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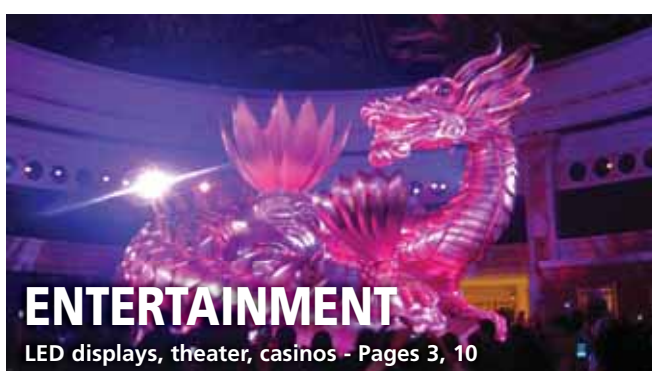
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45 Years of Solutions

This issue of **ELECTROSONIC WORLD** marks the 45th anniversary of the founding of Electrosonic. During those 45 years Electrosonic has provided a unique service to customers worldwide by providing audio visual solutions in the corporate, cultural, entertainment and leisure markets.



Today

Today Electrosonic exploits the latest projection technology, as here at the Gettysburg National Military Park Visitor Center. See page 16.



10 years ago

In 1997 the original Newseum in Rosslyn VA set new standards in big screen display in museums, and one showpiece was this 130ft (40m) "Newswall". Electrosonic was the AV systems integrator.



20 years ago

This amazing video pyramid was built by Electrosonic in 1988.



30 years ago

The "London Experience" multi-media show installed in 1977 was one of many tourist attractions engineered by Electrosonic.



40 years ago

"Carouselvizion", a spectacular 40 projector show at Photokina in Germany in 1968, promoted Kodak's new SAV projector. Electrosonic engineered the show system.

From Greenwich to Burbank



THEN. Site of the first "office".

Electrosonic was founded in the UK in 1964. Its first "office" consisted of two rooms, originally intended to be potato stores, above a market stall in Greenwich Market.

The company stayed in the Borough of Greenwich for over 25 years, occupying four different buildings, but with the majority (1972 - 1990) at Woolwich Road. In 1990 the UK operation moved to purpose built headquarters at Hawley Mill, near Dartford.



Electrosonic's recently re-designed website gives details of office locations and news of major projects. www.electrosonic.com

Electrosonic Inc was founded in Minneapolis MN in 1972. In 1991 an office was opened in Burbank CA, and now Electrosonic has five locations in the USA. During the 1990s it became clear that a majority of the group's business originated in the USA, so the group headquarters moved to the USA, first to Minneapolis, and then, since early 2008, to Burbank.



NOW. Electrosonic group headquarters in Burbank.

Editorial

This edition of ELECTROSONIC WORLD coincides with Electrosonic’s 45th anniversary, making it one of the longest established businesses in its field.

Electrosonic has not been afraid of change, and over the years has continuously adapted to new realities and new opportunities. Some people still think of the company as the manufacturer of the celebrated “Rockboard” lighting control, the ES3601 slide dissolve unit or the PICBLOC videowall processor. The company was all of these, but right from the start was a specialist in systems integration.

Today the company offers “Solutions” and “Products”. The products part of the business, based on image processing and distribution for display, now operates as a separate unit to fit better with the trade’s requirements and expectations.

ELECTROSONIC WORLD has generally been all about successful applications. So from this issue it is devoted only to Electrosonic’s “Solutions” business. Broadly this is supporting complex AV systems throughout their life cycle, and embraces systems integration, lifetime service, and, in appropriate cases, system design.

The founders of Electrosonic often joked about being in the “fairground business”. But it is precisely the “show must go on” approach that has been the key to past success and will be the stimulus for continuing business.

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Entrance to the Hollywood version of the Simpsons Ride™ winner of a Thea Award, and voted “Best New Attraction” by Theme Park Insider.

Thea Awards go to Electrosonic clients

The Themed Entertainment Association “represents the creators of compelling places and experiences”. Every year it recognizes the creation of outstanding visitor experiences by its Thea Awards. The awards are given to the attraction concerned, but clearly those who contributed to the creation of the attraction do bask in the reflected glory of the award, and in this respect Electrosonic is no exception!

The 15th Annual Awards were presented in March 2009. They all represent peer recognition of jobs well done, and their importance can be judged by the fact that only 17 awards were given out of more than 120 nominations.

Four of the Thea Award recipients were clients of Electrosonic, and in each case Electrosonic made a significant contribution to the attraction concerned. The contribution was different for each project, embracing novel projection and optical



The Newseum in Washington DC was honored with a Thea Award in the USA, and recognized by the Museums & Heritage Awards in the UK.

techniques, automated show control systems, visitor participation exhibits and media management.

Thea Awards for Outstanding Achievement were presented to The Newseum (described in detail on Page 15) in the Museum category, The Simpsons Ride™ at Universal Studios in Orlando and Hollywood in the Attraction category, Jungla Busch Gardens (Tampa) in the New Theme Park Land category and the Tree of Prosperity at the Wynn Casino, Macau, in the Casino

Attraction category (described on Page 10).

The Simpsons Ride was also voted “Best New Attraction” by Theme Park Insider. In response to this vote Mark Woodbury, President, Universal Creative, Universal Parks & Resorts said of the honor, "The Simpsons Ride represents what Universal does best - which is to take pop culture's blockbuster entertainment concepts and bring them to life in wildly entertaining theme park experiences".



UK Awards

Electrosonic in the UK supports the annual AV Awards event, both by attending and by entering appropriate categories. The awards are valued because they are independently judged and entries are of a high standard.

Over the years Electrosonic has been successful in winning many awards. In 2008 it won both the “Systems Company of the Year” award, and the award for “Business AV Installation of the Year” (Advance Collaboration Environment for BP at Sunbury).

Electrosonic also supports the Museums & Heritage Exhibition and Awards for Excellence event in London. It has introduced an “international award” to recognize exceptional projects outside the UK. The 2009 award went to Electrosonic as proxy for the Newseum.



On the moon 40 Years Ago

Madame Tussauds in London was quick to mark the first moon landing with an exhibit featuring Armstrong and Aldrin within its “Heroes Live” exhibit.

And Electrosonic was there (at Madame Tussauds, not on the moon) with innovative projection technology.

The visors of the space helmets carried by the astronauts had back projected images appearing on them – matching the reflections seen in the real helmets.

Electrosonic devised the projection system based on mirrors and projectors with long focal length lenses hidden under the “moon surface”.

INFOCOMM Award

Electrosonic’s long association with the AV Industry was recognized at INFOCOMM 2009 by an award to its co-founder.

At the INFOCOMM President’s VIP Reception Robert Simpson received the Distinguished Achievement Award, the highest honor bestowed on an industry member by the association.

Electrosonic was founded in 1964 by Denis Naisbitt, Michael Ray and Robert Simpson.



Robert Simpson (left) receives the Distinguished Achievement Award from INFOCOMM President Jay Rogina.

Wonder Wall at Seminole Hard Rock

The Seminole Hard Rock Hotel and Casino in Tampa FL recently expanded with a new entrance, and new VIP and slot areas. One of the concepts of HKS Architects, and interior designers Klai Juba Architects was for a “Wonder Wall” feature in the entrance. At the suggestion of consulting engineers McClaren Engineering, Electrosonic Design Consulting (Burbank CA) was appointed by HKS to do the detailed technical design of the feature.

The Wonder Wall is a cylindrical construction 11 ft (3.35m) tall and 13 ft 6in (4.1m) diameter of which 215° or 25 ft (7.6m) arc length is visible. The cylinder is transparent, but the inside surface is covered by a TransVue rear projection film.

The exterior of the cylinder is a water feature with individually controlled nozzles behind a header at the top of the screen. The water falls into a pool at the base of the screen. LED color-changing fixtures in the pool



and behind the header light the water curtain from top and bottom.

Within the cylinder eight Christie DS+650 projectors are mounted on a steel structure to give complete coverage of the screen area. The projectors are sourced from High End Systems Axon servers, which also provide the necessary geometrical correction to the images and image blending to give an overall seamless image.

The Axon servers store files and video effects that can also be combined with external sources, in particular the Casino’s own multichannel TV system.

Overall show control is by a High End Systems Whole Hog Super Widget and Programming Wing. This arrangement outputs DMX which can directly control the lighting and the Axon servers.



A powerful audio system, with loudspeakers mounted on the screen header, is also installed. It is based on a Peavey Media Matrix Nion DSP controller.

As systems designer, Electrosonic carried out extensive proof of concept work, including preparing 3D models and building mock-ups. This work assured the creative team that their ideas were practical.

Under a separate contract Electrosonic Systems Integration completed the actual installation, with engineering being supervised from the Orlando FL office.

Design for National Harbor



Located on 300 acres of the scenic Potomac River in Prince George’s County, MD, National Harbor is the new gateway to the National Capital Region. It combines a marina with shopping, entertainment and residential areas. Electrosonic Design Consulting was engaged by the Peterson Companies to

design a distributed audio system for the New Harbor piers, the Harborwalk and the American Way shopping complex, and to design a lighting, audio and video system for the live entertainment theater. Electrosonic Design Consulting worked on the project from its outset, participating in the project

planning and design charette. The scope of work included the preparation of bid documents, and recommending specific technology solutions that had minimum space requirements. Other members of the creative team included Sasaki Urban Design & Architecture, Sardi Design, NYX Design, Projects of Interest and E K Fox Associates. The installed system is based on a fiber optic backbone, engineered with Weidmuller components, that carries audio, lighting control and system control information. Cobranet is used for audio distribution, and

the system supports 18 universes of DMX for lighting control. A Medialon control system is used for show control. Loudspeakers are mainly from Renkus Heinz, and include PN102 Line Arrays for live entertainment. The theater is equipped to meet the demands of small theatrical productions, presentations, conferences, music events, and even movies under the stars during the warm months. Video equipment includes a Christie HD30K projector and a Green Hippo Hippotizer server. Lighting control is based on GrandMA consoles and ETC dimmers.



The Show Lounge stage on the Baltic Queen.

Baltic Queen

The M/S Baltic Queen is the newest member of the Tallink fleet, and started operating between Stockholm and Tallinn in April 2009. This cruise-ferry contains 1,000 cabins which can accommodate up to 2,800 passengers. On board there are a number of restaurants, a show lounge theatre, five bars, three shops, a children’s world, a spa/sauna and a modern conference center which can hold up to 450 guests.

Electrosonic was entrusted with the design, installation, programming, and commissioning of entertainment lighting and AV systems in the theatre, nightclub, spa, conference center and public spaces. In addition Electrosonic provided digital signage in public spaces, shops and restaurants and a shipwide lighting control system in the public spaces.

The most demanding installation was the Starlight Palace show lounge where lighting, audio and AV equipment was integrated into one system. Here the audio system was based on EAW loudspeakers, Powersoft amplifiers, Peavey X-Frame88 processing and Yamaha mixers. The entertainment lighting system included Martin moving heads, Pulsar dimmers and a Jands control desk. CCTV cameras allow audience and show images to appear on a large screen above the stage.



The Baltic Queen.

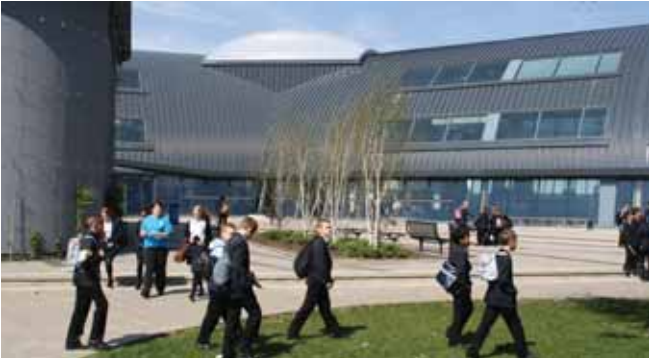


Part of the conference area.

AMX touch panels control and automate most of the electronics on board – for example at the conference center, which has demanding audiovisual presentation requirements. Digital signage systems were implemented for the conference center, shops, restaurants and reception. These are based on LG large screen LCD displays and Onelan network boxes and media distribution. Lighting control is another system using network technology; Helvar Digidim lighting control covers most of the public areas including the bars and restaurants. Electrosonic has been involved with ship-board installations for many years. The Helsinki office has installed systems on more than 40 ships (mainly luxury cruise liners and super ferries) over the past 20 years.



Informal entertainment takes place in this bar.



A view of Leigh Technology Academy.

Leigh Academy

The Leigh Technology Academy in Dartford is one of the highest achieving state comprehensive schools in England; it specializes in Business and Enterprise, Sport and Technology. In 2008 it moved into a striking new building (architect: Building Design Partnership) which is equipped to the highest standards in respect of information technology infrastructure. Working to specifications prepared by PACS Technology Consultants Electrosonic installed the AV systems, which covered the needs of 57 teaching spaces, a building wide IPTV system, information displays, and AV systems for the lecture theatre, boardroom, two drama rooms and a dance studio.

The teaching spaces are all based on a lectern or science bench with a standard set of equipment. Each lectern is fitted with a resident computer. This is used as a presentation computer, as the means of local DVD playback, and for showing material downloaded from the network. The lectern also includes a facility to connect a “visiting” laptop computer, a simple control panel for source selection, audio volume and power control and an audio power amplifier.

The lectern connects to the room equipment through suitable floor plates. These provide four Ethernet connections, and connection to the ceiling mounted projector (Sony VPL EX3) and to the loudspeakers (Tannoy i5AW).

All these systems are monitored and managed centrally using the Extron Global Configurator application. Besides giving system status information, this arrangement gives security, in that an alarm signal is given if the locked lecterns are tampered with. It also helps minimize energy use by ensuring equipment is properly shut down when not required.

The Lecture Theater, a large flexible space that can be used for assemblies, lectures and performances, and the Conference Room are fitted out to the same standards that would be found in a corporate environment. The Conference Room is equipped with a Sony VPL FX52 projector, Tandberg videoconferencing system, Symetrix audio processing, Extron video switching and an AMX system for overall control.

An IPTV system is available throughout the Academy. This is based on Cabletime’s Evolution technology which allows multiple video streams to be carried on the Academy’s network. Nine Information Displays are permanently installed. These are NEC 46 inch Multeos LCD displays sited in the stairwells and reception. They are on the IPTV network and are equipped with Cabletime decoders. They are used to display schedule information, but can be programmed to support special events.



Some of the teaching spaces are in the form of open “learning plazas”. Photo Leigh Academy.



Aspiring board members in the conference room. Photo Leigh Academy.



The multi-purpose lecture theater. Photo Leigh Academy.

Sun Microsystems EBC

Sun Microsystems recently opened a new Executive Briefing Centre at its Linlithgow European Headquarters just outside Edinburgh. Electrosonic was the AV systems integrator for the new EBC, providing an exceptionally flexible system for a reception area, a Technology Showcase and four conference rooms.

The EBC is for senior executives in user and potential user organizations where they can learn about the latest IT techniques, and how Sun’s unique technologies can improve their business. It consists of a reception area, a Technology Showcase, four conference rooms and various breakout and support spaces. Linking the whole lot together is a Network Operations Center (NOC).

The principle adopted is that any image source, whether generated within the EBC or arriving from an external source, must be viewable on any display. Thus an image generated at one of the demonstration points in the Technology Showcase has to be available in any of the conference rooms. Similarly a screen in the Technology Showcase might be required to show an external application image.

The Technology Showcase is based on 10 “pods” that demonstrate different applications and equipment. These have Sun computer screens that can display either a locally generated



The Technology Showcase. The circular display with blue lighting is the “Launch Pad”.



The Sun Microsystems European Headquarters

Client	Sun Microsystems
Architect	BDG McColl
Project Manager	Heery International
AV Consultant	Ceitrionics
M&E consultant	Blackwood Partnership
Main contractor	Thomas Johnstone
AV integrator	Electrosonic

The principal members of the project team.

image, or an image sent from the NOC. Any locally generated image can be sent to the NOC for display elsewhere.

In the center there is a feature called the “Launch Pad” displaying the latest equipment. It is surmounted by four 32 inch displays. In addition there are three 50 inch displays on the perimeter of the showcase. All these displays can show



The Java Coffee Bar is a popular port of call.

specific programme content, but are often orchestrated to work together to support a customer event.

The four conference rooms are all equipped to a high specification. A combination of DNP Supernova screens and Panasonic PT-5700 projectors produces images bright enough for any lighting condition.



One of the smaller conference rooms.

Each room is equipped with a Polycom Soundstructure audio conferencing system with HDX suspended ceiling microphones. JBL Control 26T loudspeakers are installed in the ceiling for conference sound, and a pair of Community I/05W loudspeakers are installed on either side of the screen for programme sound. All rooms are equipped with AMX

The central item of equipment is an Extron 32×32 RGB matrix switcher. All incoming and outgoing image signals are carried over CAT-5e cables using Extron baluns. Control of the switcher, central source equipment and EBC lighting is by an AMX N14100 controller which also acts as a server to switching requests from the four AMX systems in the meeting rooms.



Four Panasonic 32 inch LCD monitors animate the reception area.



Lockheed Martin upgrades to 4K

The Global Vision Solution Center (GVSC) of Lockheed Martin Simulation, Training and Support (LMSTS) is located in Orlando FL. As part of a multi platform simulation and training solution that incorporates data generated from many

Working with Tom Lavelly, Vice President of L2 Industries, who is the contracted Visual Systems Manager for LMSTS, Electrosonic engineered a significant upgrade to the system that went online in January 2009.

The Sony projector needs four simultaneous high resolution input signals, and these are derived from a VN-QUANTUM™ image processor that can scale the images and position them as required.

The most interesting part of the installation is its use of “virtual image switching”, one of the first installations of its type to do so. In “standard” installations images would exist in their high resolution digital or analog form, and a conventional router (possibly fiber optic based) would be used. This is an expensive and inflexible solution.

At GVSC all images arrive over standard IP networks. They do this by using VN-MATRIX™ codecs. These devices retain a high image quality at moderate bit rates, have minimum latency, and are robust against packet loss on standard IP networks.

Besides doing away with the need for a big router, this approach gives LMSTS some other significant advantages. Images can be acquired from anywhere within the Lockheed enterprise – often simulators are located at remote sites. Images can be displayed not only in the CORE, but anywhere else where they may be needed that has a network connection.

Electrosonic completed the engineering of the CORE system by providing intuitive user interfaces based on standard Crestron touchscreens.



Group viewing in the CORE.

diverse data bases, the GVSC needs a central display system that brings all the audiovisual data from many simulators into the Collaboration and Observation Room (CORE) and displays it in real time to demonstrate the capability of Lockheed Martin’s powerful integration solutions.

The original CORE started operation in 2004 and included a large, three screen display fed by an infrastructure of analog computer and video sources scaled and positioned by an Electrosonic Vector windowing processor. The overall display yielded a maximum resolution of 4200 × 1050, but had limitations in respect of the number of sources that could be displayed, the use of three projectors, and the analog signal delivery.



The Sony SXR4 4K projector is an essential component of the system.

The idea behind the system is that there is only one display surface, and that any required image can appear anywhere on that surface, displayed at any size. The new installation uses a single Sony SXR4 SRX S-105 “4K” projector. Its 8.8 million pixels (nearly double the resolution of the original display system) are sufficient to support the display of many high resolution images simultaneously, and in the CORE the images appear on a giant 24ft × 12ft (7.3m × 3.6m) screen.

Above the Arctic Circle

Not far from Kittilä airport, 100km north of the Arctic Circle, the Levi Summit Conference and Exhibition Centre is one of the northernmost places you can find a professionally equipped conference facility. Electrosonic was responsible for the AV and lighting control systems integration in the auditorium and meeting rooms.

The Levi Summit Conference and Exhibition Centre (owned by Levin Luontokeskus Oy and whose architect was UKI Arkkitehdit Oy) is situated on Koutale, high on the Levi hills, and forms the crown of one of



The exterior of the Levi Summit Conference Centre.



permanent simultaneous interpreting facilities for two interpreters, is based on Biamp processing and amplification, and EAW loudspeakers; whereas the meeting room audio systems are based on Genelec equipment. Room control is AMX throughout, and the main AV matrix switcher is Extron. Display and projection equipment is from Sony and Eiki.

A special feature of the building is the effect lighting built in to the auditorium. It enables the walls and the ceiling to be illuminated with different colors. “With the



The main auditorium in use.

the biggest ski resorts in Lapland. Looking up from the village it feels as if the centre is built right on the ledge of the steep hill. Looking out from the windows in the centre itself, it seems as if the slope begins right beneath your feet. The scenery, 300 metres above sea level, stretches over the Pallas national park.

The aim was to make the centre as versatile as possible, and for this reason great emphasis was placed on the AV systems. “We are very pleased with the result, since the system was built in an intelligent way, and according to our wishes”, states Mr Teo Jeskanen the Centre’s Development Manager.

Working from an outline specification prepared by Decorat Oy, Electrosonic



The view across the Pallas National Park.

designed, built and installed a comprehensive AV system for the 435 seat auditorium and for seven meeting spaces. In addition Electrosonic supplied show lighting and lighting control for the auditorium, a digital signage system for the foyer, and house lighting control throughout the facility.

The auditorium audio system, which includes

built-in effect lighting we can conjure the colorful display of Aurora Borealis if needed. With colors we can create very different moods. The lighting and sound equipment have enough power for all kinds of performances. Powerful and impressive sound reproduction is especially important for us, since many concerts are held in the building”, Mr Teo Jeskanen says. “The sound system in the building is split so that the restaurant, foyer and exhibition spaces all get their individual music.”

Electrosonic supplied Martin show lighting and a Jands Vista control desk for the auditorium. House lighting throughout is under the control of Helvar Digidim equipment, also supplied by Electrosonic.



Another view of the auditorium.

All photos courtesy Levi Summit.



The main demonstration room at Cisco's CBCC near Milan.

Cisco in Milan

Cisco has recently opened a new Cisco Business Collaboration Center (CBCC) in Vermicate, near Milan in Italy. It is a sales resource to help sell Cisco's technology and services to end customers. The main technology promoted is Cisco's Digital Media System, where rich media of all kinds is distributed over standard networks, so not surprisingly the CBCC has many displays, and many image sources (primarily Cisco's own Digital Media Players and Digital Media Servers).

The CBCC has a lively reception area, two meeting rooms and a large demonstration area. The demonstrations are designed to replicate many different user scenarios. In the special case of residential applications there is a separate "connected home" demonstration area. There is also a Telepresence room, based on Cisco's own technology; but this is a "standard product" from Cisco, and it was installed as a separate turnkey item by Cisco's own telepresence team.

Cisco's architect for the CBCC was Progetto CMR, and the fit-out contractor was GSP Italia. The overall design, and the control programming, of the audio-video system were by Cloud Systems Inc of San Francisco. Electrosonic was awarded the contract to build and install the system.

Within the demonstration areas there are many laptop computers and keyboard/mouse sets that allow the Sales Consultants and users to emulate different user situations – in principle it is possible for any such "user point" to select any source device to display on any of the many screens.

The demonstration room itself has no less than 44 Digital Media Servers as primary sources. Displays throughout the CBCC are LCD displays from NEC, in a variety of sizes (21, 32, 40, 46, 57 and 65 inch) and the demonstration room alone has 19 separate displays. The separate "Connected Home" area is designed round a 65 inch LCD display.

The Reception area features a "media wall" of four 40 inch LCD displays accompanied by a 20 inch Elo touch screen. This runs continuous programs either from Dataton Watchout, or from Cisco DMPs (Digital Media Players). Nearby a "Story Wall" uses one 46 inch and four 32 inch monitors.

The meeting rooms are fitted with twin 65 inch monitors and comprehensive audio facilities. The audio facilities throughout the center mirror the video facilities in functionality. Audio processing and amplification equipment is from Biamp, and distribution of audio is primarily over the network.

The functionality of the system is largely achieved by a comprehensive KVM (Keyboard, Video, Mouse) switching system. This uses the installed CAT-5e cable plant, but is primarily analog based on Avocent KVM transmitters, receivers and KVM switching matrices.



One of the meeting rooms at the CBCC.

THALES CATALYST

Thales has recently opened "Catalyst", a new presentation and simulation facility on its Crawley site. Electrosonic engineered the AV system, notable because it is so bound in with the Thales IT infrastructure. All audio, video, inter-communication and AV control is carried on IP.

Catalyst is a purpose-built facility designed to showcase Thales UK to civil and military customers alike. As a presentation facility, it is truly impressive: an excellent resource for demonstrating the capabilities of Thales to high-ranking customers and VIPs.

It can be used to help customers visualize 'system-of-systems' concepts, making it easy to see how systems interact with others. It is an experimentation facility, too, where complex systems can be tested against different scenarios, and a wide range of demonstrations, tests and structured experiments can be conducted. It is even possible to take real products and demonstrate them in a synthetic environment that accurately replicates the customer's infrastructure or systems. Finally, it can be used by armed forces to conduct realistic pre-deployment planning and training exercises: the ultimate tool for answering the question 'what if...?'. Catalyst is a suite of rooms, in total 450 sq m,



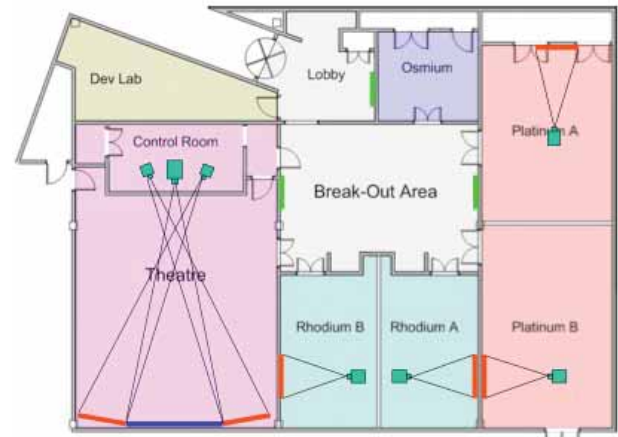
The Thales building in Crawley that houses Catalyst.

each of which can work independently or in co-operation. An entrance lobby and a central breakout area serve the six principal spaces; five of the rooms are "experimentation" spaces where individual products or concepts can be set up.

The largest space is the "Theatre", which can hold up



The Theatre at Catalyst. The screen system is 9m wide and can show more than 25 images simultaneously. All photos of Catalyst from Thales.



- Fixed projection screen (16:9)
- Retractable projection screen (4:3)
- 40 inch LCD display

Room layout and image screens at Catalyst. Diagram from Thales.



The lectern.

to 24 people around a 'U' shaped table or an audience of 100. Its large "Control Room", partitioned from the Theatre by a full width glass partition, can be used as an observer space. The screen arrangement consists of one large permanent screen flanked by two ceiling retractable side screens. The side screens are served by projectors that are each of 1920x1080 resolution, and the centre screen is served by a single Sony "4K" projector of 4096x2160 resolution.

Each space is comprehensively equipped in respect of IT and AV allowing both independent and collective operation within the spaces and with the

outside world.

Separate but interconnectable networks allow different levels of security to be applied to each room or group of rooms simultaneously, and allow access to the wider world



View from the control room.

through WAN connections.

It is a fundamental requirement that images and audio generated within a space are available within any other space, and can be exported or imported to or from external sites. An early decision was that all audio and video (AV) content would be carried over the network. For Catalyst this provides some significant advantages:

- A simpler infrastructure, based entirely on the IT structured cabling

installation.

- No need for any central AV routing equipment, with its limitations on switching capacity, cable lengths etc.
- Greater flexibility in adding or re-positioning nodes (display or image capture) at any time without the need for additional cabling.

- Easier ability to export and import AV content to and from anywhere in the world.

- Easier recording of presentation and simulation scenarios using network attached storage.

Electrosonic was contracted directly to Thales to realize the principal AV elements within Catalyst, and Electrosonic codecs and image processing are used in the system. The IT infrastructure was the

responsibility of Thales.

The audio elements include speech reinforcement, conferencing, communication and content playback. The video (or "image") elements include projection, cameras, image processing and video conferencing. The overall user control system, and its programming, was also the responsibility of Electrosonic, but the user interface was developed with the close involvement of the Thales user.

US Northern Command

Lockheed Martin was the main contractor for the communications fit-out at a U.S. Northern Command (USNORTHCOM) facility at Peterson Air Force Base in Colorado Springs, CO. Electrosonic was appointed sub-contractor for the over-view display systems.

USNORTHCOM was established to provide command and control of Department of Defense homeland defense efforts and to coordinate defense support



of civil authorities. The commander of USNORTHCOM also commands the North American Aerospace Defense Command (NORAD), a bi-national command responsible for aerospace warning and aerospace control for Canada, Alaska and the continental

United States.

Electrosonic supplied five multi-image displays. These included a videowall of 3x5 50 inch Planar rear projection “cubes”, and 2x3 arrays of 40 inch and 57 inch Planar LCD monitors.

Images are derived both internally and from many

government agencies, and include computer workstations, off-air images, videoconferencing and networked images. In order to make best use of the displays, and to ensure the images “fit” the displays, VN-Quantum™ videowall image processing is used.

Enfield Public Safety

The Enfield Public Safety Centre (EPSC) is equipped with a display wall engineered by Electrosonic under sub-contract to Siemens Building Technologies.

The idea at The London Borough of Enfield is an interesting one. The cost of running a 24/7 control room is high, so it makes sense for different services to pool resources. Initially Enfield Council, First Capital Connect, the Metropolitan Police, Transport for London and British Transport Police are “partners” in the operation of EPSC. However, it is envisaged that in the future other partners may join, and there is provision for



The display can show up to 72 simultaneous CCTV images and six RGB images.

considerable expansion.

Currently the system can view 1000 cameras on the First Capital Connect rail network, in addition to all the security cameras in the Borough.

The display system

engineered by Electrosonic consists of 12 Mitsubishi 50 inch XGA “cubes” fed from a VN-QUANTUM™ image processor. This is configured for the display of up to 72 simultaneous video images and six RGB computer

images. The cubes are front accessible for maintenance, so the footprint of the entire display is kept to a minimum.

The display configuration is controlled by VN-COMMANDER™ software, but this is invisible to the operators since it is invoked through the CNL software suite that controls the cameras.

Electrosonic has a lot of experience of this kind of display system, and can not only install them quickly and efficiently, but also help ensure their effective integration with the rest of the installation by providing competent and creative programming services.

Helsinki Energy

Helsinki Energy (Helsingin Energia) is one of the biggest energy companies in Finland. It sells electricity to over 300,000 clients and covers over 90% of the capital’s district heating. It recently upgraded its central control room in the Sähkötalo “Electricity building”, designed by Alvar Aalto back in 1973.



Overall view of control room.

The technology had become obsolete and new technology had to be seamlessly integrated, taking into consideration the distinguished surrounding architecture. Naturally the architect designing the work spaces (Architectural Agency Arktika Oy) paid great attention to the ergonomic aspects of the new layout.

Working to designs prepared by consultants Yhtyneet Insinöörit Oy (United Engineers Ltd) Electrosonic delivered a system based on Sharp 65 inch LCD displays, chosen for their combination of high



image quality, quietness in operation and suitability for 24/7 operation. To make the overall system easy to use, an AMX control system was programmed with a custom graphic display to make the control of the displays, their associated Extron matrix switcher, and the audio

system as simple as possible.

The lighting in the control room was also renewed. Electrosonic delivered a Helvar Digidim lighting control system for installation by the electrical contractor. This was integrated to work from the AMX control system.



Chesapeake Energy

Chesapeake Energy, of Oklahoma City OK, is the largest independent producer of natural gas in the USA. The majority of its output is derived from the Barnett Shale of north-central Texas, the Haynesville Shale of East Texas and northwestern Louisiana, the Fayetteville Shale of central Arkansas and the Marcellus Shale of the northern Appalachian Basin. But it has active operations and exploration activities in many other areas.

A central control room monitors pipeline and distribution activities, and monitors events that may affect demand. Electrosonic installed a new overview display system that allows both real time video images and SCADA status display images to be displayed. A VN-QUANTUM processor is used to allow complete flexibility in the positioning and sizing of images, and VN-GLIMPSE adaptors are used to allow the SCADA images to arrive over conventional Ethernet.

Electrosonic delivered the complete display system, including a 4x2 array and a 2x2 array of Planar Margay 50 inch videowall displays and two Planar 72 inch LCD displays. Winsted supplied the consoles for the control room.

Oklahoma EOC

Electrosonic has provided AV systems for the renovation of the State of Oklahoma’s Emergency Operations Center in Oklahoma City.

The facility, on the State Capital campus, was a former 1950’s era bomb shelter. Mass Architects, the architects of record, brought Electrosonic and general contractor Anderson & House of Oklahoma City on board the project, which is designed to improve resource coordination and information sharing among state and local agencies. The Center must be ready to muster resources for wildfires, tornadoes, ice storms, public health and homeland security emergencies.



The “Bullpen” at the Oklahoma EOC. Two of the four videowalls can be seen.

To that end Electrosonic furnished the Center with four 2 x 2 videowalls of Planar Margay “cubes”. Two are installed on the north side and two on the south side of the football-shaped facility with its bullpen-style main area featuring 22 workstations. The videowalls are used to display data from computer sources such as weather patterns, forecasts and webcasts of breaking news, as well as to monitor local and national news broadcasts relating to emergency situations. An audio playback system, consisting of JBL speakers and QSC amplifiers, provides audio support for the videowalls.

Electrosonic also provided seven LCD monitors of different sizes, used to show broadcast feeds, for auxiliary rooms, including the governor’s secure conference room. All of the equipment is controlled, by authorized personnel, from two computers via a web interface which interacts with an AMX system.

PROJECTION

Virtual Environments

The Centre for Virtual Environments at Salford University (Greater Manchester, UK) has completed the installation of an ambitious virtual environment research display called the Octave. Electrosonic delivered the projection and image source system.

The system is flexible in use, so that different CAVE configurations can be tried out. (CAVE = Cave Automatic Virtual Environment or Computer Assisted Virtual Environment depending on who you talk to.) However, the Octave name is derived from the fact that at its most extensive, the oCtAVE can present an eight sided projected environment that completely surrounds the participants.

The system consists of eight mobile rear projection units plus one fixed ceiling mounted projector, and an image source system based on Sun workstations on a 10Gb/s network. Images are presented in “active stereo” and head tracking cameras are used to ensure the correct viewpoint.

The mobile units allow different combinations of layouts, the most common being the full octagon or two separate four-sided “CAVES”, one with floor projection onto a mobile raised floor.

The rear projection rigs were designed to achieve the maximum possible individual image size within the room space which was 2600mm × 1950mm. All images are generated and displayed at the native resolution of the projectors which is 1400 × 1050.

Four units are twin mirror systems fitted with Christie Mirage S3K projectors. These



One of the display configurations. In actual use the overhead lights would not be on, and the screen representing the fourth side of the cube would be moved into position to completely surround the observer.



Lining up the projection system for a five screen CAVE.

have DNP wide angle screens. Another Mirage projector is used for the floor projection. All these projectors can show 3D (stereoscopic) images and are run at 120Hz. When showing 3D, the associated workstations are equipped with emitters to operate the active 3D glasses used to view 3D. The remaining rigs use Christie DS300+ projectors with rear projection onto diffusion screens.

The source equipment is a complement of Sun workstations; there are nine dual processor slave units controlled from a master server. These have NVIDIA FX5600 graphics cards which provide the VGA and 3D synchronization signals. Framelock cards have also been fitted in all

workstations. The workstations and server are networked together by a CAT5 network and a 10Gb fiber network. Electrosonic also provided a Sun storage array for the server. The workstations run Linux Redhat and were configured by Sun contracted through Electrosonic.

Electrosonic used two significant sub-contractors on the project, Sun Microsystems and Paradigm. The latter supplied the screen and mirror assemblies; these had to be craned into the building via a corridor that had the roof temporarily removed.



A panoramic rear projection screen is the main feature of The Weather Channel set.

The Weather Channel

The Weather Channel, the Atlanta-based cable network, recently moved into a new building tailored for High Definition broadcasting. Jack Morton Worldwide’s Production Design Group (PDG) of Manhattan designed The Weather Channel’s new HD set, and Electrosonic joined the team to engineer the rear projection display system that is central to the set.

The display is based on a 450 inch × 100 inch (11.4m × 2.5m) Stuart rear projection screen. The

problem was to design a custom rear projection solution that had the smallest possible footprint, since set space was at a premium. Working with Large Screen Display Solutions, Electrosonic installed a double-bounce rear projection system.

Three Christie HD8K projectors are mounted almost above screen level in a solidly constructed projector housing. In the double-bounce system, the projectors fire forward hitting the first mirror. This light

path then passes through a hole in the floor of the housing to another large mirror directly below the projectors.

The three images are blended using the ChristieTWIST™ image blending feature of the projectors. The source images feeding the display come from a Vista Systems Spyder processor to deliver an impressive big-screen HD image to Weather Channel viewers.

Undersea in Stavanger



Photos from Centrescreen Productions.

The Norwegian Petroleum Museum (Norsk Olje Museum) opened in 1999 and its unusual architecture has made it an exciting landmark in the Port of Stavanger. Recently one of the major exhibits has been refurbished to provide a diving bell simulation illustrating how divers carry

out maintenance on the oil platforms in the North Sea.

Electrosonic worked with designers Bright White and production company Centrescreen Productions to design a panoramic projection system for the display. Peter Key was the sound consultant on the project.

For projection Electrosonic supplied three Panasonic PTD5700E projectors. These project on to a curved screen. Much of the show is of the murky underwater environment that divers have to work in, so a good contrast performance is essential.

In order to obtain the highest possible image quality the images are uncompressed. A three-channel Delta Server from 7th Sense provides the three XGA image streams, and the necessary correction and image blending to achieve a seamless image.

The server also plays back multi-channel audio; this is fed to a BSS Soundweb and Dynaudio active loudspeakers (which were already installed at the museum). The show can be selected to run in English or Norwegian and can be programmed to run the languages in any required sequence. A video countdown clock tells a waiting audience the “time to the next show”.



Layout of the Octave for a surround image.



The 3,000 seat Northland Church features variable acoustics and a 75ft wide rear projection screen.

Variable acoustics at Northland Church

Electrosonic was the AV designer and integrator for the new purpose-built sanctuary seating 3,000 people at Northland, A Church Distributed, in Longwood, Florida. A non-denominational church, Northland streams its services online and coordinates with services held at other locations. Northland’s primary requirement was to make the new sanctuary’s audio the best it could be. While parishioners and visitors usually notice the impressive video systems first, Northland was aware that if services sound bad, that has more impact than most people realize.

To this end, Electrosonic carried out the first installation anywhere of Meyer Sound’s Constellation system. Constellation is based on the company’s VRAS (Variable Room Acoustical System) technology that allows venues to alter their reverberation characteristics instantly, and thus meet the needs of different aspects of Northland’s services – intelligible speech requiring short reverberation time on the one hand, and choral music requiring a warmer acoustic with longer reverberation on the other. At Northland the Constellation system consists of 32 UPM-1P, 12 UPJ-1P and 26 MM-4 loudspeakers and a

pair of Galileo processing units. In addition the sanctuary is equipped with 18 Meyer Milo clusters, six M3D subwoofers, two CQ-1 and two CQ-2 speakers for sound reinforcement and reproduction. Meyer Sound microphones are augmented by 26 Sennheiser wireless microphones used on stage. A Peavey Media Matrix Neon system controls audio distribution throughout the Northland facility. Broadcast control includes a Euphonix Max Air 106-channel audio console, an 80-input Digidesign Pro Tools HD3 Accel system, Meyer Sound HD-1 monitors and an N-Vision 416x384 audio and

video router. A 75 ft (23m) wide rear-projection screen located at the back of the stage displays ambient and scenic images as well as song lyrics. It is flanked by two drop-down screens at mid-stage which display live-camera images of service participants. Electrosonic installed six Christie DS+ 8K projectors, four for the rear-projection screen and two for the drop-down screens. A Barco Folsom HD video controller handles the big-screen sources, including Ikegami HD cameras, DVD players and the text generating computers. Northland is linked by optical fiber to offsite locations where services may also be held, or where musicians and singers may be performing remotely. Six RME ADI-648 digital “snakes” and two RME MADI bridges provide the connection to these offsite venues. Concept consulting design was by Platt Design Group of Sierra Madre, CA. WOW!Works of Clermont, FL, supervised the vendors and general contractor for Northland.



Video display control.

900 loudspeakers in Freestyle Music Park

Electrosonic designed, engineered and installed the park-wide audio system for the new Freestyle Music Park (formerly known as the Hard Rock Park) which recently opened in Myrtle Beach, South Carolina. Spanning 55 acres, Freestyle Music Park celebrates the spirit of rock ‘n roll through more than 50 world-class rides, shows and attractions. It also encompasses other genres of music including country, reggae, beach music, pop, R&B, alternative, Christian, and disco.



Pole mounted loudspeaker.



The live performance stage (here shown with original branding).

To ensure an immersive music experience, Electrosonic installed more than 900 loudspeakers park-wide; throughout the guest entry area, on three live performance stages, along walkways, in shops, restaurants, bars, ride queue lines, gardens, restrooms, and completely surrounding the lake for the daytime lagoon and fireworks shows.

Loudspeakers are predominantly models from Peavey (Versarray®, PR 15T, and Impulse 6T) and JBL. Amplifiers are predominantly from Crest Audio. Audio distribution is based on the use of Peavey’s Media Matrix System, equipped with a custom programmed graphic interface. The system is easy to use, although it took

countless hours to program! The main sound source, a multi-channel background music server supplied by PCM Technologies, provides extensive track lists for each environment. Its ability to random shuffle keeps soundtracks fresh for visitors and park employees alike. The audio system is also used for announcements and emergency paging by zone or park-wide. It mutes audio in certain areas if live shows or performances are taking place.



Colorful attraction

380 channel audio in Hollywood



Auditorium 6 at the Mann Chinese. The loudspeaker array that surrounds the audience can be clearly seen.

Auditorium 6 of the Mann Chinese Theaters in the heart of Hollywood is now equipped with a 380 channel Iosono® audio system installed by Electrosonic. The Iosono® system has been developed in Germany by a team led by Professor Karlheinz Brandenburg. Its aim is to give true, natural “three dimensional” sound. A target market is the cinema, since the system has the potential to give every seat in the house the same 3D sound experience. The new installation is designed to help Hollywood sound designers assess the system, with a view to its ultimate adoption in premium theaters.

The system has to be heard to be believed. It “places” sound in an uncanny way. It does this by surrounding the audience with a continuous loudspeaker array – in the case of Auditorium 6 there are no less than 380 discrete audio channels. The system is based on the insight of Christiaan Huygens, the famous Dutch contemporary of Isaac Newton. He postulated that, in respect of an advancing wavefront, at any instant every point on the wavefront is the source of a wavelet which propagates outwards as a spherical wave. His observations were made in respect of light as a wave, and they helped explain the phenomena of reflection, refraction and diffraction.

The Iosono system represents an application of the Huygens principle applied to sound waves. A desired wavefront is created by having a large number of closely spaced sources, each radiating a small part of the “sound image” – the individual wave motions interfere with each other to produce a single wavefront.



Close up of the loudspeaker array (left). View of the Peltz Theater taken during installation of the Iosono system (right).

For the system to work a large number of individual sources are needed, depending on the size of the space. At the Mann Chinese 380 separate sound channels are used; with 64 channels behind the screen, and the remainder distributed evenly either side and across the back of the auditorium. Each channel has a 3-way loudspeaker unit and associated amplifier. The screen channels are rated at 200W each, and all the rest at 100W. The system is augmented by “conventional” sub-bass loudspeakers.

Electrosonic has also been a key player in the renovation of the Museum of Tolerance in Los Angeles. Among the improvements made was the installation of an Iosono system in the Peltz Theater, the first theater installation of its kind in the USA.

The 300-seat theater was rebuilt to better meet the Museum’s multipurpose needs. Yazdani Studio of Cannon Design was responsible for the interior design concept. Electrosonic was responsible for the design, engineering, fabrication, installation and programming of the audio-video systems, with “the crown jewel” of the theater’s technology being the audio system from Iosono GmbH. Its 308 independent audio channels and five subwoofer channels are entirely hidden within the architectural elements of the theater to give an all-encompassing natural sound.



MGM Grand LED

The MGM Grand in Macau features a giant LED display over the entrance, supported by “ribbons” of LED running along the building. Optotech Macau supplied and installed this massive piece of signage.

Electrosonic was the sub-contractor for the video source and automatic playback system. This consists of five MS9500GL High Definition players, genlocked together to run in precise frame synchronization, and a VN-QUANTUM image processor to scale the image sources to the displays.

Overall show control is based on Medialon, and there is provision for connecting additional sources for special events. Electrosonic’s Hong Kong service office carried out the installation of the source system and provides ongoing support.

Club Nokia

Club Nokia is the exciting venue in Los Angeles operated by AEG. Located within it is an innovative interactive experience based on foot-controlled floor interfaces, touch screens, and a large LED screen installation. Users can scroll through the history and the future of Club Nokia events. Fans interact with pictures, video, and text submitted by fellow concert fans and professional photographers, using their cameras in high-end Nokia devices.

Electrosonic engineered the complete audio-video system associated with the experience (except the LED display itself, supplied directly by Lighthouse). Electrosonic was a member of a team which included Graham Wickman as AV Consultant, project manager Faithful + Gould, interior designer Eight Inc, content producer RG/A and fit out contractor Murray Sandford Construction Company PCL.



Suzhou Sky Screen



Electrosonic World No 14 featured an amazing “Sky Screen” installed in Beijing. Now the company that was behind that project has excelled itself with another Sky Screen, this time in Suzhou.

Suzhou Time Square, located to the east of Lake Golden Cockerel in Suzhou Industrial Park, China, boasts a 3856 sq m video ceiling installed by Optotech (Suzhou office). Electrosonic supported the project from its Hong Kong office by engineering the image scaling system required for a 350m length of the Sky Screen, based on two VECTOR image processors.

The display uses Nichia 3 in 1 surface mount LEDs, with a pixel density of 952 pixels per sq m. Peak luminance is in excess of 2000 Cd/m².

Wynn Tree of Prosperity

Electrosonic provided audio, video replay, master show control, an intercom system and a closed-circuit video surveillance system for the complex Tree of Prosperity Show in the atrium of a new wing at the Wynn Hotel and Casino in Macau.

The show begins when music starts playing. In the ceiling a 20m diameter iris, with the Chinese horoscope sculpted on it, opens to reveal an LED display of abstract video. The video is replayed from six MS9200 High Definition players genlocked together. Then the LED ceiling itself parts and a 10m diameter chandelier, lit by thousands of LEDs, descends. Now the action shifts to ground level where a copper dome, with the Western horoscope sculpted on it, opens and a 20m tall golden tree rises from a vault below the floor. The magical tree rotates to the music until the show ends and all the mechanical elements return to their home positions. Recently an alternative show has been introduced, where the tree has been replaced by a traditional Chinese Dragon.

The new “Dragon” show.

Electrosonic’s audio system, based on Crown amplifiers and JBL speakers, was extensive. Eight main speaker positions and subwoofers are installed on the mezzanine level to play the music for the attraction. Four effects speakers, which play back sounds like “shimmers” are linked through a slip-ring connection. Three additional effects speakers and four tweeters are suspended from a cruciform structure which also supports the chandelier.

Working to specifications prepared by consultant Joel Gread Associates, Electrosonic supplied an Alcorn McBride master show control system with a Crestron touch panel as user interface. This cues the AV playback system and triggers the sub-systems supplied by other vendors for the lighting and mechanical elements of the show.

A Clearcom intercom system keeps the technical staff in close communication



The new “Dragon” show.



The Tree of Prosperity with giant chandelier.

during the show. A comprehensive closed-circuit video system also ensures that the attraction is working as it should. Twelve cameras located throughout the atrium are routed to a 42-inch LCD display and three 20-inch LCD displays in the second-floor control room where technicians maintain oversight of the show. Mechanical engineering for the Tree of Prosperity Show was by McClaren Engineering, with fabrication and installation by Show Canada of Montreal. The automation systems are by Stage Technologies.



The iris ceiling opening to reveal the video screen..

Old movie theater transformed

The Palatsi Music Theatre in Tampere, Finland, was designed by Bertel Strömmer and built in 1929. Palatsi is a fine example of 1920’s classicism, and the theater has now been renovated and brought back to its original glory.

Electrosonic’s responsibility was to design and build a suitable sound, light and show system; install it on site, program it and give the client guidance in its use.

The space is intended for versatile use; a consequence of this was the specification of an all-digital system, ensuring that cabling occupied minimum space, and that the system could exploit future developments. The installed system uses 11.5 km of twisted pair cable and 800m of optical fiber.

Show lighting is based on a GrandMA console, Martin moving lights and ETC theater luminaires. House lighting control is by Helvar Digidim. The sound system is



based on active line array loudspeakers from EAW placed on either side of the stage. Audio mixing and processing equipment is from Biamp and Yamaha.

The video system uses three Sanyo projectors; one directed at the backdrop silver screen, two directed to screens either side of the stage. In the ceiling there are two remote controlled Sony Dome cameras, with which events can be filmed and projected on the stage screens.



600 Displays at Penn National

The Hollywood Casino at Penn National Race Course (HCPN) in Grantville, PA, is a 365,000 sq ft (34,000 sq m) integrated thoroughbred racing and gaming operation. Working to the requirements of HCPN’s entertainment services manager, John Wise, and specifications prepared by consultants Group SPI, Electrosonic engineered a large video routing and RF distribution system that feeds 600 displays sited throughout the complex.



An 83-channel digital RF system enables customers to watch live races at HCPN, or follow action at other tracks via an L-band satellite system and Roberts Communications’ simulcast decoders. For example, the races are displayed on 250 19-inch Samsung LCD TVs in the Box Seating and Terrace Dining areas. The displays feature the latest QAM digital tuners to match the system’s use of Z-Band RF. Each simulcast decoder represents a race track, like Aqueduct or Belmont Park, and each race track becomes a TV channel. The RF system also distributes Comcast and DirecTV feeds of sports programming and Pay-Per-View events to the Sports Bar.

A separate video routing system is based on a Magenta Mondo 64×160 matrix switcher with AMX control. It distributes pre-produced video to the casino floor’s Media Blitz area. It also feeds customer information, such as special player rewards and big jackpot announcements, to the gaming floor and to Pioneer plasma displays in eleven locations in the elevator lobbies. Twenty-four 52-inch, and twelve 32-inch, monitors display races day and night in the Simulcast Theater.

Heineken Experience

A new Heineken Experience opened at the historic Heineken Brewery in Amsterdam at the beginning of December 2008. Designed and produced by BRC Imagination Arts, it makes extensive use of specially produced high definition video programmes. Electrosonic's UK office was appointed by BRC as its principal sub-contractor for audio-visual systems integration.

In an area themed as a traditional Amsterdam Bar visitors view a show called "Born in Amsterdam" where they learn about the origins and development of Heineken since its founding in 1863. The presentation is informal, apparently given by a genial barman standing behind the bar.



The "Born in Amsterdam" show uses two 3m wide High Definition rear projection screens. Photo BRC.

Visitors enjoy the "Brew U" simulation ride, where they undergo the complete brewing process, from being mashed up as barley, boiled up with water, fermented, stored and bottled. In order to accommodate peak visitor flow there are three near-identical installations. Each one consists of a space dominated by a 3m wide screen. This presents a high definition film accompanied by full 5:1 surround sound, and a raft of special effects including lighting and water spray. The audience stands on a platform which provides the requisite "shake, rattle and roll" that is particularly effective when you (as the now brewed beer) proceed through the bottling plant.

"Raised by the World" is a fast paced presentation



The "Raised in the World" show has eight synchronized screens in a space dominated by a ceiling composed entirely of Heineken beer bottles. Photo BRC.

shown on eight screens that surround the audience. It shows the impact of the Heineken brand in countries all round the world, using footage from many sources. Four high definition players, each feeding two screens play back the show.

Visitors get a chance to taste the product in the "World Bars"; one of these includes a pouring demonstration. Video cameras allow visitors a close-up view on the LCD monitors near the bar.

Electrosonic was responsible for the engineering, supply and commissioning of the main audio and video systems.

However, installation was carried out by local company Mansveld. Some items from the "old" Experience, which had also been supplied by Mansveld, were carried over into the new show. The interactive displays were developed by the companies Alterface and Bitmove. All video media and sound tracks were produced by BRC Imagination Arts.



A scene from the "Brew U" simulator ride.

New England Patriots

The Hall at Patriot Place, a \$22million investment by the Kraft family, is located right next to the spectacular Gillette Stadium in Foxborough MA, home to the famous New England Patriots NFL team. The Hall is a combined Museum and Hall of Fame. It opened in late 2008, and its interior architecture and exhibits were designed by Cambridge Seven Associates. It makes extensive use of audio, video and interactive media. Cortina Productions produced all the video content, and Electrosonic was the principal



One floor and three overhead giant screens dominate the Grand Hall space.



The Hall at Patriot Place. The video pylons can be seen through the windows.

AV systems integrator.

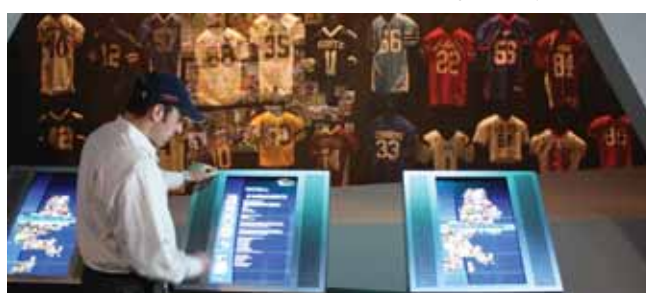
The "Grand Hall" is dominated by giant ceiling and floor projection screens. These show images of Patriots, past and present. Projection is by 3-chip DLP™ projectors of 16,000 and 8,500 lumen light output to deal with the large screen size and relatively high ambient light.

The 150 seat Raytheon Theater presents The Hall's signature film called "Patriots Way". Three projectors are used to create the image.

The Hall of Fame is devoted to the all-time greats of the Patriots team and currently there are 13 players

so honored. Four elegant touchscreen units allow visitors to select player statistics, biographical details and video clips.

The area is dominated by four giant "video pylons", each 30ft (9.1m) high and 5ft (1.5m) wide that show the selected action images.



The "New England Football" exhibit features the jerseys of the local high school teams. An interactive database is accessed by three large touchscreens.

The images are "back to back" so they are seen both from the outside of the building and within the Hall of Fame itself.

The pylon displays were supplied under a separate contract by Magink. They use a novel reflective cholesteric LCD technology. This means that the display is illuminated either by daylight, or by conventional lighting. The display is "tiled", with each tile 17 x 17cm (6.7 x 6.7 inches). Pixel pitch is 9mm. The overall effect is pleasing, since the image brightness relates directly to the ambient light. The effect is that of a dynamic poster.



The "Terrorism in our times" exhibit uses ten 20 inch and nine 37 inch synchronized LCD monitors accompanied by a multichannel sound track.

The CELL

Visitors to Denver's new Center for Empowered Living and Learning (The CELL) are plunged into a multimedia experience designed to explore one of the most important issues of our time: the threat of global terrorism.

Founded by Larry A. Mizel, The CELL is a non-profit, non-partisan institution, located within the Denver Civic Center Cultural Complex.

The exhibit brings the pervasive threat of global terrorism to life through compelling graphics, sophisticated computer interactive displays and effective audio and visual techniques. Davis Partnership was the architect for The CELL exhibition space, and exhibition design was by Houghton Kneale Design. AV content was produced under the direction of Richard Trank.



Robust interactive displays in the "Action Center" give visitors a strong message to take home.

This process took place over a three year period. Electrosonic's Systems Division was then responsible for engineering and installing the AV systems.

Several different techniques are used at The CELL. To emphasize the fact that terrorism can affect everyone, visitors are given a magnetic card carrying the biography of someone who has been directly affected. The card is used to activate the interactive exhibits, and visitors learn more about their adopted victim at each exhibit.

"A Delicate Balance" shows how governments are faced with the difficulty that protecting citizens from terrorism and still allowing civil liberties can be conflicting objectives. The debate is presented through three identical "touch table" exhibits (using Zytronic PCT™ touch technology) and is based on experience in the USA, the UK, France and Israel.

The overall extent of the installation at the CELL can be gauged by the fact that in the control room, which is visible to passers-by, there are nearly 100 small LCD confidence monitors that show the content of all the displays in the exhibition.



One of the three "Delicate Balance" interactive exhibits.

Electrosonic was involved with the project in two ways. In the project design and development stages, Electrosonic's Design Division worked up many AV concepts for evaluation, and prepared the final AV specifications.



The "Hitting Home" exhibit is a powerful show presented on 30 screens.

VISITOR CENTERS



The projection screen is suspended over the mosaics at Lullingstone Roman Villa.

Roman neighbors

Just five miles from Electrosonic’s main UK office is Lullingstone Roman Villa, one of England’s most important Roman archaeological sites. Now under the guardianship of English Heritage, it has recently had a major refurbishment including a new roof, improved visitor facilities and an enhanced exhibition.

The extensive remains of the villa include the foundation walls, the heating system and a pair of magnificent mosaics. These can be viewed at close quarters at ground level, or, to get an overall view, from a viewing gallery. At regular intervals the lights dim, and an introductory film is shown on a screen that floats above the mosaics.

The film explains the villa’s development over 350 years starting in AD 75, and shows how people lived in the villa and its importance to the local economy. It also explains why the villa shows some of the earliest evidence of Christianity in Britain.

The film makes use of re-enactments of aspects of daily life, of 3D re-constructions of the villa that were made by English Heritage, and of artist’s impressions of how the villa might have looked in its heyday. The film was made by Centre Screen Productions Ltd of Manchester, and Electrosonic was sub-contracted to Centre Screen to engineer the AV playback system. It is based on a Projectiondesign F1 SXGA+ projector sourced from a DVS(UK) Blade digital video player.

The installation is an excellent example of how comparatively simple AV installations can, with high quality production, make a major contribution to the success of an historic attraction.

BBC Scotland

BBC Scotland’s new headquarters at Pacific Quay in Glasgow is a benchmark in terms of state-of-the-art technology and production methods, across TV, radio and online. All BBC Scotland’s national broadcast output comes from here.

One of the facility’s objectives was to bring BBC Scotland closer to its audience, so the entrance foyer is designed to be the “accessible front for BBC Scotland” with free entrance and lots to see and do. Graven Images of Glasgow was appointed exhibit designer for the visitor experience, and Derek Kemp was appointed AV Consultant. As designs were finalized, Electrosonic was appointed the AV Systems Integrator. Siemens was project manager for the BBC.

BBC Scotland is responsible for the content



The “monitors over” exhibit shows high contrast images in high ambient light. Glass rear projection screens with 3M Vikuiti™ black film are used.

shown within the exhibits. It is carried on a Content Media Server, and there is also access to the BBC’s “General Media Viewer” or GMV. This is a network based system that carries all the BBC’s output, so any display fitted with a “GMV interface” can access any channel currently broadcasting. Additional interactive software and custom applications were provided by Crash Media, Chunk and Stand.

The foyer is a flexible space and is used for special events and broadcasts. While the exhibits all work independently, it is a requirement that principal exhibits can have content changed instantly, for example, the whole area can be themed to match a “football week”.

The idea is that many of the exhibits are automatically



One of the “Learn about” exhibits. All displays have the High Definition aspect ratio.

updated. Thus, for example, the “Monitors over” exhibit has a custom application to determine how content is displayed, but the content itself is “hot off the air”.

The main computer interactive terminals are in two groups of five, and support the “Learn about” facility, designed to familiarize visitors with all kinds of BBC “product”. As far as possible in the “learn

about” exhibit, all material is presented in both visual and aural form.

The building features a spectacular open area at its core that rises over five high floors and is known as “The Street”. “Gateways” lead off the street into production and office areas. There are many conference rooms, dressing rooms, green rooms and other spaces, including a large staff restaurant at the top of the building.

Electrosonic’s work included the installation of 20 46inch widescreen displays in the “gateways”, a complete PA and AV presentation system in the Staff Restaurant, 10 main meeting room AV presentation systems and 20 display systems in green rooms and dressing rooms.



The spectacular “Street”.



“The Circuit” – a series of working historic exhibits.

The World of Coca Cola

Electrosonic played a major role in the new World of Coca-Cola, the \$100 million attraction in Atlanta, GA by providing all of its multimedia systems, including complete show and lighting control. The project was five years in the making and is now attracting more than a million visitors a year. Exhibition design and project management was by Jack Rouse Associates.

Visitors first encounter Electrosonic’s work with a 46-inch LCD monitor in the lobby and six 40-inch LCD monitors in the “Loft” pre-show area, filled with Coca-Cola memorabilia. These tell the story of the famous beverage’s origins, preparing visitors for the Open Experience Theater where they are treated to a high-resolution, fully animated show, “The Happiness Factory,” which follows the journey of a coin through a Coke machine. At the end of the show the screen, a mechanism by Oceaneering, is hoisted up like a giant



Exterior of The World of Coca Cola.

garage door allowing visitors to exit. As people file into the central rotunda’s hub, they see The Portrait Wall display which conveys Coca-Cola’s charitable and humanitarian efforts, around the world.

The interactive “Milestones of Refreshment” exhibit spotlights the history and branding of Coke. Two large-format touch-screens allow visitors to try their hands at drawing the beverage’s logo.

From there, visitors walk through an actual bottling plant for a close-up look at the process. Four screens tell the story of water filtration, Coke’s secret recipe, carbonation and bottling. The images are displayed on active LCD glass. This glass appears clear until people approach it; then it turns opaque and the rear-projection display explains the process the visitors are witnessing.

Visitors exit to a Pop

Culture exhibit that includes a 46-inch LCD monitor displaying avant-garde footage shot by Andy Warhol of people drinking Coke. An interactive area allows people to design their own Coca-Cola ad. Two additional interactive stations enable them to relate their own oral histories about the drink.

“The Secret Formula Theater” is an exciting “4D” quest to find the secret formula of Coca Cola®. 3D images, moving seats and special effects give visitors a

thrilling experience.

In the Advertising Theater visitors watch and hear a potpourri of Coke ads and jingles from around the world;

In the “Taste It” area, there are eight 46-inch LCD’s, configured as a horizontal videowall. This gives a review of the 400 Brands in the Coca-Cola family. Sixteen LCD monitors form a circle around each of the five big dispensing stations where visitors can taste the Coke-branded beverages available on every continent.



“The Loft”, the pre-show for “The Happiness Factory”.



The “Taste it” area.

Science of survival

The Science of... is a partnership between the world renowned Science Museum in London and the intellectual property management experts, Fleming Media. Its mission is to “ask the big questions about the world we live in”, and it does this by organizing high profile touring exhibitions that visit key locations round the world, and which are supported by relevant corporate sponsors.

Its latest exhibition The Science of Survival, designed by Enigma Creative Solutions, was considered so important that two identical exhibitions were built. Construction was carried out simultaneously in the UK and USA. Electrosonic Ltd (UK) designed the AV system and built the AV system for the UK based exhibition, which first appeared at the Science Museum;



An electronic “lazy Susan” presents visitors with an international menu. Fill up your plate and see the global impact of your choice.

while Electrosonic Inc (USA) built and installed the AV System for the USA based exhibition, with its first appearance at the Liberty Science Center in Jersey City, NJ. Interactive software was by ico Design Consultancy, Spiral Productions and Luckybite, and video production by Griffilms South.

The theme of the exhibition is a look at what the world may be like in 2050. In no way minimizing the problems ahead, the exhibition demonstrates the ways by which Science can help solve them. The idea is to show that everyone can contribute to a sustainable future.

On arrival, visitors are given a card, this is an RF tag that both initiates the interactive displays, and allows responses to be tracked.

The exhibition is devoted to five fundamental aspects of daily life. Drinking, Eating, Enjoying, Moving and Building. Each subject area poses some of the problems, and



“Your future food” exhibit.

demonstrates some of the possible solutions. The interactive nature of the displays encourages visitors to think how they themselves can contribute to the solutions.

The finale of the exhibition is “Future City”; here the solutions that the individual visitor has adopted are aggregated with other visitors’ ideas, and the resulting “Future City” is displayed, showing the kind of neighborhood that can be expected in 2050.

The configuration of the AV system is based on the fact that the exhibition “tours”. Any central source equipment for an area is mounted in “road racks” to facilitate rapid installation and easy transport.

The exhibits are all networked (because the tag data must be transmitted between them) and this facility can optionally be used for the central control of exhibit power up and power down routines.



The “Future City” builds up in front of visitors as they add their contribution.



The Orientation Center.

Museum of Tolerance

The Museum of Tolerance in Los Angeles is a long standing client of Electrosonic. Right from its opening in 1993 it has made extensive use of audio, video and interactive techniques and Electrosonic provided the initial AV installations which were based on slide projection, laser discs and CRT monitors.

Over the years new exhibits have been added and old exhibits refreshed. In 1998 video servers started replacing laser disc players in new exhibits, and now all video is played from servers. Similarly, LCD and plasma monitors have replaced the old CRT monitors, and CRT projectors have been replaced by DLP models.

The most recent update was carried out in 2008. In this upgrade all projectors throughout the Museum of Tolerance and the Holocaust exhibit were replaced with new Panasonic DLP™ projectors, the Orientation Center show that had been based on slide projection was converted to use 12 plasma displays, and the “Video Host”, formerly based on CRT monitors, was converted to use LCD monitors.

In addition a completely new exhibit is the Polling Station which uses touch screens to allow visitors to answer topical questions – the cumulative results are displayed graphically on an associated plasma monitor.



The Video Host.

Believe It or Not® in London

The new attraction at No1 Piccadilly Circus (The London Pavilion) is an investment by London Bridge Entertainment Partners LLP, a franchisee of Ripley Entertainment Inc. formed to develop the “Ripley’s Believe It or Not!”® Museum in London.

Visitors enter the London attraction at street level, and take an elevator to the fifth floor. They then work their way down through the 24,000 sq ft (2,230 sq m) museum.

“Ripley’s Believe It or Not!”® claims to be the “Global authority on the weird, strange and bizarre”, so the exhibits defy classification, although the galleries do have themes. The “Clearing House” has mysterious crates containing specimens from round the world, “Weird People” is just what it says it is on the tin,



The World’s Tallest Man (2.7m) Robert Wadlow, with his video photo album.

“Art” includes works that would puzzle the Tate Modern, “Shrunk heads” are not for the squeamish, “Dungeons” includes chastity belts and “iron maidens”, and there is a special section for the “English” who are clearly no less weird than anyone else.

The London “Ripley’s Believe It or Not!”® museum was designed and produced by Jack Rouse Associates of Cincinnati, Ohio. The lead fit-

out contractor was Paragon Creative, and lighting design was by Abernathy Lighting Design. Electrosonic was responsible for the main AV installation.

Audio and video enhance individual exhibits, and animate the galleries. The AV system is based on 16 channels of Standard Definition video and two channels of High Definition video, with accompanying audio. In addition there is

provision for 24 audio effects tracks and for programmed lighting control.

One of the HD systems is used in the “Mr Ripley’s Office” exhibit. This is a reconstruction of his studio where he drew his “Believe it or Not” newspaper strips. Robert Ripley appears “live” and retails some of his adventures. The illusion (courtesy of a 65 inch plasma screen and Pepper’s Ghost illusion) is excellent, especially where “real” props are integrated into the film’s action.



Robert Ripley in his studio



Dressed to kill

Displayed over three floors of the historic White Tower of the Tower of London, a stunning exhibition celebrated the 500th anniversary of Henry VIII becoming King of England. Some of the world’s rarest arms and armor were selected from the treasures of Britain’s Royal Armouries and international collections. The exhibition conveys the power, majesty, wealth and psychology of the man, the icon and the king - who always ensured he was “Dressed to Kill.”

The exhibition was designed by Studio MB, with construction by Paragon, AV production by ISO and Peter Key and lighting design by Nich Smith.

Electrosonic designed and installed the supporting AV system, which required four projected images, one plasma display and multi-channel ambient audio.

London Transport



Amazing floor projections in the “Design for Travel” gallery. Photo by Dave Patten, Science Museum.

The London Transport Museum, in Covent Garden, re-opened at the end of 2007 after a £22million refurbishment and extension. The “new” museum makes intelligent use of audio-visual and interactive techniques, with over 150 exhibits featuring AV elements. Electrosonic was the principal AV systems integrator.

The London Transport Museum opened at its present location in 1980 in what was built as the Covent Garden Flower Market in 1871. In 2005 it closed for a two year programme of refurbishment and extension, during which the exhibition was completely re-ordered. Principal exhibit designer was Ralph Appelbaum Associates (London office), with Conran Design Group as designer of the entrance feature “World City Wall”.

The whole exhibition relies heavily on the use of audio-visual techniques to enhance and interpret the artefacts. Since its opening in 1980 the London Transport Museum has had an experienced in-house AV team, so the AV system design became a collaborative



24 interactive “Visitor Information Points” (above) and many “Media Panels” (below) are sited throughout the museum.



An overhead view of some of the larger exhibits.

effort between the Museum and Electrosonic, the AV Systems Integrator.

The AV content comes from many different sources. New content for major exhibits was produced by ISO Design of Glasgow; but a significant proportion of the content was produced in house, either as new material, or drawing on archives, or using elements from the previous exhibition. Much use is made of audio to animate otherwise static or mute exhibits with specially commissioned sound tracks from Julian Scott and overall sound design by Martin Pilton.

The AV hardware installation follows current practice in taking a “hybrid” approach, intended to minimize the amount of cabling required. Most source hardware is rack mounted and installed in four small control rooms – however, a significant proportion is sited within the exhibits. The reliability and very small size of current video playout devices and single board computers, and the fact that it is now easy to control and update such items over networks, makes this arrangement practical. At the London Transport Museum a Medialon system is installed for overall control. This is also able to monitor system performance and allows for

and Harry Beck’s iconic underground map, to station architecture, vehicle design and pioneering transport advertising, the gallery shows how London Transport developed a visionary style which defines the identity of the city.

The gallery presents a selection of posters, original artwork and artifacts, but these are augmented by multiple projected images that seem to fill the space. Seven projectors are used, six projecting on the floor, and one onto a wall. The show explores several design themes, and is run from Dataton “Watchout”.

Sound is used extensively to animate and interpret exhibits. Much of it is sourced from accompanying video, but “audio only” tracks are sourced from solid state players. Many different loudspeaker types are used, including Panphonic “Sound Shower” directional electrostatic loudspeakers and Amina “Exciter” transducers fitted directly to glass panels.

Loudspeakers are installed in unexpected places. Two horses pulling a horse drawn omnibus have a chat (complete with animatronic mouths) and detailed scale models, for example of the “cut and cover” building of the first underground lines, can be viewed through optical viewers which include built in loudspeakers.



The World City Wall shows how other city transport systems compare with London.

the quick recall of settings for special events.

The Design for Travel Gallery is based on London Transport’s emphasis on good design. From the roundel logo



“Connections” features a 4m diameter 3D model of London, surmounted by a large projection screen showing live video images. Actual commuter routes, matching the overhead images, are projected on to the model. Photo: Andy Paradise. Copyright: London Transport Museum.



Faraday’s Laboratory at the Royal Institution features a ghostly image of the man himself, and touch screen displays.

Royal Institution

The Royal Institution of Great Britain (RI) is “dedicated to connecting people with the world of science”. Best known for its Christmas Lectures, it is also an important centre for research. Humphry Davy and Michael Faraday did their main work here, and today the Davy-Faraday Research Laboratory has a team working on nanotechnology.

The RI has been at its present location since 1799. It has recently completed a £20million refurbishment project with Sir Terry Farrell as architect. This included restoration work in the famous lecture theatre, and a re-ordering of the spaces within the building. A new museum, sited on three levels, has been built with exhibition design and construction under the direction of Event Communications Ltd.

Electrosonic has completed two separate contracts at the RI. One was to upgrade the AV system within the lecture theatre, and the other was to provide the principal AV elements within the new



The Royal Institution.

museum. In fact the museum is not all new. Formerly the RI hosted a “Faraday Museum” that included Faraday’s original laboratory. The new museum recognizes all the scientists who have worked at the RI while still retaining the laboratory and artifacts associated with Faraday.

The content for the AV and most of the interactive exhibits was produced by Centre Screen of



The famous lecture theatre.

Manchester, who also produced the video content for the PDAs used for visitor guidance. The PDA system itself was supplied by Hypertag under a separate contract with the RI.

All AV elements within the Museum are on a network and are under the control of an AMX control system which looks after system power control and system monitoring.



The “Our Laboratories” show is given on two large screens in an area of high ambient light. Christie M Series projectors are used.



“Science in the Making” uses multiple monitors and back projection. It tells how Royal Institution scientists discovered 10 elements and earned 14 Nobel Prizes.

This is the NEWSEUM

The numbers are impressive. 250,000 square feet, 450 million dollars of investment, 130 interactive stations, 100 new video productions, 100 miles of fiber optic communications, 15 video theaters, 14 galleries, two broadcast TV studios and much more. Welcome to the Newseum.

"The new incarnation of the Newseum is dazzling, innovative and absorbing, a first-class addition to the capital's cultural institutions." — Howard Kurtz, *The Washington Post*

The “new” Newseum replaces an earlier version, sited across the Potomac in Rosslyn VA, that ran from 1997 – 2002. It is an extraordinary combination of museum, conference center, media center, visitor attraction, party venue, diner, and hub of media politics.

The Newseum is run by Freedom Forum, a non partisan foundation dedicated to the freedom of the press. Its position overlooking the Capitol makes it clear that it is keeping an eye on government.

Electrosonic is proud to have had the same role in both old and new Newseums, that of engineering the exhibit AV. This time the work consisted of a 4D theater system, a custom engineered “Be a TV Reporter” system, the installation of news tickers and the building PA system, the audio-video systems within exhibits, and the show systems in 14 of the 15 theaters sited throughout the Newseum.

Visitors descend to the concourse level; here they are directed to one of three 45 seat Orientation Theaters; three to ensure that nobody has to wait more than a couple of minutes to see the eight minute film “What’s



The Berlin Wall exhibit.

Owner	Freedom Forum / The Newseum
Architect	Polshak Partnership
Exhibit Designer	Ralph Appelbaum Associates
Main content production	The Newseum
Production of “I-Witness” and “What’s News?”	Cortina Productions
Project Management	Tishman Speyer
General Contractor	Turner Construction Co
Exhibit Fabricator	Kubik
Acoustic consultant	SH Acoustics
Audio-video integration (production/broadcast)	Communications Engineering Inc
Audio-video integration (exhibits and 4D show) and PA	Electrosonic

Partial list of credits for The Newseum



Exterior of The Newseum.

News?” This invites visitors to consider the role that news plays in their lives. Decades of major news events based on war and peace, love and hate, tragedy and triumph are both uplifting and depressing – will we ever learn?

Before leaving the concourse level visitors see the Berlin Wall. Eight sections of the original wall and an original watchtower are augmented by three 42 inch displays that trace the role of news media through the rise and fall of the Wall. On leaving the Wall, visitors ride to the top of the building in one of three glass hydraulic elevators.

At the top, visitors have a magnificent view of the Capitol from the Pennsylvania Avenue Terrace, and in a long gallery can see facsimile full size versions of “Today’s Front Pages”. An “Early News” gallery features artifacts from pre-printing days, and the “Great Books” gallery illustrates the origins of the freedom of the press.

These small galleries are followed by the large “News History” gallery based on the Newseum’s collection of more than 30,000 historic newspapers. These can be seen in heavily protected self



The News History Gallery.



The Walter and Leonore Annenberg Theater viewed from the stage.



The Great Hall of News features a news helicopter, a model satellite and a high resolution LED screen.



“Media Towers” within the Internet, TV and Radio Gallery, feature 32inch CRT TV sets.

retracting drawers. Electronic indexes on touchscreens help with navigation round the collection.

Overhead, 20 projectors run historic news film footage on screens either side of the gallery. Below the screens, display cases explore themes such as media objectivity and 24 hour news cycles.

This gallery has five “sidebar” theaters; each with seating for 25 people. These run documentaries on a continuous basis. Titles include “Sources”, “Bias” and “Getting it right”.

A major gallery is the “9/11 Gallery”, dominated by the remains of the top section of the transmission mast that was atop one of the twin towers. It features a

wall of facsimile newspapers of the time, and a memorable video sequence of the last photographs taken by William Biggart, a photo-journalist who died when the second tower collapsed.

The most moving show in the entire Newseum is “Running towards danger”, an 11 minute documentary shown in a small theater off the 9/11 Gallery. Based on first person accounts from journalists who covered the attacks, the effect on visitors is such that a box of tissues is tactfully placed at the exit of the theater.

The most popular feature of the “Interactive News Room” is “Be a TV reporter”. It consists of eight separate “chromakey” stages, each is equipped with a retro-reflective backdrop, a color camera with LED “ring” round the lens, a prompting system, playback monitors, operator’s touch screen controller and audio system.

Participants give their contact details to the attendant and choose a



There are 130 racks behind the scenes.

background. Choices include the White House, the Newseum, and the Supreme Court. Participants can either read from scripts, or ad lib. When done they see an instant playback of their efforts and receive a photo of themselves on set. In the “old” Newseum they were offered a VHS cassette, but the “new” Newseum puts the recordings on a server which can be accessed on the internet.

The 535 seat Walter and Leonore Annenberg Theater is equipped as both an auditorium and a TV location. But for most visitors this space houses “I-Witness: A 4D Time Travel Adventure”. Here only 200 seats are used, and, as visitors enter, they are surrounded by imagery

that, besides providing a “pre-show” experience, masks off the un-needed seating.

When the show starts the perimeter screens fly away, and the “normal” 25ft (7.6m) projection screen gives way to a 57ft × 25ft (17.4m × 7.6m) monster. On it is shown a specially made 3D film featuring pioneering journalists Isaiah Thomas, covering the Battle of Lexington, Nellie Bly investigating a women’s asylum under cover, and Edward R. Murrow broadcasting from London during World War II.

The Newseum is both a museum and an event space. It can house many simultaneous events in its conference facilities, studios, theaters and public areas, placing huge demands on the Public Address system which uses 800 loudspeakers, covering 80 independently programmable zones.



The Interactive Newsroom.



One of the “Be a TV reporter” stages.

Projectors (4D show)	Christie CP2000
Projectors (large screens)	Christie DW6K
Projectors (small screens)	Christie DW3K
Projectors (history gallery frieze)	Christie DS+25
Projection screens for theaters	Stewart
LED video screen	Barco 6mm 40ft×22ft (12.2m × 6.3m)
News tickers	Sunrise Systems
32 inch CRT displays	Sony KV32F V310
42 inch and 47 inch LCD displays	Samsung
19 inch LCD displays	JVC
Production cameras	Grass Valley LDK6000
Cameras for Be a TV Reporter	JVC
2K uncompressed servers for 4D show	DVS
Large screen servers, production servers	Grass Valley K2
Production recorders	Grass Valley Turbo
Exhibit HD playback	Doremi Nugget
Production switchers	Grass Valley
Production audio	Euphonix
Exhibit, show and PA audio routing and correction	Peavey Media Matrix Nion
Exhibit control	Electrosonic ESCAN
Array loudspeakers	Dakota
PA loudspeakers	Community CIS400; EAW WET2W8; Tannoy i8. Bag End subs
Show loudspeakers	Renkus Heinz; Tannoy; Bag End
Amplifiers	QSC and Crown
Motion seats	Oceaneering
Communications	RTS

Partial equipment list. Production items supplied by CEI. Exhibit, 4D show and PA items supplied by Electrosonic. The LED screen was supplied under a separate contract.

Gettysburg

The new Visitor Center at Gettysburg National Military Park features the outstanding Gettysburg Cyclorama, an inspiring widescreen film “A New Birth of Freedom”, and a stimulating museum that makes excellent use of video and interactive techniques. Electrosonic was the AV Systems Integrator for the project.

The site of a battle that changed the course of American history, and of Lincoln’s famous address, Gettysburg is one of the most important historic sites in the USA. A previous visitor facility was both unable to support the number of visitors, and was on a key battle site, so needed to be replaced.

When visitors arrive at the Center, they see an orientation show presented on three 50 inch plasma displays, prior to reaching the ticket counter which itself sports informative digital signage.

Visitors proceed to one of two 150 seat theaters. Both show the same 22 minute film so that there can be a show start every 15 minutes. It tells the story of the Battle of Gettysburg, its causes and its consequences. Besides dramatic reconstructions, the film includes extensive graphics and contemporary photography. This led to the use of a panoramic (3.6:1) screen format using three projectors with edge blending, each sourced from a High Definition player, and accompanied by a 5:1 sound system that does great justice to the sound of cannon fire.

After seeing the film visitors take an escalator up into the rotunda that houses the Gettysburg Cyclorama Painting, 377ft long and 26ft high (115m × 8m) painted by Paul Philippoteaux in 1884. Conservation started in 2003,



A scene from “A New Birth of Freedom”, a film with narration by Morgan Freeman that explains the significance of Gettysburg. The film is shown on a 47ft × 13ft (14.3m × 4m) wrap-round screen.

and the 360° cyclorama now looks as if it was painted yesterday. The painting depicts Pickett’s Charge, the peak of the fighting at the Battle of Gettysburg.

A Sound and Light show brings the Cyclorama to life. The sound design is complex; the requirement was for a system that could make sound appear to come from anywhere in the painting, and could achieve effects such as cannon shots flying overhead.

The solution is a 34 channel sound system with 52 main loudspeakers and eight sub-woofers. Most of the loudspeakers are arranged in pairs, with one loudspeaker at the top of the painting and one at the bottom. DSP is then used to



Typical interactive exhibit with a 32inch touchscreen below a 46inch slave screen.

End Client. A partnership between the National Parks Service and the Gettysburg Foundation.	Gettysburg National Military Park Visitor Center,
Exhibit designer.	Gallagher & Associates
Producer of “A New Birth of Freedom”, the Cyclorama show, and the Museum theater shows.	Donna Lawrence Productions
Producer of the interactive displays and digital signage.	Second Story
Lighting designer for the Cyclorama show.	Ted Mather
Lighting designer for the Museum.	Fisher Marantz
AV Consultant	Bob Haroutunian, PPI
Exhibit fabricator	Art Guild Inc
AV Systems Integrator	Electrosonic



One of the Battle Theaters.

locate the sound at the appropriate height within the painting.

Visitors then move to the Museum of the Civil War. The museum is rich in artifacts and contemporary photographs, but makes extensive use of video and interactive exhibits to interpret events and explain the detailed progress of the battle. Eleven touch screen interactive displays are used to explore subjects such as “Secession or Union?”, “A day in the life of a foot soldier”, and “Signal flags”.

Two small theaters “Voices of the Campaign” and “Voices of the aftermath” are sited either end of the main battle description. Their emphasis is on the spoken word, and visual support is by

modest 50 inch plasma displays showing standard definition video.

However, most of the theaters use large (9ft and 14ft – 2.7m and 4.3m) screens with High Definition projected images.

There are three “Battle” theaters corresponding to the three days of the battle (1 – 3 July 1863) and an “After the War” theater that critically examines events in the years following the civil war. Two other large electronic images are animated graphics. One is an “Animated Civil War Battle Map”, and the other is “From Gettysburg to Appomattox” taking visitors along a timeline to the end of the war.

The AV design for the Center was by PPI. Electrosonic provided design support, and supplied and installed all the AV equipment used in the theaters, the museum and in the public areas.

Electrosonic also installed and programmed the audio and show control system for the Cyclorama show.



Photo National Trust for Scotland

The new visitor centre at Culloden.

Battle of Culloden

The National Trust for Scotland recently completed its largest ever construction project, a new £9 million visitor center at the Culloden Battlefield, near Inverness. The center includes an exhibition that aims to offer a new level of understanding of what happened on 16 April 1746.



Photo National Trust for Scotland

Four of the “character stations”.



Photo Ewen Weatherspoon

Battle immersion shown on four screens.



Visitors looking down on the projected battle table.

NTS appointed a team that included Gareth Hoskins as architect, Morrison Construction as main contractor, Ralph Appelbaum Associates as exhibition designer, CMC Associates as content researcher and producer, Atacama and Nobles Gate as AV producers and Paragon Creative as specialist exhibit fabricator. Electrosonic joined the team as the AV systems integrator.

The imaginative and subtle means by which visitors become acquainted with people who lived at the time of and through the battle are the 14 “Character Stations”, spread throughout the exhibition. Each one consists of a 46 inch LCD monitor installed behind a diffusing panel to give a “ghostly” effect, compounded by the video

sequences themselves being “shadows”. Visitors select the character by means of a touch screen, and hear the character speaking over directional loudspeakers mounted overhead.

In the “Battle Immersion” area visitors see a reconstruction of the battle. The intense experience lasts around 12 minutes, and is presented on four screens surrounding the audience. Each screen is served by two projectors, with image edge blending, to achieve a widescreen image of high resolution. The show is accompanied by a powerful multi-channel sound track.

A finale area includes the impressive Battle Table. It is a graphic representation of the battlefield, and the course of the whole battle is shown with explanatory commentary. Visitors look down on a 4m × 2m table on which dynamic graphic images are projected by three SXGA+ projectors. Not only does the exhibit make clear what has gone before, it also prepares visitors for their tour of the battlefield itself.



Visitors standing on the circular viewing platform enjoying the amazing Gettysburg Cyclorama sound and light show.