# AV OF THE HIGHEST ORDER

## Case Study

## Lightware Visual Engineering

| Market | Country |
|---|---|
| Training and Education, Sports and Entertainment | UK |

## Lightware Equipment Used in Project

Lightware MX modular matrix switcher

When the British Museum needed to introduce a permanent AV infrastructure in the new £135 million Sainsbury Exhibition Gallery, Sysco's expertise was imperative. Sysco's involvement with the British Museum as a key AV supplier and system integrator spans a period of over 14 years and covers many exhibition project installations.

In 2012, the museum approached Sysco for consultative advice on the development of an audio visual delivery infrastructure for the new £135 million Sainsbury Exhibition Gallery. The aim was to introduce a permanent AV infrastructure to maximise the effectiveness of the gallery and reduce the risk and time taken to implement individual exhibitions.

"In addition to managing permanent collections, a trend for museums over recent years has been to present temporary exhibitions. There has been a marked increase in the use of AV technology to enhance exhibition artefacts, provide a narrative to the theme of the exhibition and detailed information on individual items," says Hugo Roche, managing director of Sysco. "AV presentation has to be of the highest order; visitors pay for these exhibitions and expect high quality: better pictures and sound experiences than they are used to at home. This has increased the demands on AV system designers and integrators."

The concept of the Sainsbury Exhibition Gallery, designed by Rogers Stirk Harbour + Partners as part of the museum's World Conservation and Exhibition Centre, was to provide a purpose-built home for temporary exhibitions in an enormous space capable of displaying the largest historical artefacts. There was to be no restriction on the use of additional equipment.

To simplify and streamline AV system integration, the museum identified the need for a universal data distribution network as part of the permanent building infrastructure.

"The investment in a reliable permanent wiring network and dedicated equipment room would outweigh the cumulative cost of rewiring each," explains technical director, Graeme Bunyan. "Special exhibitions are mounted serially, with little installation time between, so time saved through the use of a prewired network is highly beneficial. Projects are managed to a very strict schedule: all installation work has to be completed before priceless artefacts are installed, and any adjustments that are necessary afterwards require special clearance and techniques carried out under the watchful eye of the museum staff. Having a reliable, fixed network reduces the risk of something going wrong with a critical element of the installation. It is a fact of life that problems occur with cables and often these are not found until the system is finally commissioned and it may be too late to deal with them simply."

Sysco's expertise identified the type of networking that should be installed throughout the gallery to enable the use of current technology and ensure compatibility with future audio and video formats, together with guidance on the most practical methods of mounting and connecting temporary equipment.

"Our role was to advise on a cabling infrastructure that would maximise the flexibility and efficiency of the gallery; basically a large open space in which generations of museum curators will mount their exhibitions. Each will be unique and call for different mixtures of AV kit. The approach we took was to ensure cabling would be sufficient and futureproof. We suggested a bouquet of cables should run from a patch panel in a permanent central communications room to floor, ceiling and wall boxes spaced at 3.5 metre intervals throughout the space. That would impose no limitation on curators in positioning exhibition units or the number of services provided," adds Bunyan.

Whilst the ideal solution would be to install multiple cables of several different types to each outlet, this would not be practical or affordable. Meetings were held between Sysco, the museum management, the architects and main building contractor, Arup.

We considered the expectation the museum has for future exhibitions and what was feasible in terms of wiring routes to develop a reasonable compromise. This included evaluating acoustics using a model Arup developed which allowed us to assess the effects of various sound treatments and reflections on individual areas within the building using different types of loudspeaker. In a similar way we investigated how large screen images might be created in the future – by multiscreen LCD and projection or single very high resolution displays – and the need for high densities of video data at specific points."

Other considerations were discussed: the physical size and style of the cable termination outlets so that they would be as visually unobtrusive as possible, the need to individually control AV devices, power requirement and methods of isolating the network so that it could only be used for exhibition AV installations and not as general access or power points. The resulting cable 'bundle' includes single Cat 6 cables to support general purpose data and control because, as Bunyan says, Cat 6 is so versatile and adaptable: it can be used for analogue and digital video extenders and audio networks and integral or dedicated control signalling. Quad multimode fibre ensures sufficient bandwidth for immediate and future methods of video distribution and isolated speaker cabling provides connectivity for the museum's large stock of speakers as well as new, more dedicated units to be used in the future. Power is provided at each outlet through 24hour continuous and centrallyswitched single phase mains sockets: switched power for display case lighting and solidstate hardware, with 24hourpower for projectors with lamps. Lowprofile, robust connection boxes were designed with all outlets using industrialgrade Neutrik sockets. Any device powered or connected requires a special lead; preventing the connection of unauthorised tools. Opticon fibre connectors include sealing shutters and pullhandles to protect against dust and to cope with frequent reconnection and replacement of data leads. The floor, ceiling and wall boxes themselves were specifically designed and manufactured to blend in to the surface finishes of the new gallery; the architects specifying the final visual appearance, locations and fixing methods of each of the three types. Cables were run and boxes installed by the building contractors prior to termination by Sysco's installation team as the building was completed. Sysco also proposed that a Lightware MX digital crosspoint router should be installed within the communication room. This was not part of the original brief.

"The basic requirement was for a direct connection through the patch panel to each outlet so pairs of video extenders could be installed and data sources connect to each display," explains Bunyan. "The increased flexibility of a central video switch would enhance the capability of the overall system, so the space could be reconfigured quickly for special events, for example for corporate or sponsorship VIP evenings. However the museum was unsure about the reliability and effectiveness of this type of device, having previously encountered operational problems.

"We arranged an extended demonstration of a Lightware switch to prove the effectiveness and reliability of the system which passed with flying colours. On the basis of this successful test, the museum subsequently specified the switch, together with an associated Aten KVM matrix for remote monitoring and access purposes in the system." A major construction project of this size and complexity would normally present challenges that would need to be overcome before completion and handover, at which point the building would go through a stage of 'settling in' to rectify minor glitches and design changes before being used in earnest.

However, the Sainsbury Exhibition Gallery was due to open with a new temporary exhibition about the Vikings. Close collaboration This was a major installation project in its own right, involving the reassembly of the surviving timbers of a 37metrelong Viking warship in a fullsize stainless steel frame, together with thousands of artefacts of all sizes. Sysco successfully tendered and embarked on the exhibition design whilst completing the build of the new gallery. Running both projects simultaneously helped in the final delivery of both: it meant that a single contractor was responsible and able to resolve any problems as they occurred.

"Our extensive connection with the museum and the working relationships formed over the years contributed to the success of both projects," says Roche. "There is a clearlydefined process for the design and implementation of temporary exhibitions and distinct groups of service providers: architect, curatorial, media design and lighting design teams are involved at different stages. "Using two AV specialists for the building installation and the exhibition integration would have created difficulties in resolving any problems that lay between the two spheres of activity."

With projects of this magnitude, problems and compromises were inevitable says Bunyan: "A typical example is the creation of a large video presentation on the gallery's farend wall. Our calculations showed the need for six, 6,000 lumen projectors, edgeblended and aligned into a single image to achieve the desired size and resolution.

"However the architect insisted on above axis, shortrange ceiling mounted projectors in pairs which led to difficulties in focusing over the image plane, keystone correction and the inevitable loss of brightness. "Close collaboration with the architects and media designers allowed us to create a superb image that depicts a moving seascape in front of the Viking ship making an emotional connection with visitors; exactly the effect the curators sought." The cabling infrastructure has now been used extensively for the Vikings exhibition. Video streams at various points. Audio is distributed to multiple speaker arrays and also by a thirdparty, Studio ZNA, the exhibition lighting designer which accessed switched power provided in the outlet boxes for individual exhibit luminaires.