

Success Story

Mummy: The Inside Story



Archeology meets Advanced Visualization with SGI Technology

“We have been able to take a journey of exploration in real-time deep within the wrappings, to examine in fine detail skin, bone, teeth and also amulets traditionally placed with the mummy. We also made a very exciting discovery of a crude clay bowl on the mummy’s head, something we have never seen before.”

– *Dr. John Taylor,
Assistant Keeper,
Department of Ancient Egypt and Sudan
at the British Museum*

In a world first, using SGI’s visualization technology, British Museum visitors can see for the very first time what lies beneath the wrappings of a 3,000-year-old mummy, while it remains completely intact.

One of the challenges when studying Egyptian civilization is that Egyptian mummies contain a wealth of information about the past, but to un-wrap them is an irreversible and potentially destructive process. This poses a huge problem for Egyptologists, who want to gain access to the data contained in mummies while at the same time preserving them untouched for future investigators.

Visualization technology is used by SGI customers in a wide range of industries, such as in healthcare—for medical diagnosis—and in oil and gas—for the analysis of seismic data. The technology was also used in an innovative project called the ‘Visible Human’, where for the first time a complete human being was virtually visualized inside and out. SGI came together with the British Museum to see if the same techniques could be applied to an Egyptian mummy.

The British Museum chose the 3,000-year-old priest Nesperennub as the mummy to investigate. Nesperennub was CT-scanned at the National Hospital for Neurology and Neurosurgery in London and underwent 3D laser scanning in Scotland. These scanning sessions produced more than 1,500 images which were reassembled into a single 3D dataset that could be interactively viewed and explored, using a specially developed, real-time visualization application created by SGI Professional Services.

Invaluable Archaeological Discoveries

A team of SGI and British Museum experts were then able to embark on a process of discovery by subtly adjusting many parameters, such as density and opacity to tease out fine detail buried deep in the body. They have been able to identify features that could never have been accessed if the mummy was unwrapped such as a mysterious cavity inside the skull which experts believe could have been the result of a disease.



Success Story

Bringing the Virtual Mummy to the Public

The British Museum realized the magnitude and impact of these findings and the opportunity to explore the possibility of sharing these discoveries not only with archaeological communities but also through educational outreach to schools and educational institutions. The museum also recognized that applying innovative technology to ancient discoveries in this way could have mass appeal and worked with the SGI Professional Services team to identify the most effective way of recreating the 3D mummy to bring the discoveries to life for the public. The result was the decision to install an SGI® Reality Center® immersive theater at the British Museum as the centerpiece of a dedicated exhibition.

Professor David Hughes, Manager for Advanced Visualization at SGI, who has worked from the outset in partnership with Dr Taylor to drive the project comments: "This has been a remarkable experience, participating in the project from initial concept, through the scientific discovery phase and here to public outreach. Now the public can share in this too through this immersive experience that recreates these discoveries just as we found them originally."

The 'Mummy: Inside Story' exhibition seats 112 people and has been designed and installed by SGI Professional Services and Fakespace Systems Inc. Powering the Reality Center is an SGI® Onyx® 350 system with three InfiniteReality4™ graphics subsystems, 12 MIPS® R14000™ CPUs, 6 gigabytes of RAM and 1.5TB of disk space.

The British Museum will use this technology in three modes. Playback: where the public will experience a 22 minute narrated show. Playback and Real time: where the show will be paused for 'inter-



The Mummy of Nesperennub, still sealed inside its painted case.



CT image of the skull of Nesperennub showing cavity above the eye. This view shows that it had almost pierced the frontal bone of the skull.

active interludes' where free roaming is possible to explore areas of interest. And finally Real Time — a full interactive mode where the entire model of the mummy is loaded for research, special events and presentation by a museum expert.

Due to open to the general public on July 1st 2004, the exhibition will take visitors on a journey inside the mummy, going under the lid of the coffin, virtually peeling away the bandages and traveling into the body itself, all in 3D stereo. The show is narrated by Sir Ian McKellen and will be shown on a 12-foot tall by 42-foot wide curved screen. Following the show, which will include a facial reconstruction of Nesperennub and a historical reconstruction of how he would have lived, the final area of the exhibition will feature the mummy displayed in its coffin alongside examples of the artifacts featured in the show.

The launch will reinforce the British Museum's reputation as a leading center of research on all aspects of ancient Egypt. It currently houses the most comprehensive collection of Egyptian antiquities outside of Cairo.

Working together, the British Museum and SGI saw a unique opportunity to marry visualization technology used by businesses to explore large datasets, with the non-invasive exploration of ancient Egyptian artifacts. The result is an innovative virtual experience based on SGI's leading edge visualization technology that has been adapted and made accessible to the public in an exhibition that once again shows the British Museum as a world leader in the study of Egyptian civilization and a modern, innovative world heritage institution.



Corporate Office
1500 Crittenden Lane
Mountain View, CA 94043
(650) 960-1980
www.sgi.com

North America +1 800.800.7441
Latin America +55 11.5509.1455
Europe +44 118.925.7500
Japan +81 3.5488.1811
Asia Pacific +1 650.933.3000

©2004 Silicon Graphics, Inc. All rights reserved. Silicon Graphics, SGI, Onyx, Reality Center, and the SGI logo are registered trademarks and InfiniteReality and The Source of Innovation and Discovery are trademarks of Silicon Graphics, Inc., in the United States and/or other countries worldwide. All other trademarks mentioned herein are the property of their respective owners.