

CyArk Europe


COTAC One Day Conference, London

26 November 2013


Ruth Parsons



CyArk



Founder: Ben Kacyra



Urban Sprawl
Pyramids at Giza, Egypt

Arson
Sungmyemun Gate, Seoul, South Korea

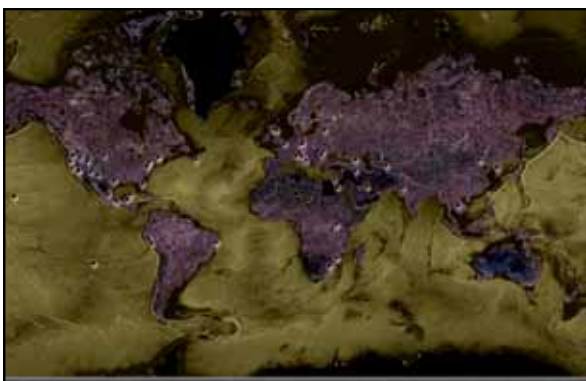
Flooding
Piazza San Marco, Venice, Italy

We are losing our sites...

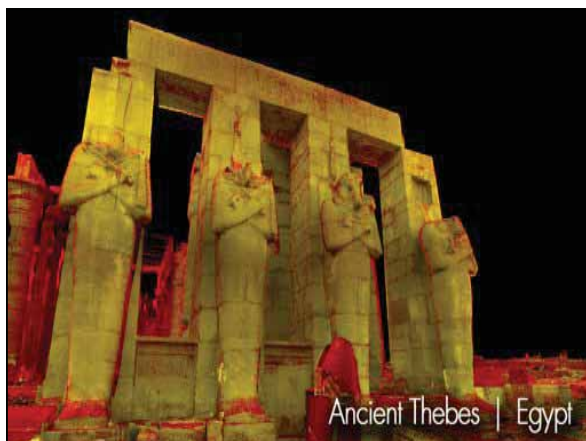
CyArk

Our Mission

CyArk is dedicated to the digital preservation of cultural heritage sites through the use of innovative methods, to collect, archive, and provide open access to data created by laser scanning, digital 3D modelling, and other state of the art technologies.



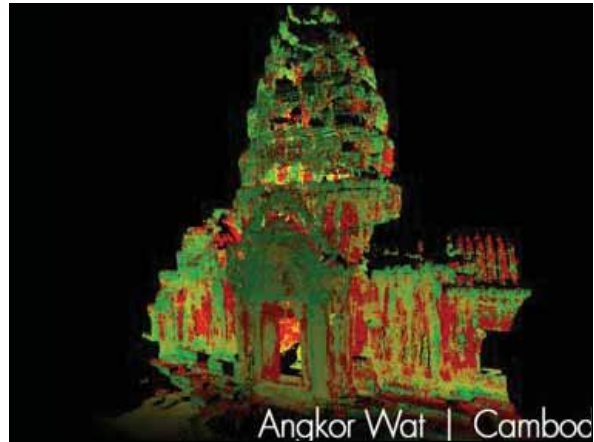
CyArk's Progress



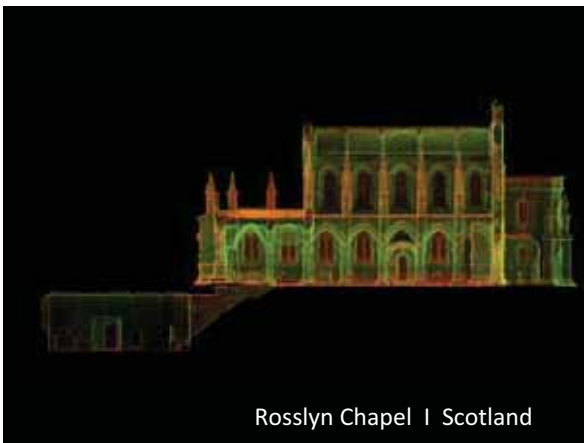
Ancient Thebes | Egypt



Chichen Itza | Mexico



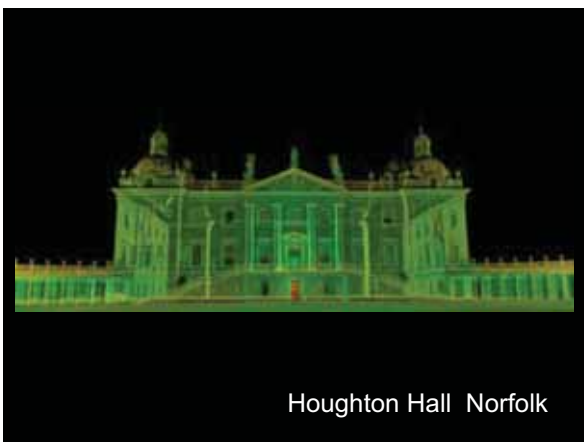
Angkor Wat | Cambodia



Rosslyn Chapel | Scotland



The White Tower
The Tower of London



Houghton Hall Norfolk

SCOTTISHTEN  The Scottish Ten Project 

CyArk, in partnership with Historic Scotland and the Glasgow School of Art's Digital Design Studio aims to digitally document 5 Scottish UNESCO World Heritage Sites and 5 international cultural heritage sites. So far, 9 cultural heritage sites have been documented, including 5 Scottish sites:

				
New Lanark	Neolithic Orkney	The Antonine Wall	Edinburgh Old and New Town	St Kilda

SCOTTISH TEN

Working with partner countries to record 5 international sites (field data for 4 completed):

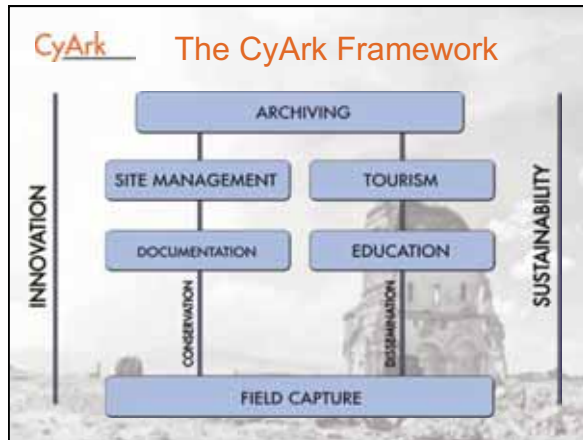
The Eastern Qing Tombs, China

Rani Ki Vav, India

Mount Rushmore, US

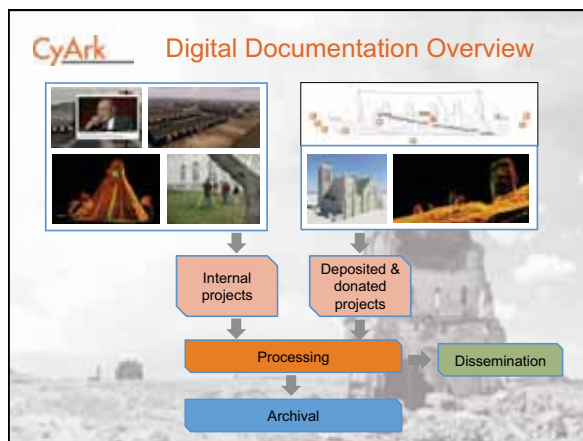
The Sydney Opera House, Australia

Unannounced



CyArk CyArk's Operation

- Individually funded projects
- Philanthropic donations
- Working with partners
 - Dataset donation
 - In kind support



CyArk Data Collection

Digital documentation tools and methodologies

Principal capture techniques include:

- Laser scanning survey
- HDR digital photography
- Photogrammetry

CyArk Skills and technology transfer

Working internationally with educational bodies and heritage groups to create sustainable digital documentation skillsets, by delivering training and building partnerships.

CyArk Archive

Practice

- Standardising dataset structure
- Conversion from proprietary to open formats
- Format specific conversion: e.g. Point clouds – ASCII XYZRGB/1 point data
- Generating ingestion metadata

System

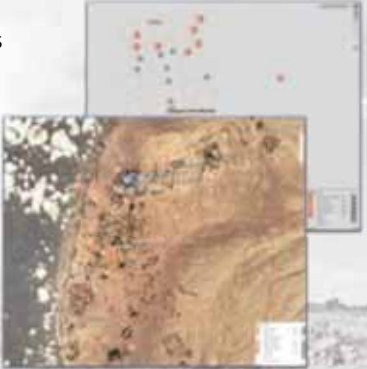
- Scalable 2PB LTFS with Crossroads Strongbox
- Media and data integrity verification (checksum)
- Periodic off-site backup to secure, underground Iron Mountain facility
- Data migration





CyArk SiteManager




- Bespoke web based GIS
- Embedded multimedia content with metadata from datasets
- Management with content type filters, layers, hierarchies and sub-areas



3D viewing tools

3D model & point cloud viewer

- Measurable
- Perspective / orthographic
- RGB/Intensity
- Clipping box








Church of St. Trophime, France

CyArk Project Deliverables

Common project outputs and media include:

- Architectural CAD drawings (and other survey outputs)
- Textured 3D models
- Panoramic virtual tours
- Rendered animations
- Interactive game environments

St Peter ad Vincula, Tower of London

CyArk Ancient Merv, Turkmenistan

- 'Oasis city' on silk road, located in Karakum desert
- Bronze age centres occupied area from 3rd millennium BC
- 12km² site area
- Inscribed as UNESCO World Heritage site in 1999



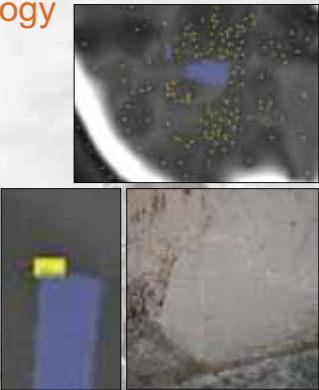

CyArk Risk & conservation challenges

- In 2000, Merv was placed on World Monument Watch's list of 100 most endangered sites
- Primary construction material is earth
 - Mudbrick, mortar, plaster
- Natural: Weathering, vegetation
 - Wind, sand abrasion and driven rain
- Anthropogenic: Development & visitors
 - Construction of Karakum canal in 1950's
 - Higher water table, soil salinity
 - Undercutting




CyArk Hydrology

- Scan dataset allowed hydrological analysis from Digital Elevation Model (previous topographic data very limited)
- Showed basins, highlighting drainage problems discussed in previous monitoring
- Preventative action



Dissemination

- Database driven website
- Embracing open access
 - Site multimedia released under Creative Commons license
 - Free access to 3D viewer for point cloud data and 3D models
 - Lesson plans (Primary & Secondary education)
- Developed own tools...



Web

- Project/site information and historical context
- Links to interactive educational content, lesson plans
- Designed to be social-media friendly, e.g. unique content URLs and comment system



CyArk Digital Content and Multimedia



TOWER OF LONDON

Historic Royal Palaces

CyArk



CyArk Community Engagement

Manzanar (Japanese American Museum of San Jose)



