

ELECTROSONIC WORLD 13

★ MUSEUMS & VISITOR ATTRACTIONS ★ CORPORATE APPLICATIONS ★ CONTROL ROOMS ★ RETAIL DISPLAY ★ LED DISPLAYS
★ VIDEOWALLS ★ NETWORKS & NETWORK PRODUCTS ★ INTERACTIVES ★ LIGHTING CONTROL ★ HIGH DEFINITION VIDEO ★ AUDIO



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TRAFFIC IN AUSTIN TX

Control Room Systems Page 6



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LED and Big Screens

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CORPORATE SYSTEMS

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High Definition

★★★ Demand for high resolution images in public display is increasing – as it should be, because there is now no reason why customers should not insist on High Definition presentation on all displays larger than 30 inch diagonal. Resolution-independent production methods, and the fact that all large screen displays are HD capable mean that HD is now affordable. Electrosonic's contribution is the provision of a range of players optimized for automatic playback. These devices, combined with Electrosonic's network-based media management and show control software, ensure the right high resolution content is shown at the right time – every time.



The HD FrEND™ from Electrosonic is a cost effective network compatible device for the showing of High Definition video programs.



The Fremont Street Experience in Las Vegas uses Electrosonic High Definition players in a system supplied by Newton Technologies Inc. See story on page 3.

New image processor

★★ This edition of ELECTROSONIC WORLD coincides with the introduction of a powerful new image processor from Electrosonic.

The VN-QUANTUM™ sets new standards of performance for managing large quantities of visual data.

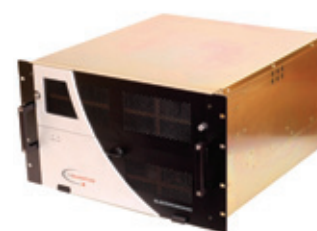
Intended for use with electronic display walls of any size, VN-QUANTUM integrates multiple video, graphic and networked sources. It makes extensive use of streamed image delivery and lossless compression to maximize source capacity.

A single frame system can drive up to 28 screen displays, and can carry up to 144 full frame rate video sources and 64 graphics sources for simultaneous viewing.

A single screen "output" can show up to 64 sources. Image scaling is based on Electrosonic's

patented convolver technology as used in the powerful VECTOR™ processor, and as usual with Electrosonic, the emphasis is on the highest possible video quality.

More information on Page 6.



The VN-QUANTUM rack mounting frame is suitable for systems using from 1 – 28 screen displays. A ruggedized real time operating system and redundancy options make it ideal for 24/7 operation.

Electrosonic opens up in New York and Edinburgh

New York area architects, designers, consultants and builders now have access to unsurpassed audio-video systems design and installation support as Electrosonic has established an office in Long Island City.

Electrosonic New York is not just a re-location. It is the combination of Electrosonic's Northeastern USA business with the systems installation business of Scharff Weisberg.

Scharff Weisberg has a 25 year history as a New York based provider of audio, video and lighting technology for the staging and rental market. Recognized as a technical and creative leader in the field, many clients look to Scharff Weisberg for advice on permanent installations.

Electrosonic New York combines the well developed infra-structure and global reach of Electrosonic with the innovative design of Scharff Weisberg - together a design build powerhouse.

Electrosonic has also opened up in Scotland. Here the long established Edinburgh based Audio Visual Consultants (AVC) has joined the Electrosonic Group. While continuing to provide a much appreciated local service to the Scottish market, the Electrosonic association brings new resources to the operation.



Electrosonic New York's office in Queen's.

Editorial

The theme of this edition of ELECTROSONIC WORLD is “High Definition”. Developments in display technology, media storage and media origination have matured to the extent that all users of the “Big Image” are entitled to expect images of much greater resolution and fidelity than were available in the “traditional video” era.

At Electrosonic we are making it our business to contribute to this improvement in image quality. For several years now our VECTOR™ product has been the real time image processor of choice where high resolution images must be presented on multiple displays. It is now being joined by the new VN-QUANTUM™ range which includes innovative methods of carrying high resolution images over networks.

The Electrosonic HD FrEND™, a network appliance for the playback of high definition content, is a highly cost effective device that enables users to benefit from the introduction of both large flat panel displays and the latest generation of projectors. It is just one of several Electrosonic products that both simplify and improve presentation technique.

Our Systems Integration business is helping clients get the most out of new developments, both by helping them choose the right products for the job (whether or not made by Electrosonic) and by giving them the benefit of enormous worldwide experience; and our rapidly expanding Service business continues to ensure that clients get the most out of their investment in presentation systems.

Electrosonic has now been going for over 40 years; we are, therefore, one of the most experienced companies in the “AV” business. We are proud of this achievement, but not complacent. It is by being constantly alert to both clients’ needs and technology trends that we continue to add value.

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Scotland

The story on Page 1 outlines the opening of Electrosonic New York, and expansion into Scotland.

The photo above shows the offices of AVC Electrosonic in Edinburgh, currently responsible for significant corporate, educational and museum projects in Scotland.

ES Ltd wins Grand Prix



The UK AV Awards are given annually at an event that has now become a significant date in the industry calendar.

The awards are given to companies making an outstanding contribution to the industry, and are judged wholly independently by two panels of judges drawn from a range of AV disciplines, including consultants, producers, service providers and end users.

In 2004 Electrosonic Ltd won all three categories for which it entered. Winning both the “Systems Company of the Year” and “Service Company of the Year” awards was a significant achievement, because Electrosonic had won the same awards in 2003. In 2004 these were joined by both the “Installation of the Year” award (in respect of Space Center Bremen) and the Grand Prix award, chosen from the winners of all categories.



Electrosonic Ltd’s service director, David Ambrose (left), receiving the 2004 Service Company of the Year Award from AV Magazine’s editor, Peter Lloyd.

Electrosonic Ltd (UK) moved into their then new Hawley Mill HQ back in 1990. The building is in excellent shape, and has recently benefited from some refurbishment. The nature of the work undertaken by Electrosonic has changed considerably in the last 15 years, so the opportunity has been taken to re-arrange the building to improve the working environment.

The changes include a large new showroom, a large combined sales and development office for “Products”, and an extended open plan office that provides accommodation for systems engineering, service and accounts staff.

Hawley Mill gets a facelift



The new showroom at Hawley Mill demonstrates all kinds of display technology, and, of course, Electrosonic image processing, image source, and control products.



Network products

✧ Electrosonic has two centers for developing products. In Burbank, CA, the emphasis is on network friendly show control and image source products. These include high bit rate MPEG-2 players for High Definition playback, standard definition multi-channel servers and the FrEND™ range of serial and digital network interfaces.

In Dartford, UK, the emphasis is on image processing. However the trend here (see “Quantum leap” on Page 6) is for images to arrive over networks.

While Electrosonic display systems can and do deal with streamed images (mainly based on MPEG) there are a number of applications where the “standard” methods of image compression are inadequate.

For this reason Electrosonic has recently developed two proprietary methods of high resolution (including 1600 x 1200 and HD) image transmission over networks.

VN-GLIMPSE™ provides lossless compression at remarkably low bandwidths. For example an SXGA image can be transmitted at a few hundred kb/s. Obviously there is loss of temporal resolution, but for many applications in the control and monitoring market this is not significant. Simple animations, including mouse cursor movements, are effectively transmitted in real time.

In simulation, high definition surveillance and telemedicine the requirement is for real time full motion imaging. Here Electrosonic has introduced the unique VN-MATRIX™ product. This device transmits high resolution real time full motion images with a bandwidth of only a few Mb/s.

However, its most important attribute is that it does this with minimum latency (approximately 3 frames end to end), unlike MPEG which, by its very nature, introduces latency of some seconds.

VN-MATRIX is currently supplied as a codec pair. It can be programmed to provide lossless, visually lossless and lossy compression according to available bandwidth.



VN-GLIMPSE™ transmits high resolution RGB images over networks at very low bit rates. Decoding is in software.



VN-MATRIX, supplied as a codec pair, uses the wavelet transform and a unique coding method to transmit very high quality moving images over networks.

CAVSP



The photograph above shows Electrosonic Ltd’s operations manager, Peter Barrett (left) receiving Electrosonic Ltd’s CAVSP (Certified Audio-Visual Solutions Provider) certification from Geoff Turner, ICIA Europe regional manager.

Electrosonic takes care to ensure that its staff are correctly qualified for the very varied tasks that the company undertakes, and to ensure that staff have the opportunity for continuous training.

As part of this process Electrosonic participates in the International Communications Industries association (ICIA) certification program, and many of its staff on both sides of the Atlantic have “CTS” certification of different grades.

The ICIA’s certification program has only recently been fully introduced into Europe, and Electrosonic Ltd is one of the first companies to take part.

Electrosonic also takes part in the INFOCOMM and ISE seminar program.

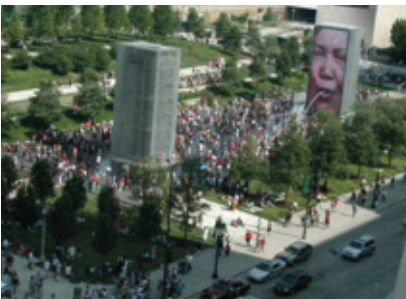
Watery screens in Chicago

☆☆☆☆ Chicago IL based Culture 22 won the sub-contract to provide the source control system and content integration for the Crown Fountain in Chicago's Millennium Park, working in partnership with the Barnycz Group of Baltimore MD. They in turn looked to Electrosonic to provide core elements of the system, including High Definition Players, overall show

control, and content management. A gift of the Crown and Goodman families of Chicago, the Crown Fountain has won instant recognition as a key Chicago landmark. It was designed by Spanish sculptor Jaume Plensa working with architects Kreuck Sexton, and is based on two 50ft (15m) high towers separated by a 232ft (71m) long pool. The towers are

the "fountain" element, with water cascading down all four sides, and with multi-colored internal illumination. The inward facing sides of the towers are giant LED video screens, each 50ft high and 22ft wide (15m x 7m), supplied and installed by main display contractor Barco. The displays are Barco SLite 14, rated IP65 for outdoor use. The principal images appearing on the screens are faces of Chicago citizens. To quote the sculptor "I always believe that people give a piece soul by breathing life into the architecture. We are filming 1,000 faces".

The video sequences are played out from two Electrosonic MS9200P High Definition players running in sync. Content management is by Electrosonic iMEDIATE™, and this allows content and playlists to be updated remotely over a wide area network (WAN). Show control is by Electrosonic ESCAN™. This not only schedules and monitors the operation of the source system, but also provides master commands to the fountain system (for example to control the water falling down the face of the "screens") and to the effects lighting system. Project management was by US Equities Realty, on behalf of the owners, the City of Chicago.



Daytime view of the Crown Fountain. One programmed special effect is to have a jet of water emerge from the mouth of the video image.



Night time view, showing clearly the effects lighting built in to the towers.

Biggest Big Screen on the Planet

☆☆☆☆ That's the boast of the Fremont Street Experience. In 1995 everyone was amazed at the giant video canopy 1400ft long, 90ft wide (427m x 27m) sited 90ft above street level in downtown Las Vegas. Designed by the Jerde Partnership, and engineered by Young Electric Sign Co, the display used two million incandescent lamps and became the most popular free entertainment in Las Vegas.

In 2004 the display was updated with LED technology. The stunning display now uses over 12.5 million LEDs for a resolution of 7552 x 552. It can now achieve 24 bit color, and run at full video frame rate (not possible with incandescent lamps). In order to achieve the highest possible image quality the system uses nine Electrosonic High Definition players as the source.

The new system was designed (and also sponsored) by LG Electronics and their associated company LG CNS Co. A specialist Korean company, Newton Technologies Inc, was responsible for the development and fabrication of



The Fremont Street Experience in Las Vegas

the LED modules, and Casino Lighting & Sign did the installation.

Electrosonic supplied Newton Technologies with a system consisting of nine MS9200P players running in frame sync; a master show

control computer running ESCAN™, and an MS9025 serial FrEND™ device for controlling other elements of the show.

The new display, now called "Viva Vision" by LG Electronics and the Fremont Street

Experience, merited new shows. "Area 51" is a show produced by Danny Murphy, director of show operations for the Fremont Street Experience. "The Drop" is a specially commissioned show produced by Imaginary Forces Inc of Hollywood.



The sign at 745 Seventh Avenue

ELECTROSONIC in Times Square

☆☆ Electrosonic can be found "behind the signs" in New York's Times Square helping to ensure the highest possible image quality.

At 745 Seventh Avenue Landmark Sign installed a Daktronics ProStar® AF2113 LED display of 16.5mm pitch. It covers over 6600 sq.ft. (655 sq.m.) of the building. Electrosonic VECTOR™ processing is used to split the images across the unusual display format. Normally three SGI computers provide the images which are split to nine XGA outputs by the VECTOR. A single Electrosonic High Definition player can be used as a back up source to drive the whole sign.

The NASDAQ sign (80ft wide, 120ft high. 24m x 36m) using a Saco display was the first of the "supersigns" in Times Square. Recently it was upgraded to use VECTOR as its pre-processor. In this case VECTOR is configured to provide eight XGA outputs corresponding to the eight sign sections. Up to eight high resolution sources can be shown.

The LG sign is a recent arrival in Times Square. It is unusual in being a "two in one" sign, with the inner part having a much higher resolution than the outer part. Newton Technologies Inc, who supplied the display, used two Electrosonic MS9200P High Definition players running in sync as image sources.



NASDAQ's famous sign.



LG's sign in Times Square

VECTOR - Broadcasters' friend

✪✪ The VECTOR™ real time image processor from Electrosonic is widely used in broadcast TV studios whenever multiple image displays are required. These may be back projected videowalls, or large LED screens showing multiple images.

VECTOR is ideal for this purpose for several reasons. It can accept almost any source from composite video to high resolution graphics. SDI (Serial Digital Interface) is now the preferred input, but often there is a need to accept either legacy or higher resolution sources.

Key to VECTOR's performance is its exceptional image re-sizing capability, which ensures a pixel-perfect match to the displays without objectionable artifacts. VECTOR can be genlocked to station sync, so images as seen by the TV camera are always rock steady, regardless of the original image's frame rate.

Finally VECTOR comes with the versatile C-THROUGH™ control program. This allows users to configure their display, and to change configurations, source allocations etc "on the fly" without "glitches".

TVN in Warsaw, Poland, is another news studio using VECTOR. 16 Barco 50 inch XGA cubes are fed DVI from the VECTOR, which is equipped for six SDI inputs and two high resolution inputs.



Channel 4 News in the UK broadcasts from a studio within the ITN building in London. It has recently upgraded its set with a 3 x 2 videowall, this time using Barco 67inch XGA cubes. Once again VECTOR's all-digital variant of SDI in and DVI/XGA out is used. However, in this case configuration control is by Electrosonic's COMMANDER™ software. While this has less flexibility than C-THROUGH, it can be easier to use if only a few standard configurations are required.



Intertech Vision M.E. L.L.C. supplied Dubai TV's state-of-the-art newsroom with no less than four videowall backdrop displays. They all use Barco displays with Electrosonic VECTOR image processing. Sources are SDI.



Belgian broadcaster VTM uses a 6 x 3 videowall in its news studio (Barco 50 inch cubes). Visual Display Solutions of Holland (an Electrosonic partner) demonstrated the advantages of VECTOR to VTM's engineering group, and installed the system. Key attributes here were the ability to accept four SDI inputs, and to provide 18 digital outputs precisely matched to the displays (DVI at XGA). In addition the system was set up so that C-THROUGH configuration commands can be directly initiated from the vision mixer in the control room.



Eurovideo of Italy uses a VECTOR processor to drive a large Lighthouse 10mm pitch LED screen that forms a backdrop to the Sunday afternoon Channel 5 show "Buona Domenica". In this case VECTOR is used because it can process multiple sources simultaneously, and because of its excellent re-sizing performance - particularly when, as often the case with LED screens, it is necessary to derive a lower resolution image for placing on only part of the display. The VECTOR pre-processor accepts two SDI inputs and provides four outputs each matched to a 4 x 4 section of the Lighthouse display.

Massteknik on tour

✪✪ Massteknik of Sweden and the UK provides the staging for several major acts, and for video presentation uses Unitek LED displays with Electrosonic VECTOR™ processing.

For Swedish cult band Gyllene Tider's 25th anniversary 20-date tour a 17m x 3.4m (56ft x 11ft) M25 screen was used as a backdrop, flanked by two 3.4m x 7m (11ft x 23ft) V9 screens.

At the Royal Albert Hall in London, Robert Wells presented his Rhapsody in Rock show backed by a 45 sq. m. (484 sq. ft) V9 LED screen.

In both cases VECTOR facilitated the simultaneous presentation of live SDI digital video and high resolution graphics.

Typically the Massteknik projects need 2 – 4 SDI video inputs and two or more graphic inputs. Multiple DVI-XGA outputs are then provided to match the actual screen format.



Gyllene Tider on tour



Rhapsody in Rock at the Royal Albert Hall



Ladra di Vento

✪ Italian soul singer Giorgia recently completed a 16-date sell out tour of Italy promoting her latest album "Ladra di Vento" (Thief of the Wind).

Produced by d'Alessandro & Galli, the concert featured a set designed by Vince Foster, who also designed a spectacular LED display for it.

As can be seen from the photos, the format (built up from 99 Lighthouse LVP10C modules) was a giant checkerboard. Because the final display format did not correspond to a standard video aspect ratio, and because multiple sources were required, it was essential to re-format the



Checkerboard LED backdrop for Giorgia.

incoming video images.

Eurovideo was responsible for the video staging, and used VECTOR™ to split

the incoming video images to match the display configuration precisely.

Eurovideo used a Globe-Caster 8000 digital video mixer to send six DVI inputs to the VECTOR, which in turn presented six outputs to the Lighthouse LIP units that fed the display. Eurovideo particularly appreciates the ease with which C-THROUGH™ allows programming of unconventional display formats.



The eyes have it.

Lobby projections at WMC

☆☆ The Wales Millennium Centre (WMC) in Cardiff makes interesting use of electronic images in its public areas. A combination of back projection, front projection and direct view displays is used to provide signage, present information, project electronic art and provide a show relay facility. The system was engineered by Electrosonic under a direct contract with the WMC, working to a design brief from the WMC itself and from the architects, Percy Thomas Architects.



The "Icon Wall" at WMC

A novel feature of the service desk is its electronic signage, which makes it possible to re-sign the different positions during the day. It was a requirement that a sign should be "invisible" if a position was not in use. This is achieved by the signs being glass with a sandwiched Polymer Dispersed Liquid Crystal layer. When an electric field is applied across the PDLC layer, the glass goes transparent. If the field is removed, it goes translucent and forms a back projection screen.

Each of the ten 80 x 30cm (31 x 12inch) signs is served by a compact DLP™ projector. The signage is sourced by an Electrosonic VN-2400 controller, which stores several images for each sign. A wireless LAN touch-screen allows the duty manager to assign the required indication to the different signs. Behind the centre section of the service desk a 16m x 2.5m (52ft x 5ft) back projection display presents high resolution images across its full length. The modular display is sourced from an Electrosonic VECTOR™ image processor giving complete flexibility in the presentation of multiple graphic and video sources.

The display uses eight Projection Design F1 SXGA+ projectors with wide angle lenses and large mirrors. The display is only 95cm (37inch) deep with projector access from the front. The public space at WMC includes a clear wall space designated the "Icon Wall". At appropriate times of day projected images appear on it.



The service counter at the Wales Millennium Centre incorporates a 16m (52ft) wide back projection display and ten programmable projected signs.

Six projectors are concealed within a balcony structure opposite the wall positioned so that they can create one large image (8m x 4m) (26ft x 13ft). Again the use of the VECTOR processor means that there is complete

flexibility in presenting either large single images or multiple images. At the time of opening, the Icon Wall was showing a work commissioned by the Mostyn Gallery of North Wales by PDC of Cardiff. Six pairs of 40inch NEC

LCD displays are installed in the theater circulation and bar areas, showing two different program streams. During the day they show similar material to that shown on the entrance display; but at show time they run "show relay" for latecomers.

Union Pacific



Union Pacific's massive high definition display in the atrium of their new HQ in Omaha, Nebraska.

☆☆ Graybow Communications Inc engineered and installed a giant (16ft x 37ft; 5m x 11m) High Definition display in the lobby of the new Union Pacific HQ in Omaha, Nebraska. The display is in scale with the large atrium space (90ft x 120ft; 27m x 36m; 19 storeys high) that it occupies. Graybow selected Electrosonic's VECTOR™ processor to power the display which is based on 28 80inch Glasfire™ rear projection screens, each served by a Sanyo XF-31 projector. The display uses a novel "open" construction, whereby the framework carrying the screens is separated from a separate enclosure that houses the projectors – the arrangement can be clearly seen in the photograph. A VECTOR processor, able to accept two high resolution inputs and two medium resolution inputs, provides 28 XGA (1040 x 768) outputs to the projectors. The majority of the material shown on the display is High Definition footage, either specially shot by Union Pacific, or derived from archive film.



Side view of the Union Pacific display, showing the separate screen and projector housings.

Slimline advertising

☆☆ Working with local re-seller Americom of St Paul, MN, Electrosonic supplied a novel lobby display system to the Martin Williams Advertising Agency in Minneapolis, MN. The client's requirement was for an eye-catching display to fit in a comparatively narrow (12ft, 3.6m) hallway. It had to be possible to create content in house, using Adobe After Effects™ software. The display consists of a line of seven 40inch Clarity



The entrance hall display at Martin Williams Advertising has a novel very high resolution display with content created by the agency.

Bobcat LCD displays. For production purposes Martin Williams uses a template of 8960 x 720 pixels; but once a program section is complete it is rendered as seven separate 720p High Definition streams. An economical high quality playback system is achieved by using seven Electrosonic

MS9100P High Definition players running in sync; these are programmed to output 1280 x 720 to match the pixel array of the displays. Electrosonic iMEDIATE™ software is used to manage the display content, and ESCAN™ is used to schedule the operation of the system.

Anadarko

☆☆ Anadarko Petroleum is one of the largest independent oil and gas exploration and production companies in the world. An important part of their operation is a well equipped conference center at their Houston, TX, headquarters. The main reception area is equipped with a videowall made up from a 4 x 3 array of Clarity Wildcat "cubes". The display is used to show a scrolling calendar of events and latest corporate video programs. It was specified by consultants BAi, and engineered and installed by Electrosonic. Anadarko's Supervisor of AV and Meeting



The reception area at Anadarko in Houston, TX, features a videowall that shows an events calendar and corporate promotional programming.

Services describes the system as being very user friendly, with it being easy to prepare content in-house. The system uses a VECTOR™ processor that allows two high resolution and two video inputs to be shown on the display.

QUANTUM LEAP

☆☆ Electrosonic has made many unique contributions to the “videowall” business over a period of 20 years. Products such as PICBLOC™ and VECTOR™ set industry standards, and in recent years VECTOR has been continually improved so that it remains the pre-eminent real time processor.

But Electrosonic has also recognized that the mainstream “control room” market has requirements that are somewhat different from those which VECTOR was designed to meet. Trends in principal markets, such as security, defense, traffic management and network operations are towards consolidation; with small local control centers being consolidated into large central ones.

At the same time there have been huge advances in camera and sensor technology, and in the use of networks as a means of transporting image data.

- Electrosonic has identified a number of areas where customers:
- require many more image sources to be acquired and displayed.
 - expect higher image quality, yet demand a lower system cost.
 - look for better network integration as they move in to the streamed source world.
 - look for better system management in the handling of large quantities of visual data.
 - want the interoperability of the PC, but with 24/7 reliability, and no downtime due to operating systems issues.

VN-QUANTUM™ is Electrosonic’s new product that addresses these needs. It is a modular product with a well defined road map which allows great scope for continuous product enhancement. But even the first release of the product represents a quantum leap in display wall image processing and system management.

VN-QUANTUM has no hard disk drive. It uses write protected flash memory to carry the operating system and configuration data. The RTX extension to the operating system takes hardware control away from Windows®.

VN-QUANTUM can be configured in many different ways, with a trade-off between inputs and outputs. If display screens are the priority, a single VN-QUANTUM frame can support up to 28 displays. If video inputs are the priority, the frame can support up to 144 video sources. Key to the system is the dedicated RAPT (Real-time Asynchronous Packetized Transfer) bus that in its basic form at 10Gb/s can carry 40 full resolution video images, and can be segmented to provide up to 70Gb/s for even greater capacity.

RGB inputs arrive over Gigabit Ethernet, using VN-GLIMPSE™ lossless compression, and because these are transferred to the RAPT bus, up to 64 graphics inputs can be viewed in a single frame system.

Electrosonic’s well established COMMANDER™ software is used as the control program for VN-QUANTUM, and the image re-sizing within VN-QUANTUM is based on Electrosonic’s patented convolver that is used in VECTOR. While VN-QUANTUM represents a quantum leap, it draws on a strong and well proven heritage.



A typical VN-QUANTUM output showing a graphic with 12 video sources on one large screen.

VECTOR in defense



At the NORAD Command Center 12 Clarity LION 67 inch and 16 PUMA 50 inch UXGA displays are used with Electrosonic VECTOR™ image processing.

☆☆ Lockheed Martin was the main contractor for the new Command Center of North American Aerospace Defense Command (NORAD) which is sited within Cheyenne Mountain, Colorado Springs, CO. Lockheed chose Electrosonic as display system partner.

As can be seen from the photo the display system consists

of a main 6 x 2 array of screens. On either side of the room there are two 2 x 2 arrays.

Critical applications of this kind demand the highest possible real time image quality, and this is where VECTOR™ excels. The NORAD installation uses seven VECTOR sub-systems and has access to 95 different images.



MTAC in Washington DC uses 12 Clarity DLP™ displays with VECTOR processing to show high quality real time images.

Traffic watch



City of Austin (TX) Combined Transportation, Emergency and Communication Center. The display system uses 60 Mitsubishi 50 inch DLP™ cubes.

☆☆ “Intelligent transportation control centers” are widespread, and there is now a move to consolidate them with those of emergency and security services.

A significant example of this trend is the Combined Emergency Management Center in Austin, TX.

Electrosonic engineered the display system for the Center. It uses one 12 x 4 and three 2 x 2 screen arrays made up from 50inch DLP™ cubes.

The cubes are arranged so that they can receive direct video, or the output of a VECTOR™ processing system.

In addition to the displays and processing, Electrosonic delivered an Ademco 256 x 256 switcher and a networked wireless control system based on COMMANDER™ control software.



The Kansas City Scout Operations Center in Lee's Summit, MO, monitors 75 miles of freeway in Metropolitan Kansas City. Electrosonic VDS delivered the display system which consists of eight Pioneer 50 inch plasma displays and 12 Clarity 52 inch DLP™ cubes. The cubes receive both direct images and the output of a VECTOR processor.



Electrosonic VDS worked with ITS consultant Kimley Horn and contractor MTM Construction when delivering and engineering the display system for the Los Angeles County Traffic Management Center in Alhambra, CA. The system uses Barco 50inch DLP™ XGA cubes, and accepts up to 16 NTSC and four SXGA inputs.

Global VDS takes a bow

✦✦ Electrosonic is in the process of strengthening its offering in the video display market with the launch of its global Video Display Solutions (VDS) division.

Over the years Electrosonic has developed a team of experts, based in several different locations, who have enormous practical experience of many different kinds of displays and image processing technology. This team is now working as an entity so new knowledge is quickly disseminated worldwide.

As is evident from the stories

in ELECTROSONIC WORLD, the VDS team operates independently of any one display manufacturer – the aim is to ensure that the client gets the most appropriate product.

Electrosonic's VDS team is happy to work in many different ways. It often works as a sub-contractor to a major systems integrator, delivering fully operational display sub-systems. It can work with display manufacturers, providing the integration and project management service that is difficult for the display



The 500 seat Baruch Auditorium at NDU has a 25ft x 10ft display of high resolution 5120 x 2304. COMMANDER™ software manages the selection of image sources and the positioning of images on the display.

manufacturer to provide. When a client is highly knowledgeable about its application, and can therefore act as its own specifier, Electrosonic works direct. When appropriate, Electrosonic VDS bids against specifications prepared by others – provided it can see that it will be adding value to the finished project.

Examples of all these methods are to be seen in the stories in this issue of ELECTROSONIC WORLD.

The pictures shown here are of a prestige installation at

National Defense University, located at Fort McNair, Washington, DC.

NDU has its own visual information specialists, and they determined that the main auditorium needed a high resolution display able to show multiple images under TV lighting conditions.

Their display, installed by Electrosonic VDS, uses a VECTOR™ processor with COMMANDER™ control software working in to 15 Clarity Lion 67 inch "cubes".



President George W. Bush speaking at National Defense University in February 2004. Photo by Sgt. Linda Tsang, Army Visual Information Directorate.

College of Saint Rose

✦✦✦ AVSSI was the systems integrator for a video display system installed in the Carl E. Touhey Forum of the College of Saint Rose Thelma P. Lally School of Education – a college that serves 4,600 students in Albany, NY.

The display has to work in a high ambient light environment, and is required to display images from all kinds of video sources including distance learning, and from document cameras and slide scanners.

AVSSI and the client selected a videowall system from Electrosonic. It consists of a 3 x 3 array of Clarity 50 inch DLP™ cubes and an Electrosonic VECTOR™ processor.



State Street Bank

✦✦✦ State Street Bank in Boston, MA, contracted with Verrex Corporation to supply a video and AV system. One requirement was for a bright multiple image display to work in the high ambient light lobby, and Verrex turned to Electrosonic for the provision of the display, which consists of a 5 x 3 array of the new Hitachi 40inch cubes that use 3-chip LCOS technology. Image processing is by VECTOR™. The system is controlled from an office several blocks away using a combination of Electrosonic's COMMANDER™ and ESCANT™ software.



VNU on Broadway

✦✦✦ VNU (which embraces Nielsen Media Research) has a new corporate HQ in a beautifully restored building on Broadway in NYC. Steve Meyer was commissioned to produce media for a special reception display presented on a line of ten Clarity 50 inch DLP™ displays. Wave Enterprises was the original systems integrator, and it turned to Electrosonic to supply the unusual display system. It uses two Electrosonic MS9200 HD players as source and a VECTOR™ system to split the two HD streams.



USA Service

The Service Division within Electrosonic Systems Inc (USA) is well set up to support many different kinds of installation throughout North America.

However, its main activity is providing support for large video displays, especially videowalls, used both in the control room environment and for public display.

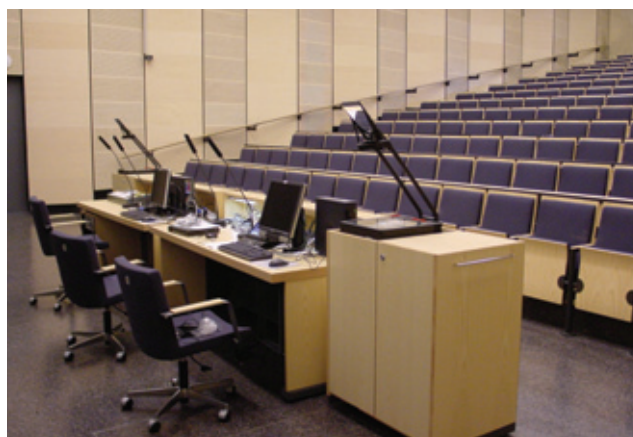
This support is offered for all makes and types of display. A particular specialty is the re-tubing of CRT displays, and the provision of spare lamps for the new generation of LCD and DLP™ displays.

Electrosonic has service staff strategically located to ensure that displays that must operate 24/7 do just that, and to ensure that customers get the maximum practicable life from their display investment.

Exactum for IT research

✦✦ Electrosonic-Lightinen delivered the AV systems for three large lecture theaters and 45 classrooms at Exactum, the Computer Science Department of the University of Helsinki.

Exactum is the largest unit at a multi-disciplinary university in Finland for information technology research and teaching. The department specializes in algorithms, intelligent



Well equipped lecture theater at Exactum.



systems, information systems, software engineering and distributed systems.

As is now common practice with modern lecture theaters, the main spaces are fitted with twin screens to facilitate the display of multiple sources and the use of distance learning techniques.

Notice the twin screen arrangement.



Töölö hospital video

Electrosonic-Lightinen of Helsinki supplied and installed AV systems for the departments of neurosurgery, plastic surgery and orthopaedics at the Töölö Hospital in the hospital district of Helsinki and Uusimaa.

The system includes audio and video transmission by optical fiber from the operating theaters to the main auditorium, and a complete presentation AV system for the auditorium itself. Operations can be viewed in the different departments, and can be recorded to hard disc. Microscope, endoscope and X-ray images can also be fed in to the system.

The Hospital

Electrosonic Ltd delivered a massive broadcast standard AV infrastructure system to a hospital of a different kind. Based in the former St Paul’s Hospital in London’s Covent Garden, and founded by American investor Paul G. Allen, the hospital houses a full High Definition production facility and many public and presentation areas. Electrosonic completed all the non-studio AV distribution and presentation systems.



Scandic Hotel Marski

Electrosonic-Lightinen supplied and installed the complete audio, video and house lighting control systems for the meeting room complex at the Scandic Hotel Marski in Helsinki.

Equipment included Helvar Digidim™ lighting control (right) Bose audio and AMX control.



ES Service at the Exchange

The London Stock Exchange is a long standing client of Electrosonic. Recently Electrosonic has completed a major project for the London Stock Exchange, followed by entering a long term service contract to support the technical facilities at the new site.

The project itself is an example of where Electrosonic worked for a major contractor

Full AV presentation facilities, all connected by a building-wide AV matrix, including microphone management, audio conferencing and video conferencing in relevant rooms, for:

- Media & Business Complex
 - One auditorium (The Theater)
 - Two syndicate rooms (The Recess Rooms)
 - Two presentation suites (Forum 1 & Forum 2)
- Five presentation suites
- 12 meeting rooms
- One boardroom
- Four dining-meeting rooms
- Two executive offices

Plasma display screens for:

- Two Media & Business Complex studios
- Green room
- One staff coffee area
- 20 house video displays building-wide

Videowall work as follows:

- Move existing Electrosonic DLP display from old building and re-install
- Supply Electrosonic VECTOR processor for new videowall installed by others

Electrosonic's scope of work at the new London Stock Exchange Building.



The main presentation theater at the London Stock Exchange.

on a project requiring tight project management as the London Stock Exchange moved from one building to another.

The professional design team consisted of Gensler as architects, and AWAV as AV Consultant. AWAV worked as a member of the Gensler team for the project. The main contractor was Interior PLC, to whom Electrosonic was contracted after a competitive tender.

Electrosonic's task was to provide AV systems throughout the new building. The systems were spread over seven floors, and ranged from a state-of-the-art auditorium, to building-wide displays fed from a house video



Recess 1 meeting room. In rooms like these the plasma displays drop down into the credenza when not in use.

system (see box).

The control system in each space is multi-functional in the sense that it adapts to different levels of sophistication for the user. While each room operates independently, there is a secure web browsing facility that can be used by technicians to control and monitor any room over the house network.

Electrosonic augmented the Crestron "Room View" application to provide full remote status display of equipment in remote rooms.

The meeting and presentation spaces within the Media & Business Complex are used by both internal and external clients for corporate events (press briefings and product launches etc). Global broadcasters also report on the day's business and market news from one of four specially-designed television studios.



Forum 2 meeting room.

Following completion of the project, Electrosonic was appointed to provide full time support to the London Stock Exchange, providing service both for the systems described here and for equipment supplied by others.



The TV interview studio includes a videowall that uses VECTOR™ processing. While the TV studio equipment was installed by others, Electrosonic provides the on-site support service for it.

On site Service

The London Stock Exchange is just one of many sites for which Electrosonic Ltd provides full on-site service.

Large customers (many of them in the financial services industry) often look to outsource the support of their presentation and conferencing facilities.

Such facilities can include up to 100 or even more meeting spaces. Electrosonic provides committed and skilled staff to the management and technical support of such sites, ensuring continuity of service to the customer, and a challenging career path for the staff.

Land Rover



Photo by kta design

The Land Rover Discovery 3 Dealer Launch event took place in Stockholm, Sweden. The presentation was given 54 times over a period of 74 days in a specially constructed theater that was based on the use of the Musion® Eyeliner™

projection system.

This system produces an amazing “3D” illusion, allowing virtual objects to be superimposed on real ones. The system is based on the well known Pepper’s Ghost illusion, but uses proprietary technology to produce huge seamless images.

The variant used for Land Rover required a High Definition video image as the “Virtual” image, and for this purpose Musion Systems uses an Electrosonic MS9100P HD player. (See also “HD Olympic bid” on Page 10.) The show was produced by PM&M of Milton Keynes UK.

★ ★ ★ O2 is a leading European cellular phone operator, with a particularly strong position in the UK. Within the UK it has 262 retail outlets, and, at the time of writing, six of the destination shops have been equipped with interactive displays.

Imagination was responsible for the design concept of the stores, and also for the creation of the program content. Each of the new stores is equipped with three 40 inch LCD displays. Associated with each display is a set of four photo-reflective sensors set in a line in the ceiling, with their corresponding reflectors set in the floor.

If a customer intercepts one or more of the beams, a “bubble” appears on the screen, starting at the bottom and rising to the top. There are four “O2 bubbles” possible on each screen, one for each of the four sensing positions.

The “bubbles”, with accompanying audio, emphasize different aspects of the O2 service, reminding customers of the various products on offer. The complete display system provides animation and entertainment within the store.

O₂ Interactive



The new look O2 Trafford Centre store

Electrosonic supplied the AV hardware, and was responsible for the installation and commissioning of the systems. The work was done under subcontract to Bedford & Havenhand, the main fit-out contractor.

VECTOR™ in Hong Kong



★ A “Digital Sky” has been installed in Hong Kong, and it uses an Electrosonic VECTOR™ processor to achieve the giant 2000 sq. m. image. Langham Place is a new commercial center in Mongkok, Kowloon, Hong Kong. It includes a luxury hotel and a 15-storey mall with 300 shops. The entire length of the mall’s ceiling turns into a digital sky when ambient lighting conditions permit. This is achieved by the use of 16 high power video projectors

arranged as eight pairs in a 4 x 2 configuration, with a VECTOR processor doing the image splitting. System design was by consultants Arup (Hong Kong office). AV integration was by PCCW-HKT Technical Services, who subcontracted the physical installation of the projectors to South China House Technology. Electrosonic’s Hong Kong office provided technical support to PCCW-HKT in the configuration of the VECTOR system.

Nike roll-out

★ ★ ★ ★ ★ Electrosonic first became involved with Nike in 1997, designing and installing the AV systems in Nike Towns across the world. In 2004 Electrosonic was asked to look at the Nike Store European roll out program and develop a strategy for the professional integration of AV into these stores. To date Electrosonic has been involved in over 30 stores, designing and installing a wide variety of display technologies including plasma panels, videowalls and video projection, as well as zoned audio systems. Part of the long term strategy for the stores is the integration of remote download technologies. Electrosonic is involved in the development of a system that uses ADSL links and a dedicated network to distribute media to Beam TV’s Beam Boxes which provide the video footage displayed within the store. Electrosonic has also been working with Nike on the implementation of Nike ID, their interactive business model, applying their knowledge of interactive systems in the museum world to the retail environment.

Kingston University



★ ★ The new media wall at Kingston University’s Penrhyn Road site is the focal point of a new student reception area primarily for students in the newly formed Faculty of Computing, Information Systems and Mathematics CISM, and the Faculty of Engineering. The wall is designed to provide students with up to the minute information regarding courses, news, developments and activities at both a Faculty and University level. It also provides a means for both Faculties to promote their achievements, including research activities, students’ work and initiatives with industrial partners to both internal and external audiences. The 3 x 2 display of Toshiba 50inch cubes was installed by Electrosonic’s new VDS division in the UK.

Thunder Valley Casino

★ Stations Casinos and the United Auburn Indian Community operate the Thunder Valley Casino under a joint partnership. Opened in 2003, it is just outside Sacramento, CA, and is one of the top grossing Indian casinos in the USA. Electrosonic was the AV and control systems contractor for the project, under subcontract to Cupertino Electric Inc. PMK Consultants of Las Vegas designed the system, and Direct AV was installation subcontractor to Electrosonic. The large system required five control rooms, and fiber optic distribution. Over 50 Plasma displays are used, and a multi-channel audio system plays out to 800 loudspeakers in 30 zones.



Flash

★ ★ ★ Lifetouch of Eden Prairie, MN, specializes in portrait photography of all kinds. One of its divisions is Flash! digital portraits®. It uses a “story telling” approach to child and family portraiture, and has a number of strategically sited studios. The one shown here is at Clackamas Town Center in Portland, OR. It is one of several that use high definition displays to promote the Flash! concept. The vertically mounted display is a Clarity 40 inch Bobcat LCD panel with anti-reflective coating, and it is sourced by an Electrosonic MS9400 High Definition video player, running HD at 720p. The MS9400 is a network appliance, so it is easy for Flash! to update the program content over their network.



Robinson Rancheria



★ ★ Another Indian owned casino, this time owned by the Robinson Rancheria Pomo Indians of California, has also had the Electrosonic treatment. The Robinson Rancheria Resort & Casino’s recent expansion includes a distributed video system with flat panel and videowall displays, and auditorium projection and multi-room audio in the three ballrooms.



EXHIBITIONS



Exterior of the Nomadic Museum. Scharff Weisberg provided projected video effects on the roof of the structure at opening time.

Ashes and Snow

★ ★ ★ One of the first projects to be completed by the Electrosonic New York operation (see story on Page 1) was the completion of the HD video theater, cascading background audio and media control system for The Nomadic Museum, which visited Hudson River Park’s Pier 54 (on 13th Street in New York City) in the spring of 2005.

The Nomadic Museum is Canadian photographer Gregory Colbert’s vision of a transient structure to house his exhibition “Ashes and Snow” as it tours the world. The exhibition was first seen in Venice in 2002, and consists of 200 large scale photographic artworks exploring the interaction between man and other animals – the images attempt to recover a lost time when man and other animals shared a common language.

The Nomadic Museum “building” is made up of colorful shipping containers stacked like a checkerboard to form its walls, and gigantic “sails” for the roof. Electrosonic New York installed a High Definition Theater with a 20ft wide screen and 5:1 surround sound at the waterfront end of the structure. It uses an Electrosonic MS9100 High Definition player and a Panasonic PT-DW7000U DLP™ projector.

Within the main exhibit space an eight channel music track is distributed through 30 loudspeakers. The combined audio-video system is controlled by an AMX N12000 controller that provides both automatic scheduled control and a manual override facility.



Interior of the Nomadic Museum, showing the large HD projection screen and some of the mounted photographs.

HD Olympic bid

★ The team responsible for the UK’s bid for the 2012 Olympics ran a major “Back the bid” campaign to gather support from Londoners. As part of the campaign exhibits were mounted in both Trafalgar Square and Canary Wharf.

Specialist production company Blend, working with Sunrise Events, created an illusion theater featuring Olympic medallist Matthew Pinsent. The high quality imagery of the oarsman was assured by him being filmed in High Definition, with playback from an Electrosonic HD player. Effects company Musion supplied the player and the illusion optics to Blend.



The photo shows a (real) member of Blend's staff setting up the show on the same stage as the (illusory) Matthew Pinsent. Photo by Louise Stickland.



Eurofighter New Dawn Theater

★ ★ Impact Image produced a dramatic High Definition promotional film for Eurofighter GmbH that was used at the Asian Aerospace Exhibition in Singapore, the ILA airshow in Berlin, and the Farnborough Airshow in the UK during 2004.

Presenting such films in the



Entrance to the New Dawn Theater at the Singapore Asian Aerospace Show.

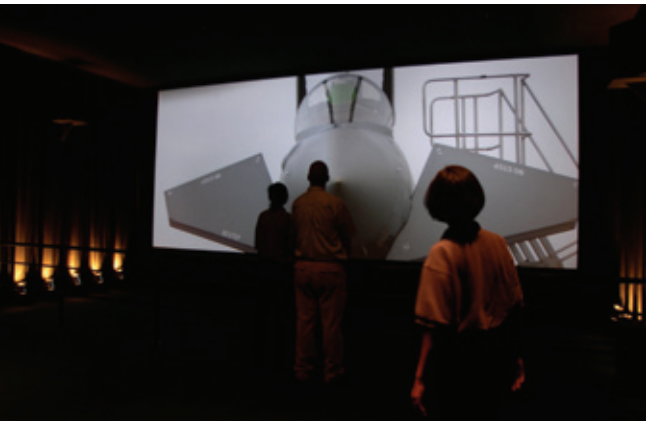
confines of an exhibition booth does present some problems, especially when running costs must be kept in check. It is in just such applications, however, that Electrosonic HD playback systems provide a highly cost effective solution.

Mayhart Ltd was sub-contracted to ATC to provide the show playback system for Eurofighter’s “New Dawn Theater”. The aim was to produce an 8m x 3m (26ft x 10ft) image at a resolution of 1920 x 768 pixels.

Mayhart used two Christie X7 XGA (1024 x 768) DLP™ projectors to project the image, and two Electrosonic

MS9200P HD players as source. The MS9200P includes a “soft edge” image blending feature that allows two players running in sync to produce one

single large image. Sound for the show was also carried on one of the players as a Dolby Digital 5:1 surround sound track.



The 8m x 3m image is produced by two side by side projectors with image blending on the overlap.

The Concorde Experience

★ The Museum of Flight at East Fortune, East Lothian, Scotland is one of the National Museums of Scotland.

A new exhibition (designed by Austin-Smith Lord) introduces Concorde to

visitors. It includes the presentation of a 12 minute film that tells the story of Scotland’s Concorde, and of its journey by river, sea and land to East Fortune.

The film is shown in a



Concorde G-BOAA at Scotland's Museum of Flight. Visitors get a “boarding pass” to tour the interior. Photos by Ian Jacobs.



Before boarding Concorde, visitors see a film in this theater about G-BOAA, and its strange journey by land and sea to its present site.

presentation theater. It is run from a Denon DVD player playing into a Projection Design F1 XGA DLP™ projector.

The film presentation system was supplied and installed by AVC Electrosonic

of Edinburgh. The site of the Museum of Flight is a protected first and second world war airfield – and in 1919 it was where the R34 airship took off on a record breaking east-west transatlantic crossing.

3D thrill ride at Busch Gardens



Exterior of the Curse of DarKastle – The Ride

★ ★ ★ ★ “Curse of DarKastle – The Ride” is a new thrill ride located in the “Germany” part of Busch Gardens in Williamsburg, VA.

The ride transports guests through a grand Bavarian castle frozen in time. Following a pre-show that introduces the legend, guests board eight-passenger “Golden Sleighs” for a mesmerizing journey through the castle’s ghostly chambers.

Technical staff at Oceaneering review the restraint system in the ride vehicle.



Electrosonic engineered the audio, video, projection and show control elements of the ride, making extensive use of products from its Media Networks range.

The ride vehicles, of which there are 15, are equipped for full multi-axis motion and rotation; computer controlled to synchronize with the projected imagery.

Oceaneering delivered the ride system which uses an innovative motion base for providing the vehicle movements.

While in the vehicle, guests see a combination of “hard” theming and 3D projected images seen through polarizing spectacles.

The ride uses a total of 19 Electrosonic MS9200P High Definition players with HDSDI digital output. One is used for the pre-show,



The Team

Architect	Peckham Guyton Albers & Viets
Attraction designer	Bush Entertainment and Falcons Treehouse
Theming	The Nassal Company
Ride	Oceaneering
Media	Super 78
Audio, video, projection, control	Electrosonic

and the other 18 are used in nine synchronized pairs to show the 3D scenes.

Christie projectors are used throughout. A single projector shows the pre-show and nine pairs of 3-chip DLP™ projectors of differing power and resolution (depending on image size) show 3D images on a mixture of front and rear projection screens.

Show control is by ESCAN™, using digital, serial and Mini FrEND™ network interfaces to receive inputs from track sensors and to control the projectors, HD players and special effects.

Audio is a mixture of “off-board” audio, derived from the HD players’ SPDIF digital audio outputs, and “on-board” sound within the vehicle.

The off-board sound is decoded and fed through a Peavey Media Matrix for equalization, and thence via QSC amplifiers to 51 Klipsch CA8T

loudspeakers augmented with JBL sub bass speakers.

On-board sound is carried in Electrosonic MP3 solid state digital players; there are four on board



CCTV monitoring system in the ride control room

channels per vehicle requiring a total of 30 players.

Electrosonic also installed the ride CCTV monitoring system and a comprehensive paging and queue line audio system.



One of the scenes in the DarKastle ride. Each one is projected in 3D.

Borgs invade Bremen and Las Vegas

★ ★ ★ In 2004 Electrosonic had the interesting experience of completing two installations based on the same underlying show, but using different projection techniques.

The show, a mixture of live action, 3D projection and special effects, is a new attraction developed by Paramount Parks, based on the STAR TREK™ franchise.

A pre-show area provides a “briefing” from “The Doctor”, presented on an HD screen supported

by live action and thunderous sound effects. As the attempted Borg Invasion starts, visitors move to the “transporter” – in fact an auditorium where they not only see outstanding digital imagery on a big screen, but are subjected to a range of physical effects.

Every seat is equipped with probes that poke the guests’ backs and provide unexpected airblasts, all programmed to enhance the feeling of “assimilation” by the Borg.

Electrosonic provided the main audio, video and show control for

installations at both Space Center Bremen, in Germany, and at the Las Vegas Hilton in the USA. The shows were, however, on different scales.

In Bremen the show accommodates 250 people at a



“Star Trek : Borg Encounter®” at Space Center Bremen. In this installation the 4D seats are by ACR Media AG.

time. The main screen is 13.2m x 7.7m (43ft x 25ft) and the picture is provided by twin 70mm movie projectors using a projection system supplied by Kinoton.

In Las Vegas the auditorium seats 48, so the screen is smaller at 35ft x 20ft (10.7m x 6m). In this case Electrosonic delivered the projection system which is all electronic, using two DVS HS2U-200HD high definition servers playing into two Christie CP2000 “Cinema” projectors using

2K 2048 x 1024 DLP™ chips.

Both installations use High Definition presentation for the pre-shows, and in this case Electrosonic MS9200P HD players are used, as they are for a “ceiling” screen which is unique to the Las

Vegas installation.

Both systems have massive audio systems installed by Electrosonic. The main show uses over 60kW of amplification in Bremen and 23kW in Las Vegas, the majority of which is used to power “Buttkicker®” low frequency drivers coupled to the seating.

Main show audio is sourced from a DTS™ system in Bremen and from Fostex D2424LV hard disc players in Las Vegas.



“Borg Invasion 4D at STAR TREK™: The Experience” at the Las Vegas Hilton. In this installation the special effects, including the 4D seats, are by Technifex.



The main pre-show at the Las Vegas Hilton.

THEMED ATTRACTIONS



Azure underwater fantasy

“Azure” is the Silverton Hotel’s brand new underwater fantasy show. It is one of Las Vegas’ newest “free” attractions, and is based on a 150,000 gallon salt water aquarium designed for 5,000 fish and live performances by costumed swimmers. Electrosonic provided an integrated show control system that runs nine different automated sound and light shows. Shows run every hour, but the number of performers and the themes of the shows vary according to the time of day (or night!). Show control is by ESCAN™, operating audio source, tank lighting, architectural lighting, bubble curtain and waterfall control through Electrosonic Digital and Serial FrEND™ network devices.



The Azure underwater fantasy, produced by Stephane Miermont.

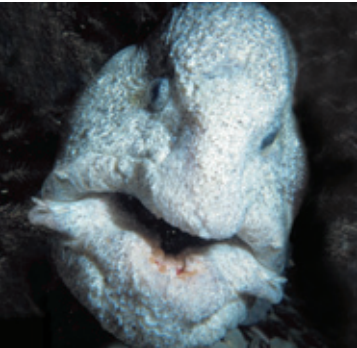
The Deep goes deeper

The Deep is an amazing “Submarium” in Hull (UK). It was described in ELECTROSONIC WORLD No. 12, and has been a huge success with the public since it opened in 2002. Recently “Phase 2” of the project has been opened, and this includes a new exhibition (designed, as was the main exhibition, by John Csáky Associates) called “The Twilight Zone”. This re-creates the inhospitable world that exists 1000 metres below the surface of the sea.

Electrosonic was responsible for AV and lighting control within the new area, and designed the system to be an extension of the existing large audio-video and interactive system. The new exhibition includes several plasma screens showing video, four touch-screen interactive displays, and a “jelly fish” interactive. Here jelly fish images are projected on the floor, and when approached these change color.



The Deep is a Hull landmark (Architect Terry Farrell & Partners). Photo Richard Bryant/ARCAID.



The Wolf Eel, denizen of the Twilight Zone. Photo Linda Pitkin.

Ben Franklin at EXPO 2005

“Nature’s Wisdom” is the theme of EXPO 2005 (Aichi, Japan, March – September). Few Americans have understood and captured Nature’s Wisdom with more success than Benjamin Franklin, so BRC Imagination Arts enlisted his help as the “star” of the USA Pavilion. Audiences see “The Franklin Spirit” in which Franklin visits the world of 2005 to celebrate his 300th birthday.

Visitors first see a “pre-show” presented on two portrait screens in an area dominated by the figure of Franklin himself. They then move into the main theater to see an amazing mixed media show that uses all the stage craft for which BRC Imagination Arts is so well known. The audience doesn’t need



Ben Franklin snatches power from the clouds in the USA pavilion pre-show.



The main show uses multi-plane images to achieve magic effects. All images are sourced from Electrosonic HD players.

to know that the show uses 10 projectors on a mixture of front and rear projection screens, because they are simply immersed in the story; sharing the amazement of Franklin (himself the inventor of bi-focals and a pioneer of lightning research) as he experiences the technical, social and agricultural advances that have taken place since the 18th Century. In the show Ben Franklin appears and disappears, he conjures up lightning bolts and acknowledges that the 21st century is the most exciting time to be alive. The audience is spellbound, while being

educated and entertained. Electrosonic was sub-contracted to BRC Imagination Arts to provide the show audio video and control system. The pre-show and main show are designed to run in precise sync – indeed one cannot run without the other. Overall show control is by Electrosonic ESCAN™, and all projectors are fed from Electrosonic MS9200P High Definition players running in frame sync. Another feature of interest at the USA Pavilion is the large LED (11ft x 33ft) display on the exterior of the building. This display, together with three large plasma

displays in the queue area, runs topical material from the pavilion sponsors and is continuously updated. Two Electrosonic MS9100 High Definition players are used running with Electrosonic iMEDIATE™. This allows the displays to be updated by media providers Long Branch Group direct from Washington DC back in the USA.



The exterior LED display is updated from Washington DC using Electrosonic iMEDIATE™.

Fort Siloso

Fort Siloso, on Sentosa Island, is Singapore’s only preserved coastal fortification. It has been a visitor attraction for some time – indeed Electrosonic supplied AV equipment for it through a local installer back in 1991. But in 2004 Jack Rouse Associates, a USA based design and master planning firm, designed and produced a complete “revamp” for the attraction, and Electrosonic was contracted directly to engineer and install the AV and show control system. The new Fort Siloso Experience takes visitors from Singapore’s earliest days



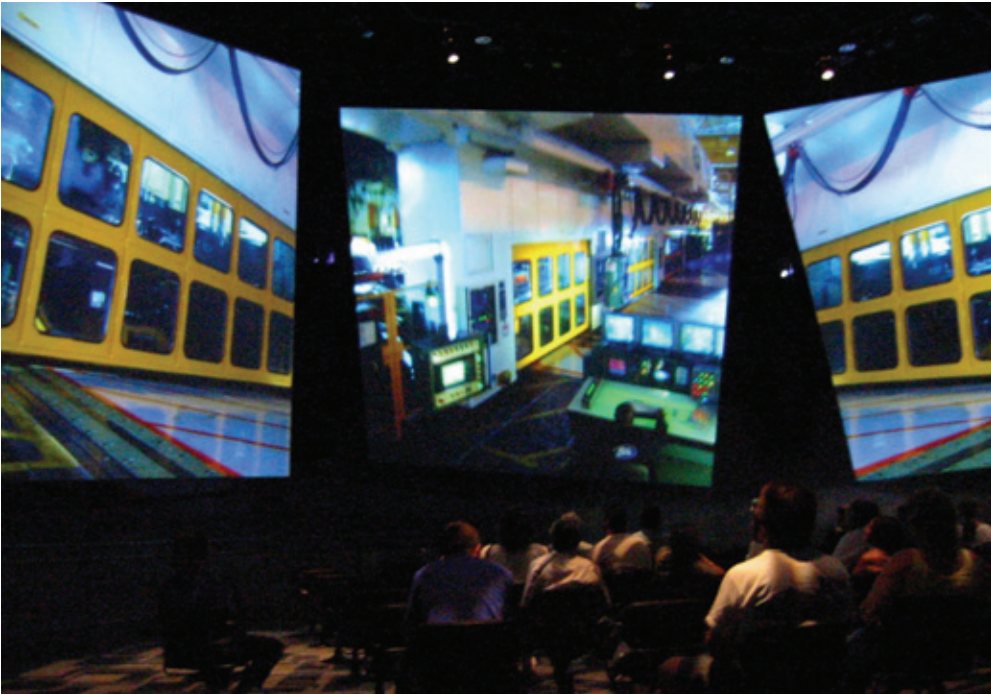
Part of the fantasy walkthrough preceding the Merlion Experience.



High Definition presentation on Sentosa Island.

through the events of World War II in a comprehensive and cohesive fashion. It does not claim to be either a museum or a memorial, rather it offers visitors the opportunity to step back in time, experiencing the story of Singapore’s coastal fortification and defense in the place where events happened. The attraction also includes

the Merlion Experience, a whimsical realization of the “Merlion” story. While the finale is a theater based show (using High Definition projection run from an Electrosonic HD player) it is preceded by a multi-scene walk through an “underwater cavern”.



The “Art of Manufacturing” immersive show is a highlight of the Ford Rouge Factory Tour. It uses seven Electrosonic High Definition players running in sync at 24fps 1080p.

Ford Rouge

2003 was the 100th Anniversary of the Ford Motor Company, and it was also the year in which an exceptional “Factory Tour” was completed. Electrosonic was responsible for the audio-visual systems that support the tour.

The Rouge site in Dearborn, MI, has great historical significance; it is where Henry Ford created the first wholly integrated car plant with iron ore coming in at one end and cars coming out the other. The site has now been completely re-built to include a modern truck assembly plant, but Henry Ford believed in keeping a record of what he did, and the tour’s fascination lies in being able to compare old and new methods.

The nearby Henry Ford (the USA’s greatest history museum, now an independent foundation) operates the factory tour in partnership with Ford Motor Company, and provided the content direction for it. The visitor experience itself was created by BRC Imagination Arts.



Neat factory-wired racks are always a feature of Electrosonic installations, like these ones at Ford Rouge.



In the walk around the Ford plant, the processes going on below are explained by monitors like these.

The tour embraces both a visitor center and a walk round the plant on an overhead walkway that looks down on the highly automated production line. Interactive stations are located along the walkway, as are monitors that explain the work happening below.

In the visitor center the “pre-show” is given in the Legacy Theater. This is a three screen presentation using High Definition projection to show the history of the plant, including Henry Ford’s own footage and contemporary news footage. All the original films have been lovingly transferred to High Definition, and the results are remarkable.

Visitors next move to a circular multi-media theater; this combines seven screens of High Definition video with spectacular lighting, heat, fog, fans, mister and shaker effects within an immersive environment. The show is the specially commissioned “Art of Manufacturing” from BRC.

Both theaters use similar technology. All main show playback is from Electrosonic MS9200P HD players running in sync. Projectors are Sanyo PLC-EF30 in the Legacy Theater, and PLC-UF15, custom configured to run 1080p HD at 24fps, in the main theater.

Both shows use Mackie SDR 24/96 hard disc audio players, locked to the video by timecode. Audio processing is by BSS Soundweb. In the Legacy Theater Mackie powered loudspeakers are used, and in the main theater a combination of Crown CT amplifiers and Renkus Heinz TRX-151 speakers is used, augmented by three Electrovoice subwoofers and 64 Aura bass shakers.

Electrosonic worked with BRC Imagination Arts in the realization of the project, alongside other team members, including Scenario Design (Scenic Contractors) City Design (Lighting) and Show FX (Special effects for main show).

High density AV at the NCC

The National Constitution Center (NCC) opened in Philadelphia on 4 July 2003. It seeks to emphasize the importance of the American Constitution, both by presenting how it was developed in the first place, and by demonstrating its relevance to US Citizens and the World today. The exhibit area of the Center has one of the highest concentrations of audio-visual and interactive presentation to be found anywhere; it is highly effective and clearly popular with its audience. Electrosonic Systems Inc engineered and installed the entire AV system.



Most areas in the exhibit hall are surmounted by large screen video projection. Here visitors can vote for their favorite president.

The NCC Team	
Architects	Pei Cobb Freed
Exhibit design	Ralph Appelbaum Associates
Exhibit fabrication	Maltbie and Associates
AV and interactive software (exhibits)	AMPU
“Freedom Rising” show	Donna Lawrence Productions
Acoustics (show and exhibit areas)	Jaffe Holden Acoustics
Acoustics (public areas)	Cerami & Associates
AV systems integration	Electrosonic

The introductory “Freedom Rising” show is presented in the 350 seat Kimmel Multi-Media Theater, a circular space with a central floor space and steep raked seating. The show lasts 17 minutes. Narration is normally by a live actor although there is an alternative version of the show that uses recorded narration.

At the conclusion of “Freedom Rising” visitors leave the Kimmel Theater at its top level and enter an annular exhibition hall that surrounds the theater. The Richard and Helen

DeVos Exhibit Hall has as its theme “The Story of We the People”.

The Richard and Helen DeVos Exhibit Hall requires intensive audio-visual and interactive support. There are approximately 60 computer interactive exhibits, 50 video replay screens, and 10 audio only exhibits, all operating within a comparatively compact area. Image display is by a mixture of LCD flat panel (both conventional and “touchscreen”) plasma display panels and projection.



The exhibit hall is surrounded by etched panels that carry the text of the Constitution. Below these panels exhibits explore how the Constitution has shaped US history.



The “American National Tree” at the NCC consists of both graphic panels and 32 electronic images. Visitors can explore the origins of the American People using the six large touch screens below it.



The “Freedom Rising” show uses 10 projectors sourced by a multi-channel video server to produce a 360° image. In addition Electrosonic HD players are used for the “floor” image and for four gauze screens that appear during the show.

Dana Centre AV Network



Dana Centre at London's Science Museum.

★ ★ The Dana Centre is a new facility that has been built adjacent to the Science Museum in London. It is a forum where the international research community and the general public can meet to discuss the controversial issues raised by the accelerating progress in such fields as neuroscience, molecular biology and genetics.

The Science Museum has a full time staff engaged in the realization of interactive exhibits, and has enormous experience of the realities of using AV techniques in the public domain. With the Dana Centre it was quite clear about its objectives, but it did not have the in-house resources to complete the detailed design.

In seeking outside help the Science Museum issued a Request for Proposals for the design, installation and commissioning element. Electrosonic was chosen not only because its proposal appeared cost-effective, but also because it was clear that it had relevant experience - both in the technical aspects of the use of networks in AV, and in the special requirements of museums, where Electrosonic has unrivalled international experience.

At the Dana Centre the public spaces are on three floors, and are very open. This results in the need for a flexible system and close attention to

the realities of ambient light and audibility. The basis of the system is an AV network that allows any video, audio or data signal to be routed from any one space to any other space. There are a total of 36 "network nodes"



Informal meeting area at the Dana Centre. Note the "stacked" screens.

within four principal spaces, with CAT-5 cable plant used for the majority of signal distribution.

The selection of equipment was a collaborative exercise between Electrosonic and the client; with thorough practical demonstrations being carried out before any final decision. This applied particularly to the selection of high gain front projection screens and projectors; and to a major part of the audio system.

In this case Electrosonic worked with Bose and the client to specify the system, using Bose "Modeler" and Bose "Auditioner" simulation products to prove the design prior to installation.

Overall system design, including site cabling and infrastructure; project and system engineering, installation, programming and commissioning of the following:

- The AV network
- Audio, AV control and display systems for lower ground floor, forum and seminar room
- Video conferencing systems
- AV playback equipment for the display systems
- Computer hardware systems for the D-Lounge and Balcony
- Specification for the system hardware for the Science Museum to procure
- Full system documentation

Electrosonic's scope of work at the Dana Centre.

AV at the Clinton Library

★ ★ ★ ★ The William J. Clinton Presidential Center in Little Rock, Arkansas, is the eleventh library in the Presidential Library system, and it makes extensive use of audio-visual and interactive exhibits to interpret the Clinton Presidency. The architect of the building was Polshek Partnership of New York City, and the exhibit designer was Ralph Appelbaum Associates (RAA). The audio-visual systems within the library complex were engineered and installed by Electrosonic, working to specifications prepared by Cerami & Associates.

RAA's aim was that people should "think about the Library as not just a story of a Presidency, but a story of America in those extraordinary



Exterior view of the Clinton Presidential Library. The design was inspired by President Clinton's commitment to build a "bridge to the 21st Century".

years before the 21st century." The exhibit elements include an 80 seat orientation theater featuring a 13 minute High Definition film narrated by the President, full size replicas of the Oval Office and Cabinet Room, a 110ft long "Time Line" showing world events in the period 1993 - 2001, exhibit alcoves depicting important milestones in the Clinton

Presidency, and exhibits that detail life in the White House.

Having worked on many other RAA designed exhibits, Electrosonic knew that the design aim was to ensure a seamless integration of the audio-visual elements - so that the displays appear to be a natural part of the exhibit rather than being "glued on". Electrosonic enjoyed excellent co-operation with the construction management company (Phelps LLC) and the exhibit fabricators (Maltbie Associates) in realizing this aim.

The system is based on both standard definition (SD) and high definition (HD) video playback, and on touch screen interactive displays. Within the exhibition area there are 40 channels of SD, 12 channels of HD, and 18 touch screen interactive displays using 18inch LCD touch screen monitors. Video presentation is mainly on 20 inch, 30inch and 40inch LCD monitors.

Audio channels are fed through DSP equipment to facilitate overall audio control and to allow individual

equalization on each channel. Overall exhibit control is by an AMX Netlinx™ system.

In addition to providing the AV system for the exhibition area, Electrosonic also installed a number of "conventional" AV presentation and videoconferencing systems within the Presidential Center.

While Electrosonic engineered the AV presentation system as a whole, the task of content creation was undertaken by a team. The



The 110ft long "Time Line" exhibit at the Clinton Presidential Library shows world events between 1993 and 2001. 30 inch LCD monitors are built in to the display panels. Associated interactive displays allow visitors to enter any date during the entire Clinton presidency and see President Clinton's complete schedule for that day.

orientation film was produced by Mozark Productions. Cortina Productions were responsible for the "Time Line" and "Alcove" content. Donna Lawrence Productions produced the "Inauguration" show, and the "Life in the White House" content, and also managed the production of the computer-interactive exhibits.

LOCOMOTION



★ ★ ★ Britain's National Museum of Science and Industry (which includes the Science Museum) has a number of "outposts". The newest is LOCOMOTION, a branch of the National Railway Museum at Shildon in the North East of England.

Electrosonic installed video replay, computer interactive and sensor operated audio equipment in the three main buildings of the museum. The picture shows visitors watching a 3-screen show in the "Welcome" building which also houses the 1829 locomotive Sans Pareil built by local rail pioneer Timothy Hackworth.



At the Clinton Presidential Library a series of "alcoves" depict important milestones in the Clinton Presidency, such as the economic boom and the promotion of peace and democracy in the world. 40 inch LCD monitors are at the center of each display, and these show High Definition video images from Electrosonic MS9400 HD players.



The entrance to the "Our Lives" exhibition uses clever back projection with semi transparent mirror to make visitors seem to be "in the picture". Panasonic PT-D-7500 DLP™ projectors are used here. Photo Walter Larrimore NMAI.



The striking exterior of NMAI.

NMAI in Washington



Outside the three main exhibition areas there are displays that introduce a few of the hundreds of thousands of objects in the NMAI collections. Called "Windows on Collections: Many Hands, Many Voices" these displays show more than 3,500 objects. They are interpreted by an interactive touch screen system with software by Magian Design Studio. Photo Walter Larrimore NMAI.

★ ★ ★ ★ The National Museum of the American Indian (NMAI) on the National Mall in Washington, DC, is the sixteenth museum of the Smithsonian Institution. The striking curvilinear building,

clad in Kasota limestone, and designed by Douglas Cardinal, was opened to great acclaim in the fall of 2004.

Electrosonic was appointed systems integrator for the AV systems associated with the

exhibition areas, under a direct contract with the Smithsonian Institution, working to specifications prepared by PPI Consulting.

The permanent exhibition at NMAI consists of three distinct areas, "Our Universes", "Our Peoples" and "Our Lives". Each was separately curated by experts from within the Native American Community, with input from eight different tribes and native communities (meaning that, in all, 24 communities from Chile in the south to Alaska in the north are represented). Each area was then entrusted to a separate design group for realization (see "Exhibits Team" box).

All three areas make extensive use of audio-visual and computer-interactive support. The great majority of images are presented on flat panel displays that are fully integrated into the exhibits. These include 15 3M Microtouch touch-screen LCD displays, 60 LCD displays, mainly from Marshall, in the range 8-20 inch, and 12 Plasma displays, mainly Panasonic, in the range 37-60 inch.

Program sources are standard Dell Optiplex computers for the computer interactive displays, Alcorn McBride DVM4 video players with removable hard disc drives for the video, and Alcorn McBride Repro-5 solid state



Artifact exhibits are well interpreted with touch-screen interactive displays.

audio players for audio-only exhibits. Overall system control is based on AMX equipment.

Audio signal processing is by Mackie DX810 mixer/processors, and these are followed mainly by QSC CX-168 multi-channel amplifiers. A great variety of loudspeakers, from vendors such as Tannoy, Mackie, and Bag End, are used depending on the exhibit design and purpose of the sound.

The proximity of the exhibits means that in many cases there could be an objectionable overlap of sound between exhibits. This is dealt with by the use of Dakota Focused Array loudspeakers, of which around 35 have been installed at the NMAI. These devices are custom made for specific distances, and are appreciated by designers because they can be placed out of sight above the visitors.



The "Our Lives" exhibition includes two videowalls in exhibits devoted to social and celebration activities. Clarity Wildcat 40 inch "cubes" are used in 3 x 3 and 3 x 4 arrays.



"Life on the River" uses two 42 inch and one 50 inch plasma display. Visitors can use a "steering wheel" to navigate through the video sequences.

Exhibits team at NMAI			
Exhibit design "Our Universes"	Design & Production		
Exhibit design "Our Peoples"	ExPlus		
Exhibit design "Our Lives"	Hadley Exhibits		
AV Consultants	PPI Consulting		
AV Systems Integration (exhibits)	Electrosonic		
Interactive, audio and video software for the exhibits was produced by a team including Cortina Productions, Interface Media Group, Magian Design Studio and Pyramid Studios.			

IN BRIEF...



Big Pit

★ ★ ★ Big Pit is a real coal mine, but is also the National Mining Museum of Wales. This has recently been refurbished, with many new exhibits designed by Haley Sharpe. Highlight is the Mining Galleries multi-media display where five areas, one shown above, are synchronized to provide a single show. Smaller show systems support the Pithead Baths and Historic Pithead areas. The complete AV engineering was by Electrosonic, and is based on ESLINX™ show control, ESTAT™ solid state sound stores and Electrosonic SD video servers.

Edinburgh Castle



★ ★ "Prisons of War" is a new visitor experience at Edinburgh Castle (run by Historic Scotland). It shows how the vaults in the castle were used as prisons in several different wars. In an evocative display, designed by Jasper Jacob Associates, visitors first see a video pre-show in the Officers' Room at ground level before descending to the vaults below.

The spaces here are enhanced by theatrical lighting, clever shadow projection, special effects and smells. The dramatic story is told by precisely located sound, and more than 50 channels of audio are used. Electrosonic installed the automatic show systems.

Newcastle Discovery

★ ★ ★ Electrosonic was responsible for the AV engineering for the new "Working Lives", "Tyneside Challenge" and "Story of the Tyne" galleries at Newcastle's Discovery Museum in Northeast England. In the galleries, designed by Redman Design and built by Edwin Dyson & Sons, 22 exhibits use AV support in the form of video replay and computer interactive exhibits. Displays include both front and rear projection, LCD and plasma panels, and a 2 x 2 videowall with Electrosonic IMAGESTAR™ processing.



Churchill Museum

★☆☆ The Churchill Museum, opened by Her Majesty Queen Elizabeth II on 10 February 2005, is an outstanding example of the successful integration of audio-visual techniques into an exhibit design. Credit for this is due to The Cabinet War Rooms (CWR – part of the Imperial War Museum) as client, Casson Mann as exhibition designer and the talented group who produced the software. Electrosonic designed, built, and installed the complete AV system which serves over 70 exhibits showing documentary footage or interactive presentations.

The Churchill Museum is a new but integral part of the CWR which were opened to the public in 1984, showing the rooms exactly as they were in 1940. Part of a large neighboring complex of rooms that was used by the joint Intelligence and Planning staffs has now been restored to house the new Churchill Museum.

Because Churchill was in the public eye all his life, was a prolific author and lived in the age of sound recording and filmed records, a huge amount of documentary material on his life exists and this is cleverly exploited in the museum.

The 9,000 sq ft (850 sq m) space is divided into five “Chapters”; Young Churchill (1874-1900) Maverick Politician (1900-1929) Wilderness Years (1929-1939) War Leader (1940-1945) Cold War Statesman (1945-1965)

These “Chapters” are arranged round the centerpiece of the museum, the 15m x 1.25m (50ft x 4ft) “Lifeline” table. This is arranged as a computerized “filing cabinet” containing items relating to each year, and in many cases each month and day, of Churchill’s life. Touching a strip at either edge of the Lifeline

The equipment	
Projectors (F1 DLP™)	27
LCD monitors 6.4-15 inch	25
LCD monitors 17-40 inch	7
Touch screens 17-23 inch	18
Computers	41
8-channel SD video servers	5
MP3 audio players	18
4-channel amplifiers	20
Directional loudspeakers	26
Full range loudspeakers	33
Membrane loudspeakers	26
Sub bass loudspeakers	4



There are several instances of large image (3m, 10ft wide) projection at the Churchill Museum. All use the Projection Design F1 projector (XGA version) in order to ensure an unobtrusive installation with a high quality image. Artifacts, such as Churchill's red siren suit, are protected by glass cases, and many of these also incorporate AV elements.

brings up data, documents, films, photographs and even sound tracks that relate to his life. Up to 26 people can access the Lifeline at any time.

Key dates can bring a surprise. Selecting 6 August 1945, the day of the Hiroshima A-bomb, results in the whole display flashing white and the sound of a huge explosion. The Lifeline software was developed by Small Design Firm Inc of Cambridge MA; it includes 4600 pages, 200,000 words, 1100 documents, 1150 images and 206 animations.



The Lifeline Table at the Churchill Museum. Photo AV Magazine.

The Churchill Museum Team

Client	Imperial War Museum, Churchill Museum Project Team
Designers	Casson Mann
Project management	Fraser Randall
Mechanical and electrical services	White Young Green
Graphics	Nick Bell Design
Software co-ordination	Media Machine
Sound consultant	Liminal
Lighting design	DHA Design
Scenic contractors	Devonshire House Associates
Physical interactive displays	hb.source
Electrical contractors	McAlpine Business Services
Audio Visual systems integrator	Electrosonic

Audio Visual production was by Small Design Firm, PLANT, Soda Creative, Elbow Productions, Kaija Vogel, Novamatic and Dr Andrew Hudson-Smith.

13 networked computers provide the imaging, and another computer provides the accompanying multi-channel audio.

Projection on to the table surface presented a considerable problem because of the very low ceiling height, the cluttered ceiling and the presence of building support columns. The design phase of the project coincided with the introduction of Projection Design’s compact F1 DLP™ projector. This proved ideal for the task. At the time of its introduction it was the only projector providing an offset projection facility with a very short focal length lens, meaning that the projector is aligned with the edge of the image, not its center. It can also be operated pointing directly downwards, has completely sealed optics, is incredibly quiet, and comes warranted for continuous operation. The Lifeline uses the SXGA version of the projector.

Neat integration



Some examples of the neat integration of AV elements at the Churchill Museum are shown here. At the “speech wall” visitors can hear excerpts from eight key wartime speeches; these are triggered by sensors activated when someone stands in front of one of the photos. This exhibit, in common with several others, requires highly directional sound in order to avoid mutual interference. A combination of ATC HyperSonic Sound and Panphonics electrostatic loudspeakers is used for this.



Churchill's favorite film was “Lady Hamilton”. In an exhibit showing how he spent a typical day, the glass display case embodies a small area of rear projection screen to show it.



Here a dissolving picture sequence shows portraits of the Churchill family. The LCD display has been nicely framed, and a neighboring 6.4inch LCD monitor gives the caption information.



The exhibit devoted to Churchill's funeral uses a triptych of LCD monitors.