The IHC Digitization programme

• Aim to promote best practice in managing heritage – Digitization is a best practice (a tool)
The IHC Digitization programme

• Aim to promote best practice in managing heritage – Digitization is a best practice (a tool)
• Challenge: digitize world heritage: we need research for solutions and education.
Challenge: In order to do that… you need to find it first

Solution:

• This is the first step, it's too difficult to do on your own

• You need a crowd solution.

• This is how we see the immediate future shaping:
Title
Parthenon

Verified
Yes

Description
Parthenon at the Acropolis, Greece

Category
Building, Stone, Classical

Date
1:31 PM, Sun, Sep 4, 2011

Add Report

Title
Enter title

Description
Enter description

Category
Select category

Date
Sunday, September 4, 2011
and status of verification (whether verified for their validity or not).

Showing Reports from Sep 04, 2011 through Sep 04, 2011

Filter Reports By
- Category
  - All Categories: 2
  - Date - 19th to 20th: 0
  - Date - Iron Age: 1
  - Classical 480bc - 336bc: 1
  - Date - Modern Era: 0
  - Date - Stone Age: 0
  - Size - Size of Item: 2
  - Building: 2
  - Type - Kind of Item: 1
  - Stone: 1

Location

Type

Media

Verification

Reset all filters

FILTER REPORTS
19th Century Stone house
Stone house in Tolo, Greece

Parthenon
Parthenon at the Acropolis in Athens, Greece
Submit a New Report

Report Title [a]

Description [b]

Date [c]

01/08/2011

Time

[00:00-23:59] [00:00-12:00] [13:00-17:00] [18:00-22:00] [00:00-07:00]

Categories [d]

City, State and/or Country

Refine Location name

News source link [g]

Video link [h]

Upload Photos [i]

Optional Information [i]

First Name

Last Name

Email
Challenge: Once we have identified the sites we need to save them.

Current Solution:
- 3D laser scanning (most accurate)
- Photogrammetry
True View Keymap
SKETCH UP (ένωση φωτογραφιών)
Challenge: we need hands

- Solution 1:
But once you ‘save’ heritage digitally…

• You need to save also the original fabric and continuously…
The Decay Curve

- Abandonment
- Excavation
- Damage and repair
- With conservation
- Without conservation
- Without maintenance
- With conservation
Mapping Conservation needs
Forensic Photogrammetry
Challenge: we need to present things for the heritage manager:

• So that they can know at any time what is the status of rescue excavation information.
New structure proposed for presenting 3D data

- Google / Bing or other Map / with GIS
- Flat two dimensional Map
- Tru – Views (individual scans that can be seen and used for measuring purposes)
- Links to specialised documents including the measurable models
Geographical Information Systems (GIS)
New structure proposed for presenting 3D data

- Google / Bing or other Map/ with GIS
- Flat two dimensional Map
- Tru – Views (individual scans that can be seen and used for measuring purposes)
- Links to specialised documents including the measurable models
New structure proposed for presenting 3D data

- Google / Bing or other Map
- Flat two dimensional Map
- **Tru – Views** (individual scans that can be seen and used for measuring purposes)
- Links to specialised documents including the measurable models
New structure proposed for presenting 3D data

- Google / Bing or other Map
- Flat two dimensional Map
- Tru – Views (individual scans that can be seen and used for measuring purposes)
- Links to specialised documents (such as a conservation map) including the measurable models
We need to facilitate research

• Challenge: At the moment research can only be conducted in specific seasons, after permission (so as not to clash with someone else), and in a limited amount of space and time. We need faster research so that we know what that heritage is, and what it stands for.

• Solution:
Open access 3D Tru Views that will facilitate research and exist as educational materials. Point against: what access do we want to give?
Make available to the public:

• To create income for local communities
• To make the programme more sustainable
• To EDUCATE about the past
3D visualisations FHW programme for education.
Virtual experience
Educational Programmes
Augmented Reality
The infrastructure should change the way we do things:
Instead of Physical Reconstruction…
Physical reconstruction

If the reconstruction is known later not to be accurate, what should be done?

• Inform scholars and visitors? (deliberately conveying false information is unethical, or even a crime!)
• Change the reconstruction?
• Reconstruction is expensive! And creates other wounds.
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Virtual reconstruction

Ename centre (Belgium) 11th C. AD
Excavated foundations of St. Salvator church
Virtual reconstruction of church
Ename centre, Belgium

It does not affect the monument, it is very much more cost effective, it presents alternative scenaria
Unification of Monuments and authenticity.
Research questions: temperature and air-flow
at chimney and fireplace penetrations

behind bathtubs, enclosures, above suspended ceilings

at plumbing stacks

around windows

through window joints

at rim joists, sill plates, and baseboards

ceiling light fixtures

attic hatch

receptacle and switch boxes

at drains

joints and cracks
Temperature Flow
Palace of Nestor

Southwest Building

Wine Magazine

Palos

Northeast Building

100
Light Correction

Challenge: Minimizing the time of scanning and improving capture

• Laser scanning the most accurate way to capture but it is slow and takes a long time.
• Laser scanning cannot easily go high up in good resolution as the machines are heavy.
• Photogrammetry is an alternative technique that creates very high resolution point clouds – but need correcting/calibrating (very lengthy process).
• A combination of techniques needed that do not combine at the moment
Minimizing the time of scanning and improving capture
We need improved flight planner to accommodate for Z-field changes (now it operates only on the X and Y fields) and this is the first point of collaboration with a laser scan point cloud.
We need constant referencing to the point cloud for improved image quality and accuracy.
Outcomes

• Minimum: cut the time of digitizing a monument by 50% and the cost by 45%
• Maximum:
  – Cut the time of digitizing a monument by 95% and the cost by 90%
  – Create an improved flight planner of MUAVs
  – Create an automated photo correction software that refers to the laser scanning
  – Create the protocols of scanning a site in 2 days
  – Have a team tried, and ready (well oiled) that can do this (this team will train the others).
Thank you!

We are looking forward to a fruitful collaboration.

Nobody can do everything on their own.

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