

Groundbreaking visualization and 3D technologies reveal hidden ancient Egyptian treasures

In a groundbreaking 3D digitization project, Interactive Institute Swedish ICT, Autodesk and CMIV have created a digital copy of the mummy Neswaiu from Medelhavsmuseet in Stockholm. The result is now presented in a new exhibition where the visitors can unwrap and explore the mummy using an interactive touch table. For the first time ever, visitors will be able to hold a 3D printed copy of a golden amulet that the embalmers placed under the layers of wrapping more than 2300 year ago to protect Neswaiu on his journey through the underworld.

With this project we hope to inspire museums to work with 3D digitization, interactive visualization and 3D printing to make their collections accessible in a new way. In this project we worked with mummies, but the same methods could be used on large variety of objects, such as natural history objects and other historical artifacts. – Thomas Rydell, Interactive Institute Swedish ICT at Visualization Center C in Norrköping.

Today, 3D digitization, modeling and interactive visualization create endless possibilities for museums where the technology can be used for research and education, preservation of collections and to create new visitor experiences. On February 22 2014, the new permanent Egyptian exhibition opens for the public at Medelhavsmuseet in Stockholm. Visitors will both be able to explore a digital reproduction of the mummy Neswaiu and hold a 3D printed copy of the golden amulet with their own hands.

Our new exhibition focuses on the human aspect, while also offering new perspectives on Egypt, explains Sofia Häggman, Director of Medelhavsmuseet. 3D digitization technology enables us to describe the health and fate of individuals, as well as ancient Egyptians' beliefs about the afterlife.

Amulets played an important part in ancient Egyptian religion. They were believed to transfer magical properties to the wearer, and were usually placed on specific areas of the body to protect the deceased. In the case of Neswaiu, one of the amulets is in the shape of a falcon. The falcon was associated with the god Horus who was worshipped at the time Neswaiu lived. By using a combination of modern 3D scanning and printing technology with traditional metal casting, it has been possible to recreate the amulet without disturbing the mummy, and once again let the amulet take physical form.

Turning complex data into an amazing user experience

The mummy has been captured digitally in 3D using a combination of dual energy Computer Tomography (CT) and 3D photogrammetry using the Autodesk ReCap solution, resulting in a complete 3D model of the mummy, not just for the outside but also on the inside.

"It is truly inspiring to see how technology, now so much more powerful yet so accessible, can offer unprecedented new ways to experience, explore and learn about our past. We should be genuinely concerned about the fact that, due to natural disasters and wars, we lose our cultural heritage on a daily basis and Reality Capture offers a toolset to save it today and keep it, in digital form, for posterity." – Tatjana Dzambazova, Senior Product Manager, Reality Capture, Autodesk.

Data from the CT scanning and the 3D surface scanning have been combined in Inside Explorer – an interactive visualization touch table developed by Interactive Institute Swedish ICT. Inside Explorer creates a photorealistic digital representation of the mummy that allows the visitors to explore all the layers of the mummy both inside and out- from the small carvings on the sarcophagus to the anatomy - as well as the artifacts wrapped together with the body.

About the Team

This 3D digitization project has been led by Interactive Institute Swedish ICT at Visualization Center C in Norrköping in collaboration with Medelhavsmuseet in Stockholm (Museum of Mediterranean and Near Eastern Antiquities), Autodesk, Center For Medical Imaging and Visualization (CMIV) at Linköping University, FARO and several other experts. The project has been a part of "Projektarena IVM" and is part-financed by the European Regional Development Fund.

PRESS IMAGES:

<http://www.flickr.com/photos/interactiveinstitute/sets/72157640842331235/>

PROJECT WEBSITE:

www.tii.se/projects/insideexplorer#node-8943

#mummyexplorer

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About Interactive Institute Swedish ICT

Interactive Institute Swedish ICT is an experimental IT & design research institute dedicated to the creation of groundbreaking user experiences. The institute has about 60 employees and offers expertise in interaction design, visualization, user behavior, sound design, games and entertainment. Interactive Institute is located in Stockholm/Kista (HQ), Piteå, Umeå, Karlstad, Eskilstuna, Norrköping and Gothenburg, and is owned by RISE (Research Institutes of Sweden) through Swedish ICT.

Website: <http://www.tii.se>

About Autodesk

Autodesk helps people imagine, design and create a better world. Everyone—from design professionals, engineers and architects to digital artists, students and hobbyists—uses Autodesk software to unlock their creativity and solve important challenges. For more information visit autodesk.com or follow @autodesk.

Website: www.autodesk.com

About Visualization Center C

Visualization Center C is a quad helix research center in Norrköping, Sweden and constitutes a focal point for visualization research, education and development in northern Europe. The center hosts world leading research and development groups on volumetric rendering, illumination and interaction techniques for scientific data. The center hosts a large-scale arena for public visits including an immersive dome theatre and closely collaborates with key industrial partners and constitutes a hub for knowledge dissemination and commercial collaborations. The C consortium is a close collaboration between the Municipality of Norrköping, Linköping University, Norrköping Science Park and the Interactive Institute.

Website: www.visualiseringscenter.se

About Medelhavsmuseet - The Museum of Mediterranean and Near Eastern Antiquities in Stockholm

Medelhavsmuseet is, located in the heart of Stockholm, next to the Foreign Ministry, the Parliament and the Royal Palace, hosts Sweden's largest collection of antiquities from the Mediterranean world – Ancient Greece and Rome, Egypt, the Near East and the Islamic world. Through exhibitions, activities and educational programs for schools and children, the museum aims at spreading knowledge about the ancient cultures of the Mediterranean. Medelhavsmuseet is part of Världskulturmuseerna - the Swedish National Museums of World Culture, a group of museums that together provide perspectives on the world and promote respect and understanding between people in an increasingly internationalized society.

Website: www.varldskulturmuseerna.se/en/

About CMIV

Center for Medical Image Science and Visualization (CMIV) is a multidisciplinary research center initiated by Linköpings universitet, the Landstinget i Östergötland, and Sectra AB. CMIV conducts focused front-line research within multidisciplinary projects providing solutions to tomorrow's clinical issues. The mission is to develop future methods and tools for image analysis and visualization for applications within health care and medical research.

Website: www.liu.se/cmiv