Freedom Park //hapo Museum

14 October 2013

Photo: Sarah Rushton-Read ***With courtesy Lighting & Sound International***

The latest addition to the Freedom Park heritage site in Pretoria, the //hapo Museum is an interactive exhibition telling the story of Southern Africa… Sarah Rushton-Read reports from South Africa

South Africa – In the words of deputy president of South Africa, Kgalema Motlanthe: “People, by their nature, can only feel equal and united when the dignity, self-worth and esteem of the community is guaranteed.” This common consciousness is translated through South Africa’s national symbols, their flags, their national anthem and now in a series of exhibits in the recently completed //hapo museum – a structure dedicated to exploring 3.6 billion years of the country’s spectacular history.

The museum forms the primary entrance to Freedom Park – a heritage destination in Pretoria, South Africa, that stretches over 52 hectares. Serving as a place of remembrance, its narrative is one of humanity, freedom and ecological responsibility. More recently the site has become a focal point for well-wishers and those praying for Nelson Mandela.

Designed by a collaborative team of South African architects from Mashabane Rose, MMA and GAPP, //hapo

sits at the base of Freedom Park and is reminiscent of a huge outcrop of fallen rock.

Photo: Sarah Rushton-Read

Building Consultants Aurecon constructed the innovative steel skeleton upon which copper sheets have been overlaid. Through time and weather exposure, the sheets will oxidise and further bond the building to its surroundings. The structure exudes a sense of permanency, an endless resilience in the face of difficulty, reflecting and characterising the country’s history and the outlook of its people.

Inside, the spaces are brought to life by evocative sculptures, artefacts and information pieces, which are complemented and supported by a carefully prescribed audio, lighting and video infrastructure, while exhibition design was handled by renowned artist Clive van der Berg.

Photo: Gavin Oliver

The technological aspects of the project were conceived and managed by Digital Fabric's Gavin Olivier. He called on some of South Africa's leading integrators including: TDC Africa and DWR Distribution for lighting, and audiovisual collaborators Dimension Data and Sonic Factory.

Olivier, who has played an influential role in the creation of many of South Africa's top visitor attractions and museums, is known for his commitment to the detail of his work. His ability to make people think beyond their daily lives has had a notable bearing on //hapo – particularly from a technical engagement point of view.

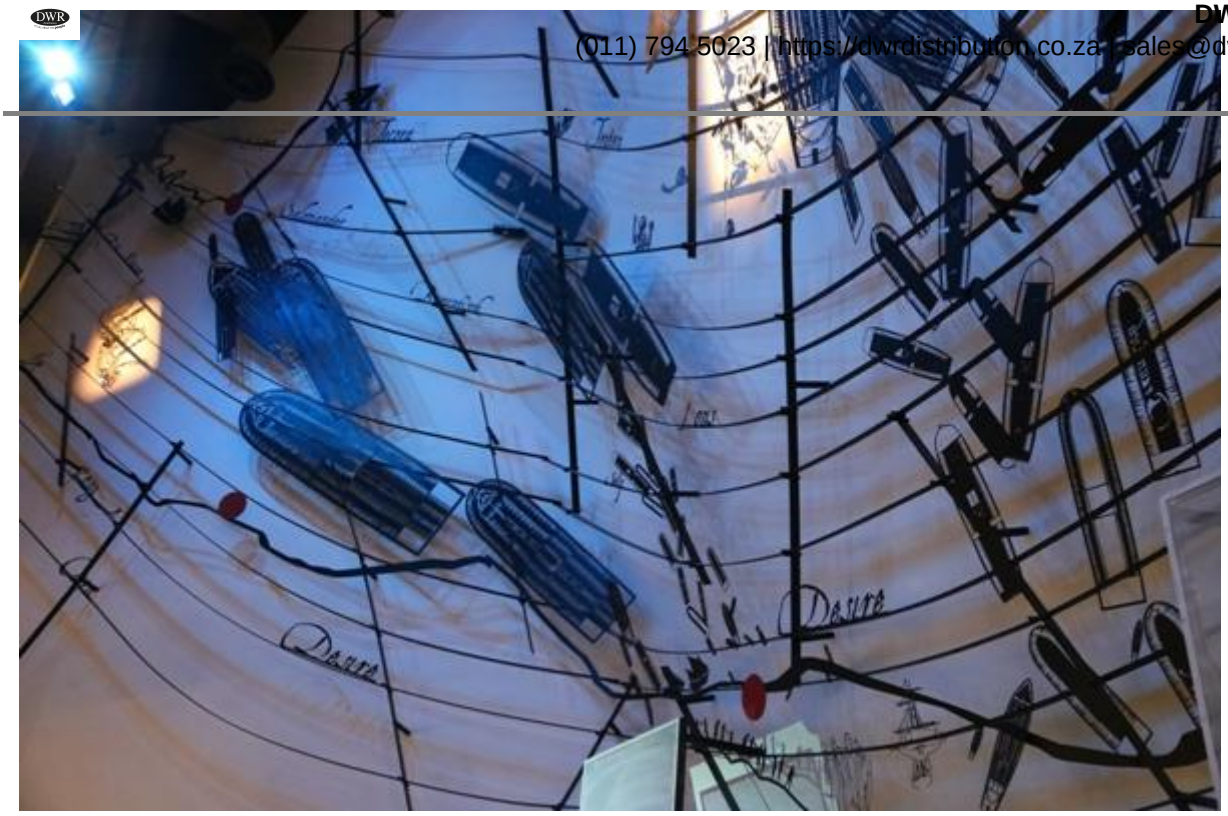


Photo: Sarah Rushton-Read

“Principally, our challenge was to create a technological system that was operationally simple and sustainable, yet equally would deliver a feature rich experience for visitors,” says Olivier.

The museum employs a host of interventions to minimise its ecological footprint. Huge windows run like crevices up the side of the museum allowing light to pour into its yawning interior, while deep-set openings in the copper exterior mitigate any solar gain.

Inside the experience is packed with the historical, cultural and spiritual past of Africa and blends it with exciting ideas for its future. While, naturally, many people’s minds are fixed on the country’s recent history, //hapo goes much deeper – 3.6 billion years deeper, in fact.

Photo: Gavin Oliver

A journey through seven epochs of South African history:

It begins with ‘The Earth’, which explores the beginning through an African story of creation about how the universe came to be. Next ‘Ancestors’ considers historical generations from both a physical and spiritual perspective. ‘Peopling’ tackles the changes experienced by pre-conquest societies in Africa. ‘Resistance and Colonisation’ tells the story of the major historical forces that gave birth to modern South Africa. ‘Industrialisation and Urbanisation’ moves to the story of large-scale exploitation of minerals during the period of colonisation and its impact on the indigenous industries and settlement patterns. ‘Nationalisms and Struggle’ focus on the contesting forces of white state formation and the struggle for a democratic society as the backdrop to the birth of the new South Africa. And, finally, ‘Nation Building’ and ‘Continent Building’ engages with the story of the reclamation of the myriad of different freedoms that is ensconced with the Constitution of South Africa.

Image not found or type unknown

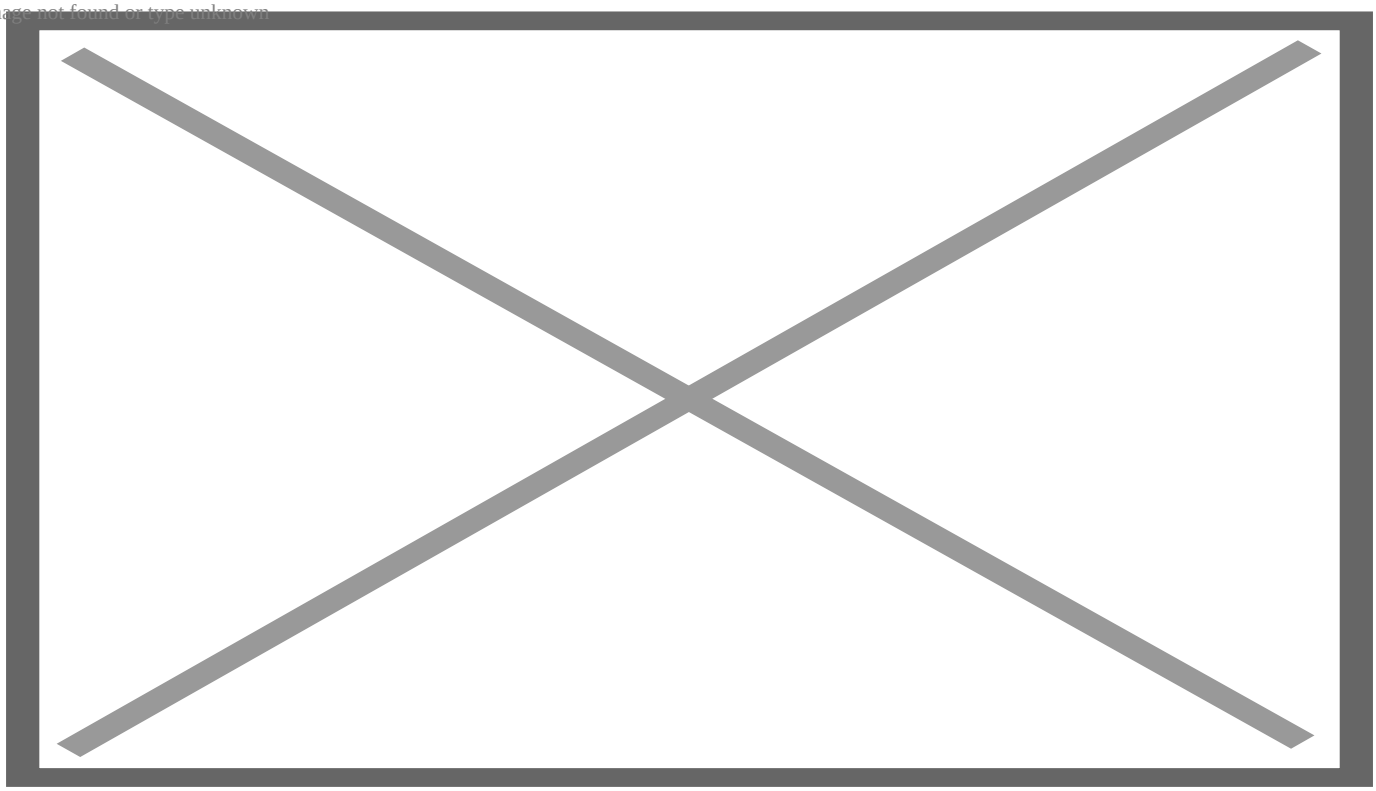


Photo: Gavin Oliver

Visitors are guided by the technology within each area – visitors are led by their own curiosity and some automated cues; engagement and interaction are key vehicles for the journey. Gavin Olivier explains how the spaces have been designed: “Every area has a digital storyteller – in the absence of a human guide, it’s the person who contextualises the narrative of that space for you. They’re very carefully chosen. They aren’t just narrators, they’re people of significance in each of the areas or epochs.”

The highly sophisticated control system, comprises Alcorn McBride and Crestron platforms, facilitating the summarisation of hundreds of control processes into an understandable user interface with automatic daily scheduling for all AV and lighting functionality.

The exhibit audio-visuals range from simple 19” LCD’s embedded into setworks to large, multi-projector blended and warped projections onto a range of surfaces and setworks. The introductory Earth story is played out as a square format, utilising two Christie HD6KM’s stacked and blended, offering a massive five metre high image to visitors as they enter the exhibition. In each of the following Epoch a key film is played out via a number of mediums including four projector wide screens and monitor trees plus projection onto art installations and wall surfaces within the setworks.

Photo: Sarah Rushton-Read

“What is significant,” says Oliver, “is that none of these items could be mounted using standard metalwork, each and every item had to be designed from scratch, requiring several hundred custom designed mounts, bezels and housings. The results show in the final product, with every item sitting comfortably in its surrounding, its not always about hiding technology away, but rather about ensuring that it looks like it is meant to be there.”

The technology is crucial and in this case lighting had a number of roles to play as Olivier explains: “Given the large role that media plays in the overall narrative, the highly visual and textured exhibition design and build also demanded a creatively theatrical approach to lighting.”

Indeed lighting is used to evoke the feel and atmosphere of each scene that //hapo presents.

TDC was awarded the lighting tender in 2009 and partnered with DWR Distribution, who managed the project on TDC’s behalf. Theatre lighting designer, Declan Randall was engaged by Digital Fabric to offer his creative thinking when it came to fixture positioning and focus decisions. In addition well known TV and music lighting designer Joshua Cutts of Visual Frontier contributed to the final focus sessions, bringing a few of his own ideas to the table.

Image not found or type unknown

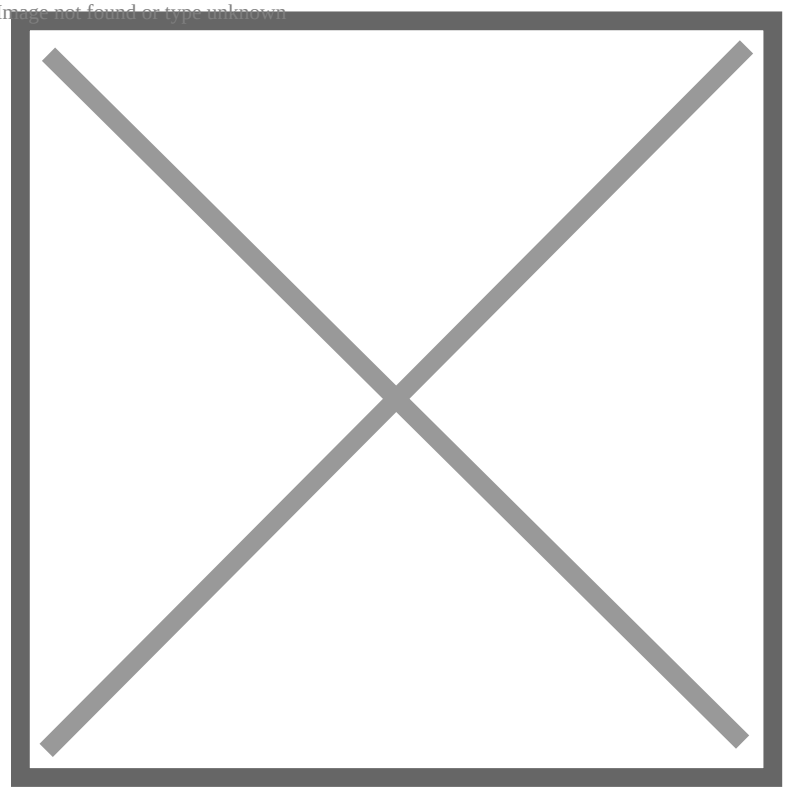


Photo: Gavin Oliver

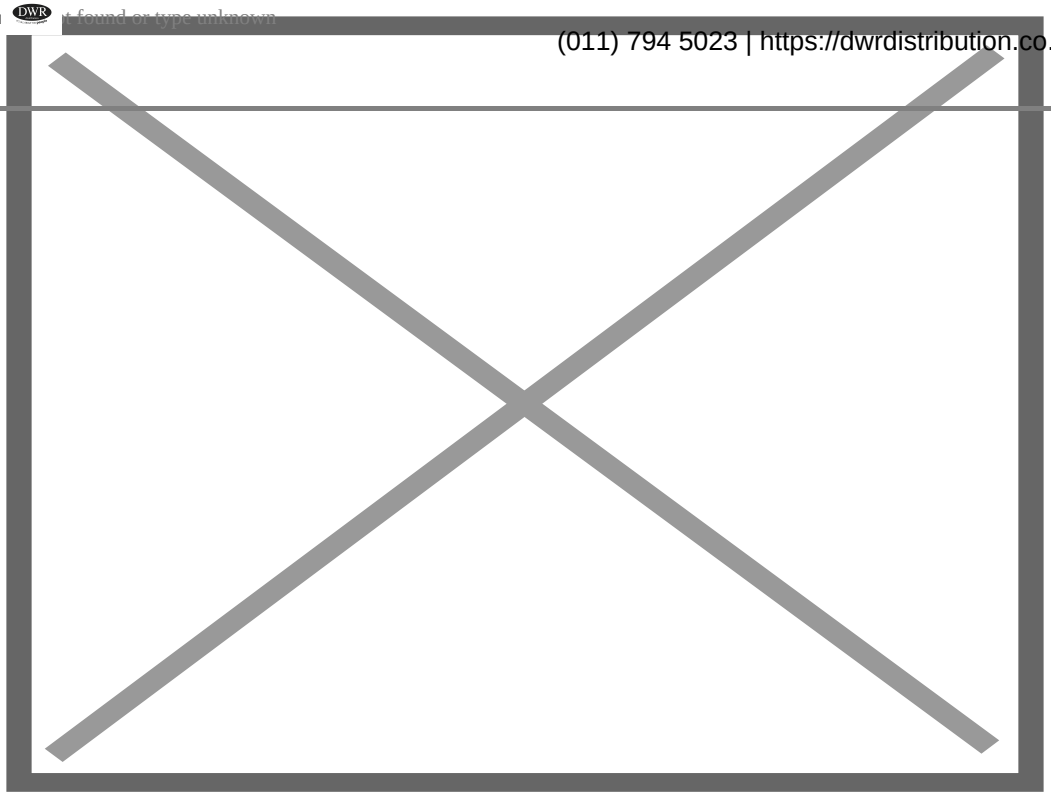
The result is an evocative fusion of theatrically dynamic atmospheres and sharp architectural lighting design. Lighting serves to separate and bring each part of the exhibition to life where required yet also provides that element of continuity and journey that makes travelling around the exhibition so fascinating.

This is the third project Randall has worked on, in conjunction with Olivier and Digital Fabric, as he explains: “When DF requires a theatrical approach to lighting I am pleased to say they often call me. Freedom Park was a long time in the making and the initial lighting design had to be extremely flexible as we knew some of the exhibits would change as things developed.”

Photo: Gavin Oliver

Randall assisted in specifying fittings and allocating units to each zone, ensuring they had enough flexibility, precision and control over the lighting in each zone. Randall also specified the colour filters and gobos and was responsible for the initial focus of the fittings for each exhibit and its associated areas.

“The museum was divided into several “epochs” or zones,” explains Randall. “Some of the areas called for low-level accent lighting on the displays, others featured graphic panels that required even illumination. We therefore required a large number of fittings that have precision optics, are energy efficient and relatively cost-effective. There were very few opportunities for any dynamic effects, so we had to ensure that we chose colour, gobos and focus very carefully.”



From DWR, Eazy Moeketsi, Gideon Mdofu and Robert Izzett. “It was the longest period I’ve ever worked on a project,” comments DWR’s Robert Izzett, who along with Eazy Moeketsi, headed the lighting installation. “This was even more so for Gavin, who dreamed up concepts a couple of years before the actual tender was compiled. He worked a total of six years on the project.”

For the final permanent exhibition DWR supplied and installed 72 fibre optic display case lighting systems. Manufactured to spec by Universal Fibre Optics, Digital Fabric’s Alex Sanfilippo spent time in the UK factory ensuring that the custom parts would work in the locally constructed cases. “Each showcase has one or more LED engines,” comments Izzett. “The showcases vary in size, and while some have 12 fibre ends, the larger showcases have an excess of 300 fibre ends. Each fibre end has an adjustable beam angle so we can control the spread of each one.”

Image not found or type unknown

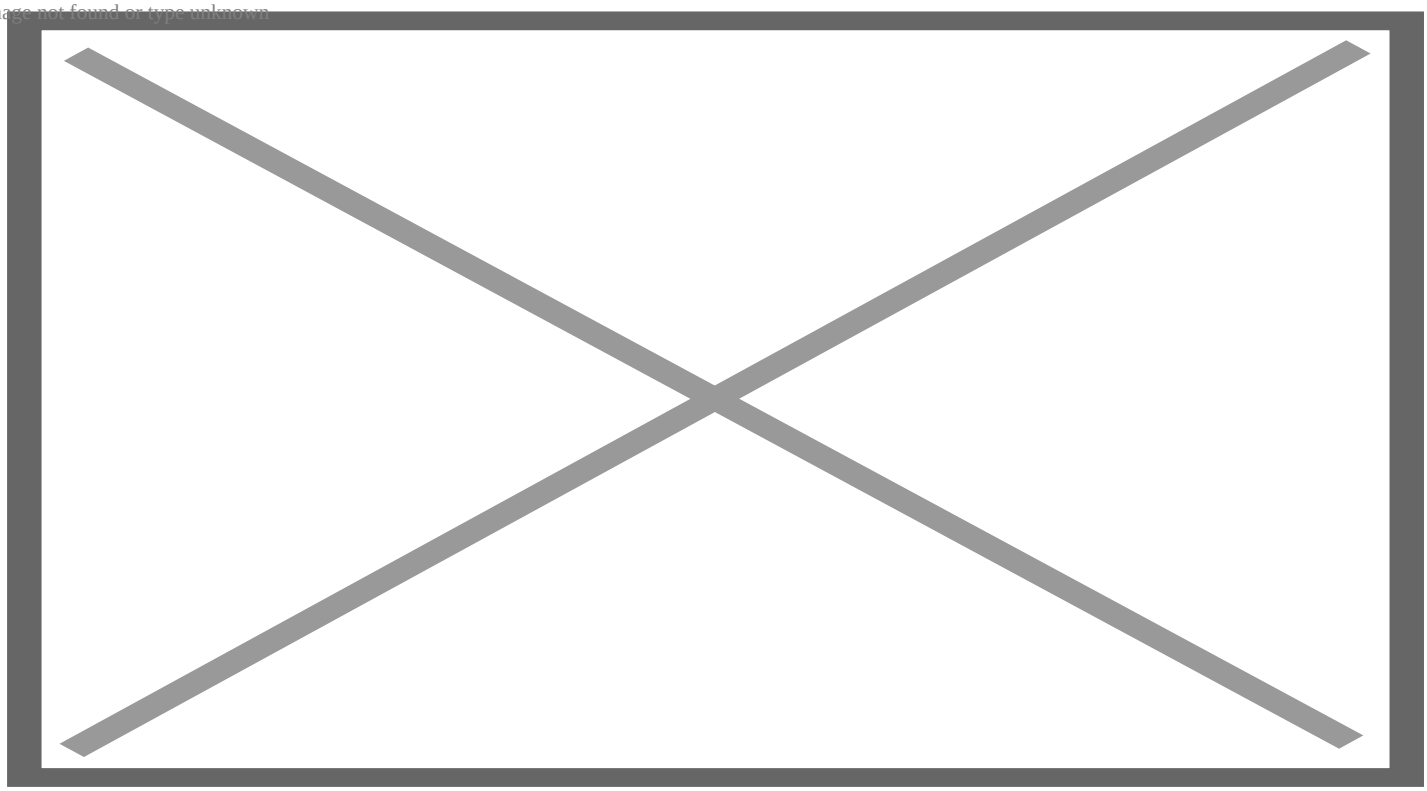


Photo: Gavin Oliver

DWR /TDC also manufactured more than 580 metres of, internally wired lighting bars. “That’s half a kilometre,” says Izzett. Designed by Digital Fabric to minimise installation time, the lighting bars featured flexible connection points that mated to the building infrastructure with minimal adjustment. Olivier comments, “When it comes to delivering custom items for projects, the experienced and diverse team at DWR are excellent. They take pride in developing technical solutions, on time and to spec. It’s extremely rewarding to see our designs delivered as required, and with such a no-nonsense approach.”

Augmenting these bespoke solutions was an extensive stock of Philips Selecon fixtures – namely 66 Philips Selecon Display 25?-50? Zoom Profiles, 54 Philips Selecon Display 15?-35? Zoom Profiles and 118 Philips Selecon Wing – Asymmetrical floods. “The compact, clean look of the Selecon fixtures made them ideal for the job,” explains DWR founder, Duncan Riley. “The Wings are small, attractive fixtures with a good output for the application.”

Gavin Olivier of Digital Fabric and Duncan Riley of DWR. Photo: Sarah Rushton-Read

LD Randall agrees: “The team chose the Selecon display profiles because they are bright and have fantastic optics. The flat field of the beam is really useful and especially helpful when lighting graphic panels. The framing shutters are great and the locking mechanism on the shutters is crucial in ensuring the focus of the fitting remains true for as long as possible. The range of beam angles available is also really useful as it meant we could specify the right beam angle for each job without loosing too much light by being forced to adjust the zoom optics too wide. They’re also easy to focus and their elegant design makes them ideal for most applications.”

Because of the high number of metal halide lamps, Digital Fabric specified minimal dimming in the museum, requiring fittings that would be bright enough to light the exhibits but not be too overpowering in the space. “The Selecon range enabled us to keep the same design of fittings throughout the space,” explains Oliver, “but at the same time we could opt to change the power of the light sources as required.”

A further 470 lighting fixtures have been supplied and installed, including 232 Custom WAC LED Zoom Profiles, 160 Par 16 LED Birdies, 38 ETC Source 4 Zoom 15?-30? Profiles and 40 ETC Source 4 Zoom 25?-50? Profiles.

Image not found or type unknown

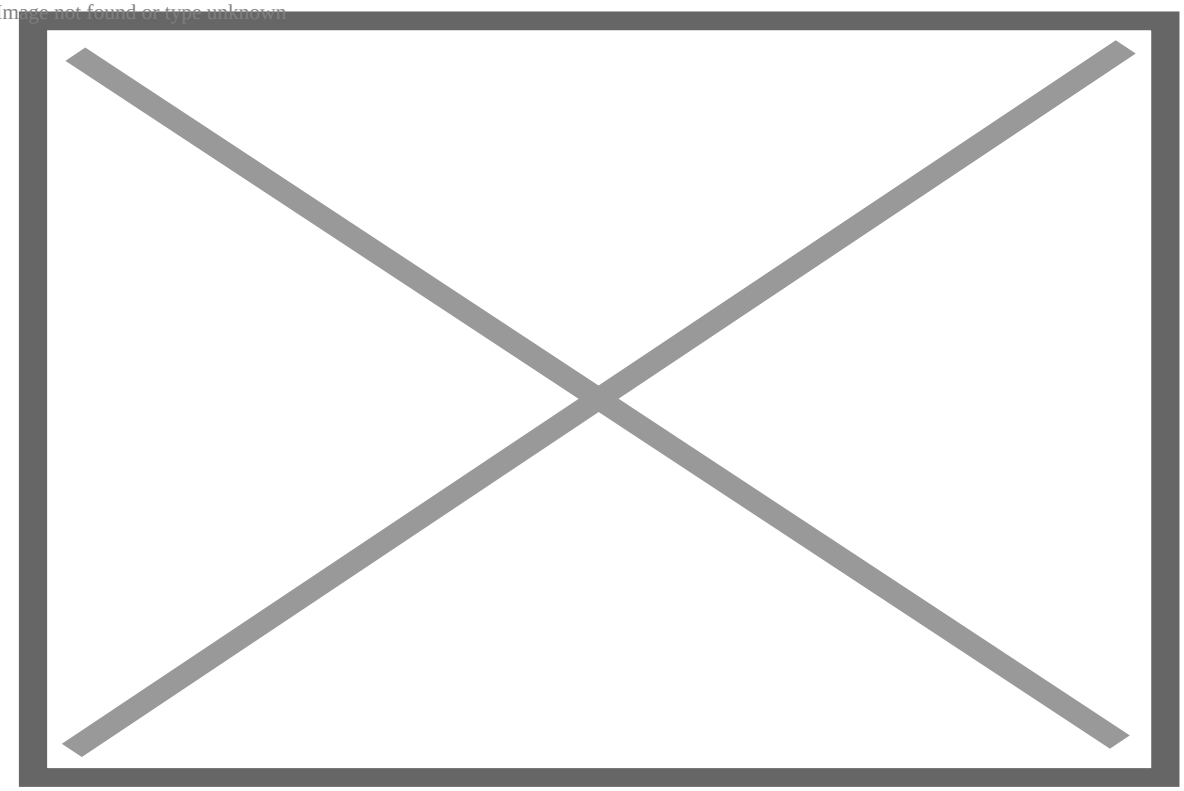


Photo: Gavin Oliver

Lighting is controlled by zone, using DMX dimming and switched contactor circuits, controlled by the AV control system.

Asked about the importance of reliable, low-maintenance lighting equipment in this kind of environment, DWR's Izzett states: "It's crucial. Some of the areas are pretty difficult to access and the lighting is running for long periods of time. Low maintenance is paramount."

And on the project's challenges, he reveals: "The timescale of over four years meant there was a lot of waiting. That was probably the biggest challenge. We have done many museum projects in the past, mostly on a smaller scale. However one of the criteria for winning this project was having that previous experience."

Photo: Gavin Oliver

It was experience, too, that helped shape the museum's audiovisual elements, which were addressed in a joint venture between networking giant, Dimension Data and integration specialists, Sonic Factory. Gavin Olivier explains: "Their combination of resources, skill and experience is what made the installation possible. Sonic Factory has a long history with Digital Fabric, having worked together on more than 30 museum and exhibition projects and this close working relationship made many of the complicated processes much easier to achieve."

Digital Fabric, worked with Dimension Data and Sonic Factory to design bespoke solutions for the unique audiovisual needs of each area. In doing so, the team used a variety of loudspeakers, including JBL Control Contractor, Panphonics Soundshower and Stealth Acoustics' architectural speakers, which have been deployed for the large screen in The Earth.

"Spot the speaker," says Olivier. "Stealth Acoustics architectural speakers are not the usual flat panel speakers. I've tried many different kinds and on the whole they tend to sound overly thin. However we found these and they're superb for a flat panel product."

Crown amplification and BSS Soundweb London provide power and control for the audio systems with override panels in each area for audio levels and stop/start functionality. Each exhibit epoch features concealed ambient sensing microphones, allowing audio levels to be continuously adjusted to suit visitor numbers during the day.

Photo: Gavin Oliver

The video system delivers more than 70 channels of HD video and 19 interactives across Opticom fibre transceivers. All video is derived from Alcorn McBride HD Binloops with the exception of a large projected landscape that required extensive warping and blending across three projectors. For this exhibit Digital Fabric specified a BSM Media Server. Projection consists of a range of Christie and NEC projectors – the DS+750 and HD6KM handle the larger screens – with NEC's PA500U, PA750U and PX750U projectors and V-Series LCD screens filling in the smaller requirements. The touchscreens are from Screenvision, driven by Apple Mac Minis.

The collective result is both absorbing and inspirational. //hapo represents the creativity, inventiveness, resilience and spirit of the South African people, through a bold journey spanning billions of years. For those who have contributed to its creation, there is obvious pride. Its physique and lasting statement are undeniably huge, but it's also the project journey, with its twists, turns and extensions that have helped to deepen the impression left on people like DWR's Robert Izzett. "It was a privilege to work with Gavin Olivier," he says. "His knowledge of history and museum systems, and his passion is awesome. Big museum projects like this don't come along often. A museum of this scale is the largest we at DWR have ever worked on. They only come by a few times in your lifetime. It's a legacy for us."

Olivier agrees: "It's an honour to be involved with a project of this scale and complexity. It feels very good to see it completed after so many years and it will always feature as a key project in our resume. It ended up being an unusually long gestation period, which for Digital Fabric meant more than five years. Of course the upside is that

we were able to plan ahead in detail, However it takes real dedication to keep tracking the various build teams to ensure that opportunities are not missed.”

Turning challenges into opportunities, Olivier has undoubtedly helped to create something that he believes is very special: “I love the way that the narrative takes visitors on a journey that starts with very broad concepts of within an African perspective. It’s

Photo: Gavin Oliver