

Stars in your eyes

The Royal Observatory has invested in a-v to help bring astronomy to a wider audience. **Paul Milligan** visited the newly opened exhibit to see what's on offer

DID YOU KNOW that there are more stars in the universe than there have ever been heartbeats in the whole of humankind? I would guess the answer to that would be a 'no'. But that's just one of the myriad of facts about astronomy that visitors to the newly revamped Royal Observatory in Greenwich, London, can learn.

The National Maritime Museum opened the final element of its £16m redevelopment in May. Funding has come from the Heritage Lottery Fund, the Department for Culture, Media and Sport and a host of foundations and charitable trusts.

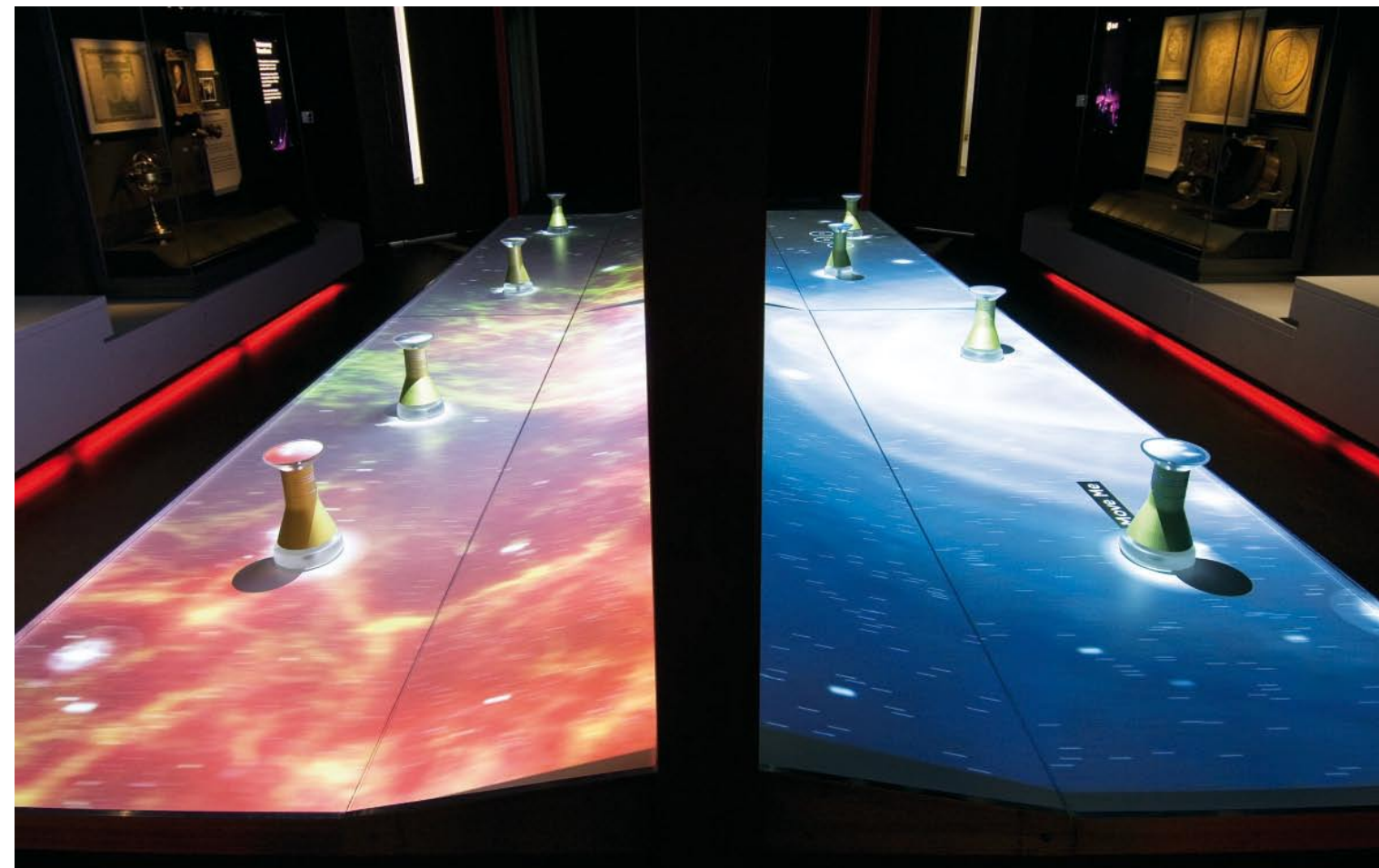
In a-v terms, the project was a collaboration between systems integrator Sysco and a-v and interactive agency Newangle. Sysco was responsible for designing and implementing all the hardware and software systems. Newangle handled all the creative content, which included filming, animation, motion-graphics and scriptwriting.

MAKING IDEAS DELIVERABLE

The two companies have previously worked together on several projects, including the National Waterfront Museum in Swansea (see *AV April, 2006*), the Medieval Palace exhibition at the Tower of London, and two years ago on the Time Gallery, which no doubt helped win them the tender.

'The big part was that we had worked on the previous gallery and we were also consulting on a lot of the project beforehand', says Graeme Bunyan, special projects manager for Sysco. 'There were so many ideas on the table that it takes a company that knows a-v to rationalise those into what is deliverable and what's achievable within budget. When there is that level of complexity, the client feels nervous if it goes somewhere else because there is so much baggage that goes along with it.'

The Royal Observatory hopes to target a varied audience



Below: The first thing visitors see on entering the gallery is the 'Astronomy Inspires' film, which uses three projectiondesign projectors



of families, local people, overseas visitors and education groups at key stages two, three, four and A-Level.

Newangle was provided with a brief, which was written by the client and interactive consultant Richard Glassborow, with input from Thomas Matthews – the exhibition designers and TGA content writers. It stated that the interactives should be usable by all the groups targeted, with minimum instruction.

But was the remit educational? Or was it more focused towards entertainment? 'It was important that the content was factually correct, the educational element and accuracy were essential, the entertainment aspect comes out when writing the script. We find the exciting and "wow-factor" facts to excite and inspire the audience', says Bev Garrett, senior project manager for Newangle.

CATCHING THE EYE

The most eye-catching feature of the redesigned site is the bronze-topped 120-seat Peter Harrison Planetarium – the only live public planetarium in London since Tussauds now focuses on celebrities.

It features a 25-minute show and is projected using an Evans and Sutherland Digital Theater system, the first installation of its type in Europe.

It was Newangle's work inside the adjacent Weller Astronomy Galleries that led the company to be asked to art direct the laser-projected 'Star Life' movie – from which the opening question of this article comes from – for the planetarium.

Newangle's Violet Berlin wrote the script and had the difficult job of juggling dense astronomical detail with the need to keep people entertained for nearly half an hour. Martyn Ware of Illustrious, former band member of Heaven 17 and The Human League, created the absorbing surround sound track.

BRINGING SCIENCE TO LIFE

It's inside the Weller Astronomy Galleries on the site that the a-v exhibits help bring sometimes quite technical scientific subject matter to life.

As you enter the gallery, the first exhibit you see is a four-minute film called 'Astronomy Inspires', delivered using three projectiondesign F1+ XGA wide projectors, which provides an introduction to the big questions and concepts explored in the rest of the gallery.

The 'Star Gazing' exhibit involves a scale model of a reflecting telescope that appears to be pointing at a representation of a star field. At bench-top level there are two levers that allow the visitor to pan and tilt the telescope. A 17in touchscreen shows the same star field and four space objects that the visitor can select, locate with the levers and zoom into to see imagery and facts relevant to that object. A 6.4in LCD screen located above pans across the star field as you move the levers create the illusion of looking through a telescope.

'Build a Space Probe' is a game for three players, where visitors select one of three missions to launch a probe to.

A 'Mission Controller' sequence played on the main plasma instructs the visitor and communicates progress.

Developing this was Newangle's biggest challenge because of its sheer scale. 'It was incredibly complex to develop and program, it is heavily scripted, includes purpose shot footage of an actor, 38 3D models, video, graphics, BSL signing and subtitles,' said Garrett. HMC Interactive handled specialist programming on the project for Newangle.

'Spectroscopy' has a 17in touchscreen that allows visitors to select and explore stars from the constellations of Orion and Gemini.

The 'Astronomers Question' exhibit is one of the largest on display and can seat eight people at one time. A table is split through the centre by a double-sided projection screen, where eight 'pucks' are used to explore, navigate and trigger content relating to four main areas – planets, stars, galaxies and universe.

Two projection surfaces are used – the horizontal provides the interface and navigation and the vertical is the main area for content delivery. Across the projection

Above: The 'Astronomers Question' exhibit uses a double-sided projection screen to divide a table in two and allows visitors to explore, navigate and trigger contents on the planets, stars, galaxies and universe

KIT LIST SUMMARY

THE ROYAL OBSERVATORY installation equipment list includes nearly 350 items. This is a summary of main brands used:

DISPLAYS:

5x Panasonic PT-D3500E; 12x projectiondesign F1+ XGA Wide; Samsung SM-242MP plasmas; 3x Panasonic TH-50PHD9; 2 x

Panasonic TY-42TM6D; 1x Panasonic TY-42TM6D; 2x Smartboard 680; Polycom and Sony videoconferencing systems

CONTROL SYSTEMS

AMX Modero touch panels and AMX NI-4000; AMX EXP-7530; Cue Delta controllers and touch panels

SIGNAL MANAGEMENT AND DISTRIBUTION

Gefen DVI cat5 extenders, USB 100 extenders, DVI RS-232 extenders, DVI to VGA converter; Kramer VM-1055, VS-88A, VM-80V and VS-24XL; TV-One C2-1350; 2x Analog Way Octo-Vue

AUDIO SYSTEMS

Fostex D-2424LV; A-Part, Triad, JBL and Speakercraft speakers; Genelec, Cloud, Sennheiser, Audio-Technica and TOA amps.

PLAYBACK SYSTEMS

Denon, JVC and DVS Blade; 12 x Sysco PC 840-P4 dual core PCs; Nvidia Quadro NVS; Winmate controllers



The use of dice in the 'Computer Modelling' exhibit help visitors understand the laws of mass and gravity

surfaces there is an ever-changing montage of Hubble Telescope imagery that pixelates when it meets the vertical projection. Star-like hotspots move up the horizontal, so the visitor can place their puck on the hotspot and have content delivered to the vertical projection.

Holophonic directional speakers deliver audio directly to each individual seating position.

There are 15 subjects each with five videos – an introduction to the subject followed by four separate videos. This is a total of 75 videos and more than three hours of content. Newangle filmed several of the UK's leading astronomers for the exhibit, and because of its size, it took a lot of work from Sysco to get the table right.

The quantity of infrared tracking used on the 'Astronomers Question' exhibit proved to be Bunyan's biggest challenge on the project. The difficult balancing act was in getting hardware that was of the right quality and reliability, yet was familiar to the software people, who were developing the code for it.

The 'Computer Modelling' exhibit is one of the most scientifically intricate subjects to get across. It simulates the behaviour of mass and gravity in the gravitational field and demonstrates that astronomers make simulations to understand how the universe evolved. Visitors arrange dice with symbols on them relating to mass and velocity and then press the 'run button', the camera-recognition system captures the image and displays a real-time simulation of the arrangement.

The project team decided early on that 'Computer Modelling' was going to be one of the tools of modern astronomy. But there was also an overall desire to have a substantial physical presence to the interactivity in the gallery where possible.

Richard Glassborow, the interactive designer on the

project team, devised many exhibits to combine physical interfaces and digital interaction. It was important for the interface to have a resonance with the content and not just buttons and levers for the sake of something physical. In the case of 'Computer Modelling' the content was essentially mass and gravity. The idea of dice came about because they are an instantly recognisable object, which boosts visitor interaction.

SCIENCE AS ENTERTAINMENT

Anyone who has spoken to a teacher or a young child will know that science is not the easiest subject to raise an enthusiastic response from. So how did Newangle, and scriptwriter Violet Berlin make astronomy fun?

'It's a tricky balancing act. Scripts need a captivating narrative that is intelligent enough for adults to enjoy, but simple enough for children to understand', says Garrett. 'Graphics have to be fun enough to draw you in, but also authoritative enough to communicate the secrets of the universe. The interactive designs must be intuitive on every level, while still being able to surprise and delight.'

'At the start of the project, Lisa Jardine-Wright, a Royal Observatory astronomer, gave our scriptwriter and designers an inspirational lecture on space. This empowered them to use their skills in translating difficult conceptual science into accessible, engaging audio-visual experiences.'

Finally, and this will make installers reading this article shudder, the project needed nine astronomers to sign off on the content. This process was further complicated by the fact that some of the information displayed is open to wide conjecture, so getting a consensus among nine scientists was quite a feat. After that, the rest must have seemed like child's play – with a serious purpose. □

CONTACTS

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