now and again McIntyre's eyes follow you. McIntyre (played by actor Stephen Wren) is to become the "Ghost Host" of the first part of the attraction.

This is a dark ride, where the ride vehicles are "whisky barrels". As visitors board the ride an attendant uses a touch panel to select the required language; at present the system caters for no less than 15 different languages. Each barrel is equipped with a multi-channel audio system, augmented by sound from within the scenic elements of the ride.

The ride is divided into ten sections, each describing a separate stage in the production of malt whisky, such as malting, the mash-tun, distillation and maturation. Each section uses a combination of scenic elements, lighting effects and video images.

On leaving the ride visitors pass through a small exhibit devoted to the art of cooperage, and then in to one of two "Sensory Rooms" where they learn about the aromas and flavors of the different whisky producing areas of Scotland. They then proceed to the Diageo Claive Vidiz Scotch Whisky Collection, an amazing collection of 3,400 different bottles of whisky, the largest collection of its kind in the world. All these areas include AV and lighting control systems installed by Electrosonic.

The Scotch Whisky Experience appointed NGP Architects to deal with the architectural aspects of the upgrade, and Continuum as the exhibit designers for the attraction. RSP were the consulting electrical and mechanical engineers.

Lighting design was by Kate Wilkins Lighting Designers. Audio and video production for the ride was by Ay-Pe, of Fulford near York. Video production for the other exhibits was by Enigma 3D.

Principal contractor for the project was Laurence McIntosh Ltd; with Stage One responsible for the ride set works. WGH Transport Engineering of Doncaster supplied the Barrel Car Ride itself. Audio visual systems design and integration was by Electrosonic. The system was designed to meet the combined needs and specifications of the client, the show producers and the lighting designers.

Interactives at NASCAR

The new NASCAR Hall of Fame opened in Charlotte, North Carolina, in the spring of 2010. The exhibition areas feature over 100 linear and interactive audio visual exhibits. Giant imaging screens using three different technologies are installed on the exterior of the building, in the Great Hall, in the Hall of Honor and in the Belk High Octane Theater. Electrosonic was the AV systems integrator and provides ongoing support service to the site.

ProAV Spotlight Awards WINNER
Best Museum AV Project

Main Photograph: The Fan Billboard. The 14ft × 18ft (4.3m × 5.5m) central display consists of 252 Christie MicroTiles. The Glory Road is below. 1: The Ceremonial Plaza features a big LED screen. 2: The Belk High Octane Theater has a 64ft (19.5m) wide screen. 3: Engine interactive with a real engine. 4: The Hall of Honor. 5: The Pre-NASCAR Theater. An illlicit still is behind the glass on the left. 6: The Tracks and Shops interactive is based on a videowall using Planar 65 inch DLP™ "cubes".


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The National Association for Stock Car Auto Racing (NASCAR) runs 1,500 races a year. Its events are among those with the highest attendance in professional sports. The NASCAR Hall of Fame is designed to appeal to the fans, and to introduce the sport.

The exhibition was designed by Ralph Appelbaum Associates. Linear video media was produced by NASCAR's own in-house Media Group, and Unified Field produced the interactive content. Jaffe Holden was the AV consultant.

Visitors arrive at the NASCAR Hall of Fame via the outdoor Ceremonial Plaza. This features a 28ft (8.5m) wide LED display (from Panasonic) supported by a high power sound system. It shows live video for special events, and pre-recorded content at other times. On arrival within the hall, visitors are greeted by a welcome display that uses six portrait format screens.

Having checked in, visitors move to the Belk High Octane Theater. They enter at the front of the theater through doors that let them pass under the screen. Once they are in the 278 seat auditorium the screen silently drops down, the lights dim and an intense twelve minute history of NASCAR is presented on a panoramic screen by Extron JMP9600 JPEG2000 players and three Christie 3-chip DLP™ projectors, supported by a 10,000 Watt audio system.

Visitors leave the Belk Theater and enter the Grand Hall, a big open area used for special events dominated by the "Fan Billboard". The high resolution display shows a mixture of graphics, live video, and action footage.

The Grand Hall is the start of the "Glory Road", a spiral walkway leading up to the next floor, accompanied by a banked ramp that simulates the banking at a number of race tracks - the most extreme being 33°. Many actual NASCAR automobiles are displayed on the ramp, and along its edge video screens describe the vehicles and the tracks that they race on.

At the top of the Glory Road visitors enter the "Hall of Honor" where the Hall of

Hall of Fame

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Fame inductees are presented. This area includes exhibits devoted to the current individual inductees, a directory system, and a massive projected frieze that surrounds the space and honors the heroes of the sport. The projected frieze is achieved using 16 Panasonic DLP™ projectors fed from a Dataton Watchout system. The complete oval display is 150ft (46m) long.

Visitors move from the Hall of Honor to the "Race Week Experience", a behind-the-scenes look at how a NASCAR team prepares for race day. It is from this point onwards that the Hard Card is used. The top floor of the Hall includes exhibits showing the history of NASCAR and its forerunners, including its origins based in part on cars fast enough to out run the police in the bootleg liquor era.

6

The Hard Card

The interactive exhibits at the NASCAR Hall of Fame are designed not only to impart knowledge, but also to engender an appropriate spirit of competition between visitors. On arrival visitors are given a "Hard Card" (based on RFID technology) which they use at each interactive exhibit. Visitors first "check in" so their card is on the database.

At each exhibit visitors accumulate "points" depending on their skill. At any time they can check their points status and see how they are doing relative to other players.

In all there are seventy-five interactive exhibits. Some are in "Quiz" form, but others are "physical". For example the "Engine" interactive has a real engine , the "Wheel Changing" exhibit gets visitors changing a real wheel, and in the Race Shop car parts are identified with a bar code reader. Quiz style interactives include "Pit Penalty" where visitors watch pit stop routines and have to identify rule transgressions.

The Hard Card is placed on a reader at each interactive exhibit.

One of the Hard Card check-in stations.

This screen shows that the visitor has accumulated 491 "points" at eight sections of the exhibition.

Exploration Space

at the Kennedy Space Center

ProAV Spotlight Awards WINNER
Best Government AV Project

Exploration Space, the first attraction at Kennedy Space Center Visitor Complex to examine the future of space exploration, combines live theater, interactive exhibits and new media components to engage and inform audiences about the next 20 years in space exploration. The exhibit opened in 2010 and was designed and produced by BRC Imagination Arts in conjunction with Delaware North Companies Parks & Resorts and NASA. Electrosonic designed, integrated, programmed and installed the exhibit's entire AV system, including projection, audio, video and show control.

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The introductory exhibit, "Your Destination," provides a portal into the universe. Visitors peer through a giant window to a 224 × 168 inch (5.7m × 4.3m) rear projection screen; a Christie DS+6K-M projector displays enormous images of the moon and Mars, giving the impression of viewing these destinations from deep space.

Alongside the window is a 46 inch LCD monitor with accompanying audio that details possible missions during the voyage. Both the portal and the monitor audio and video content are sourced from Extron MPEG2 HD video players.

"On The Shoulders of Giants", presented on a 65 inch LCD screen, features extensive animation to point out how the next generation of spacecraft will improve upon the work of previous generations including the space shuttle and the Saturn V moon rocket.

Visitors test their maneuvering skills at interactive kiosks featuring Dell game stations. Using throttles and shifters, players attempt to dock their vehicle to the International Space Station in "ISS Rendezvous" and try to achieve a safe and soft moon landing in "Lunar Lander."

Exploration Space is configured as a live theater environment with numerous exhibits that engage visitors when no live show is underway. For example, five 15 foot (4.6m) acoustically transparent screens display an informative video loop on space and the stars. Two additional 15 foot screens demonstrate "Space Dangers," such as an asteroid hit or an oxygen leak in the spacecraft, and "Surface Dangers," such as dust and wind hazards on the moon or Mars. Visitors trigger these short animations with a button push on a small kiosk; a Medialon show control system accesses Dataton WATCHOUT media storage.

Main Photograph: The main show "Explorers wanted" features a live presenter and six projected images. 1: The "Your Destination" exhibit. 2: The Lunar Landing Simulator, adjacent to the live show area. 3: The Orbital Docking Simulation. 4: The "Space Dangers" display.

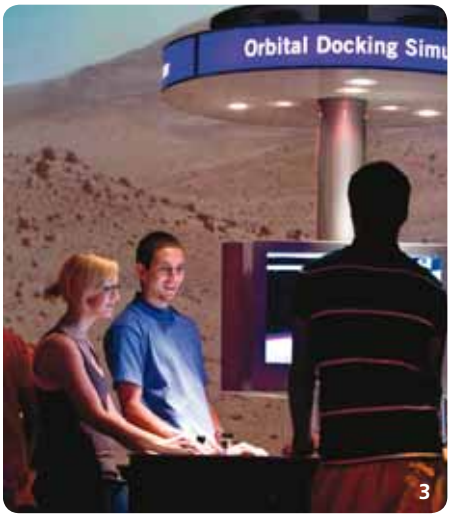
Multi-Screen Live Show

Twice every hour, the exhibit space transforms into a live theater environment for the show "Explorers Wanted". During the pre-show, visitors sit on bench seats as a presenter takes the stage to inspire the audience to become part of a NASA mission and the future of space exploration. Then the main show is displayed on a series of geometrically-shaped screens. The primary content is shown on a large center screen and a secondary circular screen, stage right. Two additional projectors also display content on four trapezoidal screens, which become progressively larger as they arc over the top of the main screen.

For the live show the primary challenge was creating a smooth interface between the automated equipment and the onstage presenters. A lot of time was spent on custom programming the Medialon software to interact with the WATCHOUT server, the projectors, and the presenters who take visitors through the show. Additional WATCHOUT programming was required so each of the two projectors could display content on the trapezoidal-shaped screens without images bleeding onto the wall.

As visitors prepare to exit the attraction they are invited to "Stay Connected" at sign-up stations in four interactive kiosks. Their images are captured by webcams and composited inside astronaut helmets in shots showing them performing various space-related activities. Visitors get to see their astronaut selves on 24 inch monitors in portrait mode and can email the fun shots back home or to friends.

Prior to the commencement of the installation, Electrosonic's Design Consulting team was tasked by the exhibit designers to provide the AV designs from concept through design development; and after installation was complete Electrosonic trained the visitor complex technical staff on the operation and maintenance of the system.



All photos illustrating this article are from BRC Imagination Arts.

New Lift-off for **Saturn V**

ELECTROSONIC WORLD No 9 carried a big story about the Firing Room Theater at the Apollo/Saturn V exhibit hall at the Kennedy Space Center. Recently, fifteen years after the original installation, Electrosonic carried out a major refurbishment of the main show and video systems.

MAYAD Inc, a sister company of MYdesign of Orlando, FL, was responsible for the overall project which involved the refreshing of all the show elements and the addition of new show features. MAYAD was contracted to the facility management company, Delaware North Companies Parks and Resorts at Kennedy Space Center Inc, and appointed Electrosonic to re-engineer the show control, video and audio systems.

The attraction includes a pre-show given on three screens, now served by Christie LX505 projectors, and arranged for a standing audience. As the pre-show ends, automatic doors slowly open to reveal the Firing Room.

The Firing Room Theater is a re-construction of the original, but is authentic in that all the operator consoles are the real thing. Back in 1996 Electrosonic re-wired these consoles to allow indicator lights on them to be programmed as part of the show, and to fit new CRT monitors. The recent upgrade makes more dynamic use of the console lights, and has required extensive service and replacement of the CRT monitors which are becoming difficult to source.

Technology developments meant that the original six racks of AV and show equipment have shrunk to only two. Equipment was chosen to match, as far as practicable, equipment used in other attractions at Kennedy Space Center (many installed by Electrosonic). Alcorn McBride Bin Loop solid state video players, Crown CT amplifiers, Peavey NION audio processing, and JBL and EAW loudspeakers are all featured.

Main show control is by an AMX NI controller, using timings from the original show. It is linked to an existing Allen Bradley PLC that controls elements such as the automatic doors and alarm systems.

The original installation was one of the first users of big LCD projectors, projecting onto three 14ft × 10½ft (4.3m × 3.2m) rear projection screens. The new installation uses Christies DS+6K-M projectors based on DLP™ technology.

Open captioning is provided in both theaters, and is based on the use of separate LCD panels (NEC V4215).

During the commissioning of the installation Electrosonic staff witnessed the final launch and safe return of the space shuttle Discovery.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Photograph 1: The Firing Room Theater showing the "lift-off" sequence. The consoles are the genuine article from the 1960s. 2: The pre-show. 3: The stage separation sequence.

Jodrell Bank Discovery Centre

The 250ft (76m) diameter Lovell Radio telescope was completed in 1957 and gained early fame by tracking the first Russian and American satellites. Today, after several upgrades, it is at the heart of the Jodrell Bank Centre for Astrophysics run by the University of Manchester. Its associated visitor center has moved into new buildings, with new exhibitions on astronomy and the work at Jodrell Bank.

Jodrell Bank Discovery Centre opened its new exhibition in April 2011. Visitors arriving at the site first enter the Planet Pavilion and are greeted by a "Live Science Wall" which explains the current work of the Lovell Telescope. In it a 42 inch LCD panel carries "live" images from the telescope. A separate area "Our place in the Universe" includes touch screens that give information about the solar system.

The main interactive exhibition is in the separate Space Pavilion. Here a "Film Pod" shows films on the history of Jodrell Bank on a continuous basis, and interactive exhibits cover topics such as the Big Bang, Pulsars, and Black Holes. One exhibit, based on an infrared camera, demonstrates the importance of non-visible radiation.

The team behind the new visitor facilities consisted of Jodrell Bank Discovery Centre as end client; Thomas Matthews Ltd and Norton Allison Ltd as joint exhibition designers, Horseshoeshape as media producers and The Moule Partnership as fit-out contractors. Electrosonic provided the AV systems under sub-contract to the Moule Partnership.

Photograph 1: The infrared camera exhibit. 2: The Lovell telescope dominates the site. 3: The "People of Jodrell Bank" exhibit uses directional overhead loudspeakers to confine the sound to the exhibit area. A touch screen allows visitors to select a "Jodrell person" and ask him or her questions about their work.

Videoconferencing at the John Hope Gateway

Established in 1670 as a physic garden next to Holyrood Palace, The Royal Botanic Garden in Edinburgh (RBGE) opened a new visitor center at the West Gate of the current site of the Garden in October 2009. The center is named after John Hope, the RBGE's Regius Keeper from 1761 to 1786.

The John Hope Gateway provides orientation information about the RBGE. The building itself, by Edward Cullinan architects, is designed for sustainability. It includes a restaurant, a new Botanics shop, an outdoor plant sales area, a Real Life Science Studio, an education room and an exhibition area.

Graham Russell of Atticsalt in Edinburgh was appointed designer for the exhibition and studio areas. Sheena Irving AV, Circa Media and BM Media were commissioned to produce AV and interactive content; and Thomas Johnstone Ltd was the main fit-out contractor. Electrosonic was responsible for the AV systems integration.

The exhibition is based on two themes; the globally important scientific and horticultural work carried out by the RBGE and biodiversity. The exhibition is made up of free standing display cases, the majority including self-contained video replay systems, with 17 or 19 inch LCD screens, to help tell the story. Exhibit subjects include "Our work", "Our gardens", "Biodiversity in Scotland", "Biomimicry", "Plant diversity" and so on.

From an AV perspective the most complex part of the installation is that in the Real Life Science Studio. The intention here is to bring the RBGE's scientific work to life, and where appropriate or necessary to include remote participants. The space is fitted with a Polycom HDX videoconferencing system with three cameras and a Polycom Sound Structure audio system with six radio microphones.

Photograph 1: "Caring for Global Biodiversity" shows how RBGE works on projects all over the world. 2: Welcome screens show what's on, 3: The Real Life Science Studio.

Thea Awards

The Thea Awards, presented by the Themed Entertainment Association, recognize the creation of outstanding visitor experiences. The awards are given to the attraction concerned, and are highly valued because only a small proportion of submissions actually receive an award.

Naturally those who have contributed to the creation of award winning attractions do like the reflected glory, and Electrosonic is no exception. In the awards presented in March 2011 three of Electrosonic's clients received Theas.

"Beyond All Boundaries" at the World War II Museum in New Orleans, produced by The Hettema Group, won an award for "Outstanding Achievement - Museum Attraction" and this is described on page 22. The ICT Mobile Device at the Information & Communications Pavilion, produced by BRC Imagination Arts, at Shanghai Expo 2010 was awarded a Thea for "Outstanding Achievement for the Integration of Technology and Storytelling". This is described on page 44.

A truly impressive "Thea score" was achieved by "The Wizarding World of Harry Potter™" at Universal Islands of Adventure® in Orlando. This received no less than four awards, with the two relevant ones being for "Harry Potter and the Forbidden Journey™" which won Outstanding Achievement Awards for both "Feature Attraction" and "Technical Achievement".

Electrosonic is proud to have been a member of the team that realized "Forbidden Journey". The company worked closely with Universal Studios' creative team over a period of three years to develop the high resolution video presentation systems required by the innovative ride.

Photograph: Hogwarts™ Castle, home to the "Harry Potter and the Forbidden Journey™" ride at Universal Islands of Adventure®.

3D at Skistar's Experium in Sweden

The Experium is a leisure center with a difference. It is in Lindvallen in the Salen skiing area of Sweden and is a Skistar development. It provides "off piste" entertainment for the local lodges, including restaurants, bars, swimming pool, fitness center and a luxurious 3D Cinema.

The cinema, with fifty-two seats, is equipped to the highest standards. It can be used both as a cinema and as a presentation/meeting space. In cinema mode it can show films in either 2D or 3D to the full DCI specification. To do this it is equipped with an NEC NC1600 Digital cinema projector, a Doremi DCP2000 media server, a Dolby DMA8+ cinema processor, and the Dolby 3D system.

The screen has motorized masking with a maximum opening of 7m × 3m (23ft × 10ft). The 5:1 audio system uses QSC amplifiers, Martin Audio Blackline main screen and sub-bass loudspeakers, and Turbosound Impact 55 surround loudspeakers.

For presentations the auditorium is fitted with a Crestron control system allowing complete flexibility in use. A separate NEC NP4001W projector is used, and can be fed from many different sources.

Electrosonic was the principal AV contractor for the cinema project, working through its Stockholm Office. Sound Associates was the specialist cinema equipment sub-contractor.

Photograph 1: Winter view of the Experium. 2: The NEC cinema projector. Main system control rack in the foreground. 3: The comfortable auditorium.

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Flight of the **Dragon**

OCT is a major developer with a network of theme parks throughout China. In 2010 it invested in two new "flying" attractions in its Happy Valley park outside Shanghai and its Window on the World park in Shenzen, north of Hong Kong. A consortium consisting of Huss Park Attractions, Super 78 Studios and Electrosonic realized the rides.

Although sited nearly 1000 miles apart, the two attractions are almost identical. However, the Shanghai ride, "Flight of the Dragon" provides an aerial journey over China, showing vast landscapes, metropolitan areas, terraced farming and mountain ranges, while the Shenzen ride, "Flying America" depicts the scenic United States of America.

The attractions feature three ride arms with thirty seats per arm in rows of ten. Seats are at ground level at the start of the ride and then rise to the vertical show position, forming top, middle and bottom rows viewing an immersive 80ft (24.4m) diameter compound curved screen.

The ride arms move synchronously with the video images and sound effects, giving the feeling of flying over the scenery of each country as wind effects, water sprits and scents are delivered at appropriate moments.

Super 78 Studios was responsible for the media content, with the show being written and directed by Brent Young. The complete ride mechanism was engineered by Huss Park Attractions, and Electrosonic was responsible for video, audio, special effects and show control. This responsibility extended to design leadership in respect of the placement of the ride vehicles in relation to the screen, the room configuration, equipment location, and the design of catwalk systems for easy equipment access.

The projection system uses four Christie HD18K projectors with custom lenses. The content is sourced as four 1920×1080 DVI streams from a DVS server, via a 3D Perception image processor that deals with the required image blending and geometrical correction. The perforated aluminum domed screen was built by Spitz.

The audio system derives twelve channels of digital audio from the server which are fed to a Peavey MediaMatrix™ system for processing. JBL loudspeakers are used and are deployed as eight channels behind the screen, left, right and rear surround channels, and a sub bass channel. Analog SMPTE timecode is derived from the audio system and fed to the Huss ride system for synchronization.

Overall show control is by a Medialon show controller. The special effects installed at each seat (fan, water sprit and scent dispenser) were supplied by Back Stage technologies. Shenzen based Artco and Digitop of Hong Kong were subcontractors to the consortium.

Photograph 1: This photo shows the ride arms moving into the upright show position. 2: The big screen seen from behind the ride arms. 3: The projectors are installed as two pairs 59ft (18m) above floor level.

LED at Kuwait 360 Mall

An all-around immersive mall experience came to Kuwait in 2010 where Electrosonic designed, supplied, installed and programmed extensive LED lighting, digital signage, video projection, special effects, audio and show control for the new 360 Mall's Family Entertainment Center complex. Electrosonic also provided what is believed to be Kuwait's largest LED video wall to the circular mall, which has become a go-to destination in Kuwait.

Created by Tamdeen Entertainment Company and designed by Concept i Design to the highest international standards of world-class leisure venues, the Family Entertainment Center offers top-of-the-line rides, the latest video games and skills tests for the entire family.

Electrosonic's work in the complex spanned eighteen months and the scope included the Infunity area, Bowl Room and Freeze Club.

Infunity

Electrosonic set the mood for fun in Infunity where 67 Studio Due LED fixtures wash the games area and generate excitement with color changes. Columns of Lagotronics LED strip lights at the entrance also rapidly change color as guests arrive.

Twelve NEC LCD displays are scattered throughout the area to deliver advertising and mall information. An entire wall of eighteen displays, consisting of a 103 inch Panasonic plasma screen surrounded by smaller NEC LCD displays, form an art installation in the middle of Infunity's large atrium.

Electrosonic constructed two custom low-resolution LED video walls featuring over 5,000 Artistic License LED "pucks" attached to Plexiglas panels. Their abstract, color changing imagery amps up the energy behind two rides.

Infunity's Yaham 10mm LED video wall, measuring 25 x 15ft (7.68 x 4.8 meters), is believed to be the largest in Kuwait. It primarily displays advertising, but is also equipped for live feeds such as, in 2010, the FIFA World Cup games from South Africa.

Two special-event spaces also came in for Electrosonic's attention: the two Party rooms sport their own audio, video and lighting systems, and the Special Event Stage features a dedicated sound system and basic lighting package.

But, that's not all. Electrosonic furnished smoke and snow machines and strobe lights for the roller coaster, rope course and climbing wall. And in a kids' play area, a Christie DS+750 projecting onto the floor combines with GestureTek technology to enable children to interact with content of popping balloons and swimming fish.

Bowl Room

The complex's twenty lane Bowl Room is designed to fulfill the desires of any bowler. Guests are welcomed to the area by a pair

of digital signage systems featuring 56 inch NEC LCDs. Behind the registration counter a low-resolution Schnick-Schnack-Systems LED wall sets the scene with visual effects, color changes and logo displays.

Pulsar LED fixtures in each lane point upward and wash the ceilings. Pulsar LEDs also shine through a Plexiglas floor to illuminate a separate gaming area with pool tables.

Chandeliers may be an unexpected addition to a bowling alley, but nine custom fiber-optic chandeliers provided by Electrosonic and suspended over the entrance, seating and food service area will dazzle guests. A Martin fixture sources all the lights for the chandeliers, which feature more than 3,500 individual strands of color-changing fiber. The tables in the dining area offer buttons, which guests can push to stop the chandeliers changing colors and start flashing a red and white pattern to catch the attention of servers.

The Bowl Room also has a separate VIP bowling area with an ultra modern, streamlined look. These lanes are also energized with Pulsar LED fixtures, and an iPod docking station, integrated with a JBL background music system, enables guests to mute the soundscape and plug in their own music for parties.

Freeze Club

The North Pole motif of the Freeze Club offers a unique venue for Kuwaiti teens with arcades, video games and simulators.

Electrosonic installed fifteen LCD digital signage systems in the club to display advertising and information. An interactive video wall at the entrance features two Christie DHD700 projectors and GestureTek cameras and tracking systems that permit young guests to interact with the content. A fog machine generates ground fog underneath the video wall.

A low-resolution Schnick-Schnack-Systems wall boasting over two thousand meters of LEDs wraps around the entire room and displays fire, rain, graphics and abstract patterns. A laser system, installed by Electrosonic, recreates the Aurora Borealis on the domed ceiling and is enhanced by smoke effects.

Nine sound domes create isolated audio zones over the seating areas so guests can plug in their iPods and enjoy the music they want to hear.

Throughout the complex, over 100 JBL speaker arrays provide background music. Infunity, the Bowl Room and Freeze Club each has a central control room with several special-purpose satellite EERs (Electronic Equipment Rooms). The main EER for Infunity, for example, also includes a DJ booth with a window overlooking much of the facility; the DJ booth controls system power, music and lighting changes and screen content. Centrally located Medialon servers control digital signage throughout the complex.

While all engineering, commissioning and programming was carried out by Electrosonic, additional local labor and support was provided by aDawliah.


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Main Photograph: The LED video screen in the Infunity area. 1: Low resolution LED video display behind one of the attractions in Infunity. 2: The entrance to the 360 Mall. 3: The bowling lanes. 4: One of many striking lighting displays at the 360 Mall. 5: The central feature in the Infunity atrium features a Panasonic 103 inch plasma screen.

Dolphin Tales

in Georgia

An inspiring theatrical production starring Atlantic bottlenose dolphins is thrilling and amazing visitors at the newly-expanded Georgia Aquarium in Atlanta. Electrosonic played a major role designing, supplying and installing all the audio and video equipment required by the show. In addition, the Design Consulting team at Electrosonic took on the production's complex AV and show control systems design.

Electrosonic's work supported entertainment design and production company WOW!Works (based in Clermont, FL) which created "AT&T Dolphin Tales", a sweeping twenty-five minute musical tribute to the beauty and grace of dolphins. The indoor show is staged in a new multi-function auditorium that seats 1,800 people and houses 1.8 million gallons of water in four pools. Five tall organic shapes, evocative of upright dolphins' tails, rise above the performance pool. The tails are actually complex, curved aluminum structures that cover an area about 80ft (24.4m) wide and 40ft (12.2m) high, and serve as innovative projection surfaces for video, graphics and lighting effects.

The spectacular AT&T Dolphin Tales story is narrated by the StarSpinner, a mysterious seafaring adventurer who leads the way through an interactive journey across the oceans. The timeless tale of good and evil is marked by exhilarating performances that highlight the strong emotional bond between humans and dolphins, and delivers a powerful message of the importance of aquatic creatures and the need to care for them. The show is a hybrid of (both human and dolphin) live performance and automatic show control, based on pre-recorded multi-track audio, video playback, and programmed lighting and special effects.

One of the biggest decisions the team made was to locate as much AV equipment as possible in the control room to protect it from the saline atmosphere of the dolphins' salt-water pool. The architect allowed for a control room that almost spans the width of the theater and is divided into an audio booth, amplifier room, projection booth and lighting booth with extra room for stage management. Loudspeakers

and antennae are the only items of AV equipment not in the control room.

For the video system, the team selected Green Hippo Hippotizer HD media servers connected via DVI to seven Christie Digital S+20K projectors edge-blended in two stacks of three, plus one on center. The center projector forms a flat image on a screen that drops down over the pool in front of the main set. The other screens are the complex curved aluminum structures.

The Hippotizers handle media playback and content masking on independent video layers, as well as pre-show in-house advertising content and audio playback. They receive LTC (Linear Time Code) from a Medialon show control system and sit on their own HippoNet with a single network bridge to the main AV network.

The audio system is wired for 7.1 surround sound and features an L-Acoustics speaker system with KUDO and ARCS arrays. Audio mixing and processing is by a Digidesign D-Show Profile mixing console, with onboard snapshot® automation that stores audio information on the different actors who perform in rotation in the show. During the show, live audio from Sennheiser handheld wireless and wired microphones is mixed with the prerecorded music tracks, which were mixed on site in the theater. Waterproof VHF wireless microphones are provided for the dolphin trainers, and Clear-Com Encore equipment is used for intercom.

Electrosonic was also contracted by the architect to design the AV systems for the dolphin gallery lobby. They include a background music system, a nine-screen LCD videowall and circular rear-projection screens above visitors' heads, which dispense educational content provided by the aquarium. The lobby system is linked to the AT&T Dolphin Tales control booth system for audio and control; at the end of the dolphin show, the show playout music minus the vocal tracks, is sent to the lobby system, so it accompanies the audience as they walk out of the theater and back to the lobby.

Electrosonic was a member of a team that, besides WOW!Works, included Atlanta-based program manager Heery International, St. Louis-based architect, PGAV, and Atlanta builder, Brasfield & Gorrie. Contributors to the show included lighting designer, David Agress, and lighting and special effects system supplier the Magnum Companies. Scenic fabrication and engineering was by Infinite Dimensions and Maclaren Engineering. The Georgia Fountain Company provided the scenic waterworks.


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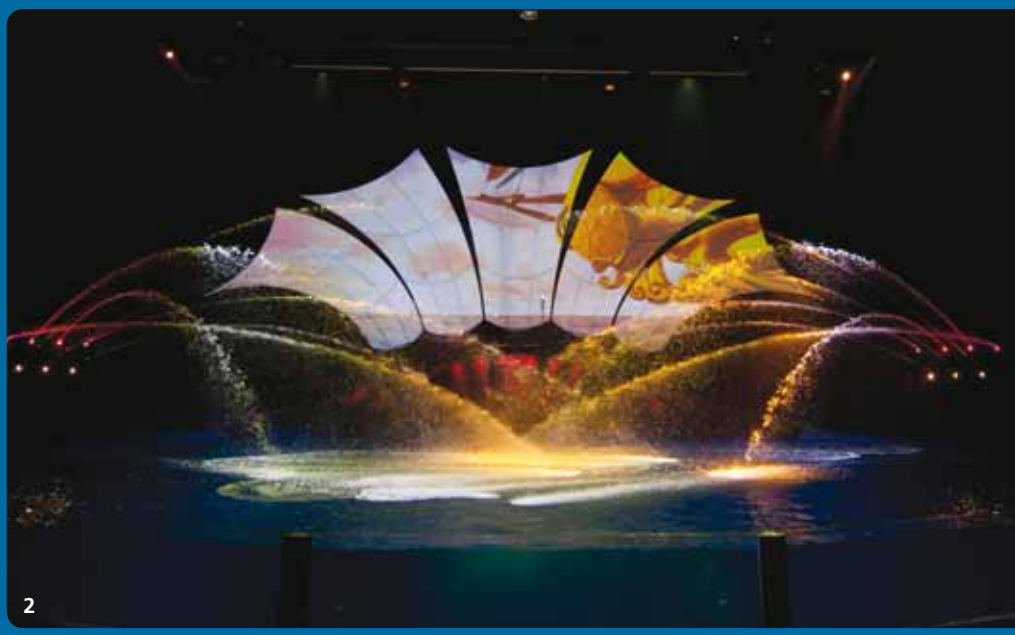
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Photograph 1: The StarSpinner. 2: Effective use is made of the "dolphin tail" screens, and high capacity fountain systems add to the fun. 3: The impressive 1,800 seat auditorium in relation to the main show pool and screens.

Photos courtesy of Georgia Aquarium and Zack Brown

Shipbuilding in Shanghai

The Shipbuilding Pavilion at EXPO 2010, sponsored by the China State Shipbuilding Corporation, occupied part of a huge building formerly part of the old shipyard. Unlike most of EXPO, it is permanent, and is to become the Shipbuilding Museum now that the EXPO is over. The Exhibition was designed by Ralph Appelbaum Associates. Electrosonic was the AV systems integrator, and also provided service during the run of EXPO.

Electrosonic installed audio, video and show control systems on a massive scale, including projection systems, background music and show audio systems, touch-screen interactive systems, touch-film interactive systems, gesture interactive systems, and lighting control.

On the display front ninety projectors were installed, as well as a video wall and twenty-three plasma and LCD displays of various sizes from 24 inch to 103 inch. The majority of the projection installations required image edge blending and/or warping to achieve the unusual screen geometries. On the audio side there were seventy-two individual audio inputs and ninety-four individual audio outputs feeding one hundred and fifty loudspeakers.

One of the first areas in the pavilion was the "Central Business District". This area used all sorts of electronic images, including a videowall, several large back projected images, and LED video screens.

The building featured a number of ramps which led visitors to the top. The first ramp had four projected images on the walls; the projectors here, as in most of the pavilion, were Panasonic PT-FD6000 DLP™ projectors. Seventy-five projectors of this family were used in the pavilion, with screens requiring more lumens being served by projectors from the Christie stable.

For example, an exhibit called "Energy Park" came next, and this required a big continuous image on two walls. This necessitated the use of Christie DS+750 projectors equipped with external blend and warp gear to ensure an undistorted image at the curved corner.

The pavilion had some notable interactive displays. An amusing example was provided by the "Aquarium" exhibit. This was a real aquarium with a difference. A Gesturetek system, based on infrared cameras and illuminators, detected images of the fish and of visitors pointing to particular fish. An appropriate caption bubble appeared on the aquarium glass, with the fish telling visitors what he is thinking.

The most ambitious interactive display was "Sailing City Construction". Here ten video projectors were positioned to create a single edge blended image along the length of a walkway. Cameras positioned overhead captured visitor movements and allowed them to interact with images on the screen. Up to five visitors could interact with the exhibit simultaneously.

The climax of the pavilion was "City Hall" with a main feature "Revealarama" that presented a spectacular show on a 177ft × 20ft (54m × 6m) screen. This used seven


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Christie HD 10K 3-chip DLP™ projectors to create the massive picture, and they were fed by Extron JMP9600 JPEG2000 players. A suitably massive sound system with belly wobbling bass provided the accompaniment.

In the VIP suite of the Shipbuilding Pavilion honored guests could see the show through a glass partition. But this same glass (by virtue of being laminated with PDLC film) could become a back projection surface, and the new display was that of a ship's bridge simulator. VIPs could try their hand at steering the ship down the river in Shanghai. The projectors for this stunt were actually in the Revealarama auditorium, but the audience in there were unaware of them.

All source equipment was centrally installed in a dedicated electronic equipment room. The distances within the pavilion were sufficiently great that fiber optic distribution was used for all signal distribution (except loudspeaker level signals).


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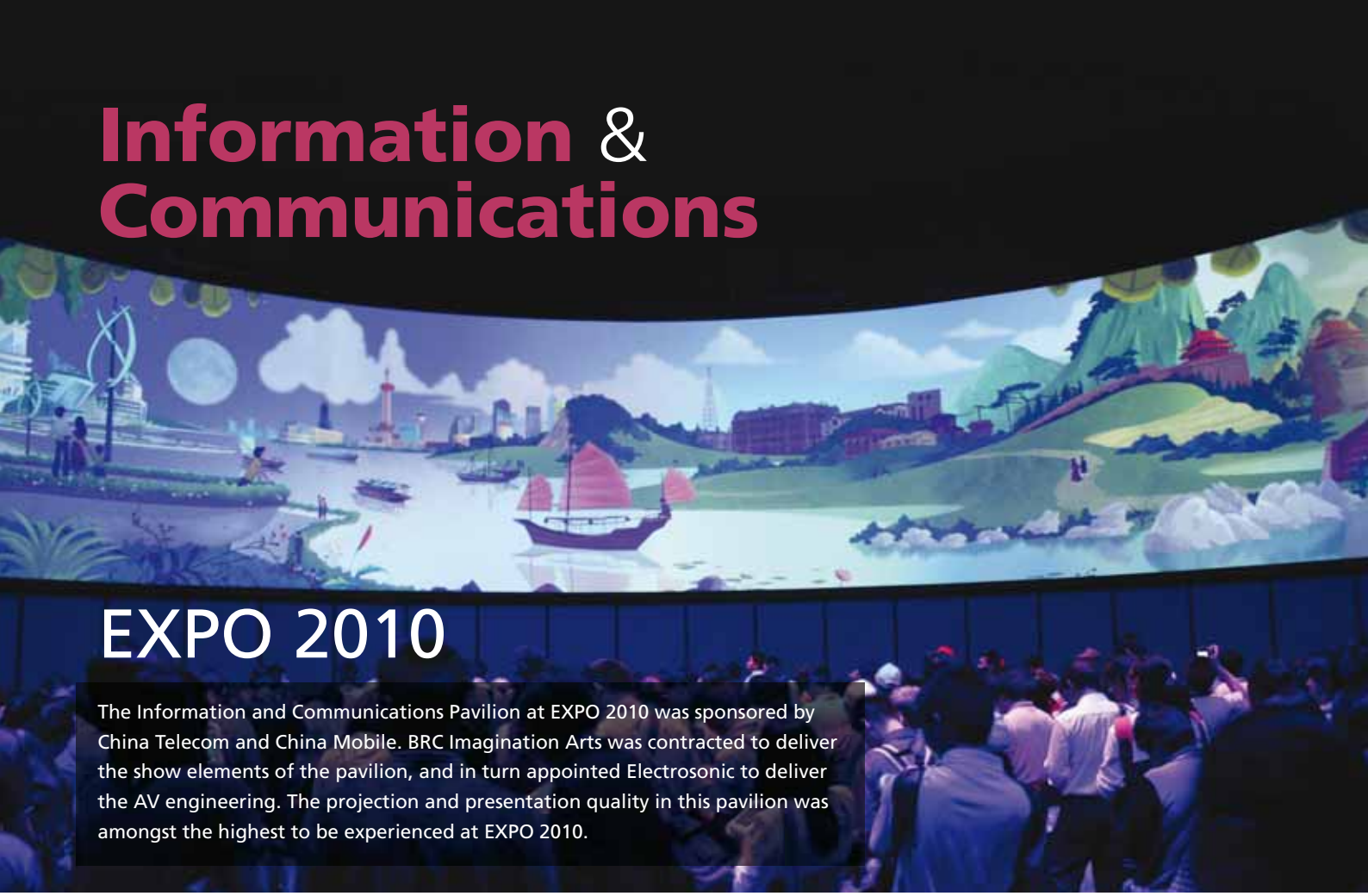
Main Photograph: The "Sailing City Construction" gesture activated interactive display needed ten projectors and accommodated five simultaneous users. 1: The pavilion entrance, 2: Exterior of the pavilion. 3: The first ramp. 4: Central Business District. 5-6: The Aquarium. 7: The Ship's Bridge Simulator. 8: Part of Revealarama's 177ft screen. 9: The Food Production Gallery with projected murals and table images.

Information & Communications



EXPO 2010

The Information and Communications Pavilion at EXPO 2010 was sponsored by China Telecom and China Mobile. BRC Imagination Arts was contracted to deliver the show elements of the pavilion, and in turn appointed Electrosonic to deliver the AV engineering. The projection and presentation quality in this pavilion was amongst the highest to be experienced at EXPO 2010.

While waiting in line, visitors were treated to a preview of the pavilion displayed on LCD screens that did successfully compete with sunlight (Sunbrite weather-resistant 42 inch displays).

On entering the pavilion visitors were issued with the ICT (Information and Communication Technology) Mobile Device, a unique handheld personal communications device that interactively provided guests with additional content that enhanced the main presentations in the pavilion. Electrosonic undertook the initial research and specification for the handheld device and installed the 802.11 wireless network for the ICT, enabling visitors to interact with the pavilion's show elements. A Medialon Manager master controller sent cues via the wireless network to allow ICT-equipped visitors to follow in sync with all the shows. The ICT device itself was sourced, designed and programmed by Linkon, a Chinese technology company.

Having obtained their ICT, visitors could practice with it while waiting in a holding area before entering the first of two theaters. The first show, "Progress Begins as a Dream" documented the history of communications in China on a 68 foot (21m) wide curved screen. The animated film was accompanied by programmed color lighting coordinated with the animation.

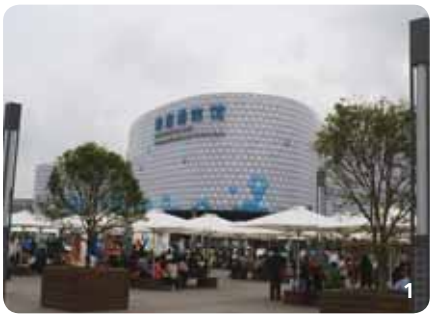
Visitors then moved into the "Dream Big Multi-Dimensional Interactive Network Theater" for the main show presented on a huge 71 × 38ft (21.6 × 11.6m) screen, and on thirty-two ceiling panels that formed an immersive canopy arching over the audience.

Both shows featured high quality multi-channel sound. The sound track of the main show was particularly impressive, enhanced by powerful low frequency transducers fitted to the auditorium seating.

After enjoying the main show visitors moved to a post show exhibition area where they could play the "Dream Lantern Collection Game" using their ICT Mobile Device to interact with the exhibits using RFID technology. Visitors could collect dreams, win prizes and learn more about future information and communication technologies.

Visitors returned their ICT Mobile Device as they exited the pavilion; however, when they were back home they could retrieve their collected dreams and virtual prizes, and could connect with other dreamers by visiting the Information and Communications Pavilion's social network website.

The Information and Communications Pavilion not only had one of the highest quality shows to be seen at EXPO 2010, but also successfully demonstrated a new show dimension by the introduction of the ICT Mobile Device.



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Main Photographs: (left) The first show "Progress begins as a dream" was presented on a 68ft (21m) wide screen, (right) The "Dream Big" main show, presented on a 71 × 38ft (21.6 × 11.6m) screen, augmented by a 32 screen "canopy". 1-2: Day and night views of the pavilion. At night the exterior presented a continuous light show. 3: The ICT handheld device. 4: The holding area gave visitors time to practice with their ICT mobile device. 5: A part of the post show exhibition area. 6: The touch screen show control panel provided both simple operation and in depth maintenance access.


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Show Technology

In common with all the projects that Electrosonic was involved with at EXPO 2010, the engineering for the Information and Communications Pavilion had to be completed within a short timescale. Systems had to be designed for total reliability and ease of maintenance. On the other hand most were only required to operate for around eight months, and this permitted some solutions that would not be appropriate for fully permanent installations.

At the outset Electrosonic Design Consulting provided guidance to BRC's exhibit designers on AV equipment selection, projection geometry, facility impact, and budgeting. Electrosonic Operations then completed engineering, shipping and installation. It also provided full time support throughout EXPO and managed the decommissioning after its close.

The projection equipment selection included five Christie DS+6K-M single chip DLP™ projectors for the first show, and four Christie HD10K-M three chip DLP™ projectors for the main show. Both shows required the use of edge blending to produce the huge images.


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The 32 "canopy" screens in the main show were achieved, surprisingly, by only four additional projectors. This required clever projection design and careful masking.

Both shows ran "in sync" from a single Medialon show control system, and both used media in the JPEG2000 format to achieve cinema quality. Playback was by Extron JMP9600 players.

USA Pavilion at EXPO 2010

The USA Pavilion at EXPO 2010 followed the pattern set at EXPO 2005 in that it provided a defined show sequence for the audience, and that the show experience was designed by BRC Imagination Arts. The engineering of the show system was by Electrosonic.

ProAV Spotlight Awards WINNER
Judges' Award

The design was such that not only did visitors get an experience of worthwhile length and intensity, but the pavilion itself could handle a significant throughput – in fact an average of 40,000 per day.

Visitors first enjoyed a pre-show, the "overture", that was informal and fun, based around the idea of introducing individuals to the Chinese audience, and also getting them to speak some Chinese words and phrases.

Visitors then entered the first main theater or Act 1 of the pavilion. The eight minute, three screen, presentation displayed huge images spanning the three screens or three discrete images. It addressed the important US-China relationship with comments from President Barack Obama and Secretary of State Hillary Clinton.

Act 2, the "big show", showcased the story of "The Garden" told with live-action imagery, CGI, and 4D effects such as vibrating seats, mist and lighting. The film illustrated how a 10 year old girl dreamt of turning a vacant lot into an urban oasis and inspired her neighbors to make her dream come true, and clearly followed the EXPO theme "better city, better life".

The show used five 30ft (9m) high screens of unconventional shape silhouetted with LED color lighting. The programming of lighting throughout the show, requiring over 800 cues, was excellent. The audio was truly impressive, and special effects abounded, much to the audience enjoyment - some even put up umbrellas in the "rain" sequence.

The audience then moved to Act 3, which was an exhibition area featuring the 22 sponsors of the pavilion. US Federal law forbids government spending on EXPOs, so the USA participation was entirely sponsor funded. In this section Electrosonic provided an ambient audio system and some projection equipment. It also provided

A scene from "The Garden" emphasizing the use of lighting to enhance the show.

service support throughout EXPO, however each sponsor delivered its own exhibition package.

In order to ensure a consistent throughput the first three shows had to run "in sync". So Electrosonic designed a single show system installed in a central control room.

The technology selected for the show systems included Medialon for overall show control. Audio equipment included Fostex multi-track audio players, QSC amplifiers, and JBL loudspeakers augmented by Bag End subwoofers.

Panasonic PT-DW6300 projectors were used for the "overture", and PT-DW10000 were used for Acts 1 and 2. In the case of the "Garden" show special masking was fitted in the projectors to match the screens.

Main show playback was in the JPEG-2000 format, and used Extron JMP9600 players which incorporate the necessary synchronization facility.


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Photograph 1: The exterior of the pavilion. 2: The Act 1 screens. 3: The audience loading into the Act 2 theater. 4: All source and control equipment was installed in a central control room. 5: Another scene from "The Garden".

EXPO Souvenir

The EXPO phenomenon is a strange one. Millions or even billions of dollars are spent on an event that normally lasts only six months or less. Generally considered to have originated with the Great Exhibition of 1851 in London, they have occurred at intervals ever since.

They have, however, been influential in the development of exhibition design and display techniques. Multi-screen 70mm movie was demonstrated at the Paris Universal Exposition as far back as 1900; IMAX® made its debut in Osaka at EXPO 70.

The Chinese were determined that EXPO 2010 should be the biggest ever, and it certainly was with 73 million visitors, a 5.3 sq km (two square miles) exhibition area and 242 exhibiting countries and organizations.

Electrosonic has been involved in EXPOs since its founding, with its first major outing at EXPO 67 in Montreal. Since then Electrosonic has delivered over 50 projects at 15 different EXPOs.

The Electrosonic EXPO 2010 Souvenir book.

At EXPO 2010 Electrosonic was responsible for the AV installations in three major pavilions, as reported in this issue of ELECTROSONIC WORLD. It also participated in the design process of several other pavilions. During the installation phase Electrosonic had over 35 people on site, and had a substantial support staff present for the duration of the EXPO.

The EXPO experience is a rare one. To share it with industry colleagues Electrosonic has given presentations to many different design groups, major customers, and the Themed Entertainment Association, based on visits to 63 pavilions. Key design customers have been presented with a "souvenir book" which includes many striking photographs of pavilion interiors.

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