3D as a Service for Cultural Heritage

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我们在哪里？
Scientific Context

● Optic
  - Professor @ IOGS
  - Member of LP2N
  - Since 2012

● Computer Graphics
  - Head of MANAO team
  - 2011 – 2018

● Archeology
  - Archeovision
    - Scientific Director
  - 3D Consortium
    - Coordinator
  - Since 2017
3D for Cultural Heritage

- How to acquire
  - Still some progresses for geometry
  - Challenges for Appearance

- How to analyze
  - Extract important structures

- How and What to visualize
  - Rendering styles
  - Tools for archaeologist
  - Tools for museum

- How and What to archive
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Acquire
Unpublished – New device for acquisition

With IFAO – Imaging in cervices – Medamoud temple – Egypt
En cours – acquisition d’apparence

- Very Large collection
  - Clothes from Asia
  - XIXth century

- Difficulty to expose them
  - Too fragile

- Goal of the collaboration
  - Create an exhibition
  - Original or actual state

Robe - Fish skin - painted et sewn
Vietnam – Woman Cloth
New acquisition platform

- Prev. : *Integrated High-Quality Acquisition of Geometry and Appearance for Cultural Heritage*
  - Schwartz, Weinmann, Ruiters, and Klein
  - VAST 2011
- Scan whole clothes
  - > 1000 LEDs
  - 3D Scanner
  - Robot arm

http://btf.cs.uni-bonn.de/viewer/
Current status
2
Analyze
Illustrative Shading

Classical Phong Shading

Illustrative Material

3D model of d’Isis (d’Alexandria LightHouse)
Acquired by CEAlex & Archéovision
Epitaph of St. Emilion
Epitaph of St. Emilion

- Discovered between 1934 and 1951
- Oldest written trace of St Emilion relics?

Frédéric Boutoulle (Univ. Bordeaux, CNRS)
Pascal Mora (Archéovision, Univ. Bordeaux, CNRS)
Romain Vergne (Inria, Univ. Bordeaux)
Taking into account scale + filtering

For Digital Squeeze
Taking into account scale + filtering

L. Amman, P. Barla, G. Guennebaud, X. Granier & P. Reuter
CGF 2012
3

Visualize
Ex: Maritime museum (Paris)
Spatial Augmented Reality

• From Prototype to museum
  – Real world as display support
Spatial Augmented Reality

- From Prototype to museum
  - Real world as display support
EgoSAR: Spatial Augmented Reality for Multiple Users

Retroreflection  Beam splitter  Personalized & view-dependent augmentation

IEEE ISMAR 2016
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Archiving
25 years of experience

1992: SIRA (Service Informatique de Recherche en Archéologie)
2003: PFT3D (Plateforme Technologique 3D)
2005: Archéotransfert
2012: CNRS Label
2014: Extended from archeology to HSS

UMR 5607 Ausonius
UPS 3551 SHS-3D Archéovision
UMS 3657 SHS-3D Archéovision
Archeogrid: more than 15 years of data organization

- Organize data from the team
- Data management
- Metadata enrichment
- Collaborative work with partners
Archeogrid: 3D data diffusion

- Publication of Corpus for research and other public with the Stereothque
- Gathering and managing metadata
Archeogrid: Data archiving

- Saving into Conservatory of 3D data for HSS, preparation to final archiving to CINES

- Servers from TGIR Huma-Num
  - National Digital Infrastructure for HSS
Goals

Development & good use of 3D tools for HSS

- 4 axes
  1. Technological review
  2. Elaboration and Transmission of Knowledge
  3. Life cycle, interoperability & archiving
  4. HSS meetings: exchanges of uses, communication & formation

consortium3d-coordination@services.cnrs.fr
Graphe séquentiel de la production de données 3D

Archiving 3D data
3D Repository for HSS

- aLTAG 3D
  - Archiving software
  - Easy to create metadata
  - Packet creation

- Archiving @ CINES
  - Format ply / dae (COLLADA)
  - Currently in the process of finalisation

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White Paper

- Tools &
- Good Practices

https://hal.archives-ouvertes.fr/hal-01683842/
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Open to Collaborate
We are open to collaborate

- Spreading the use of 3D for HSS
  - More international
  - What about a Chinese white paper?
- Appearance Acquisition
  - New challenges
  - Development of tools for on-site acquisitions

- Visualization
  - New display systems
  - New HCI
- Archiving
  - Challenge: development of tools to explore the archived data
    - Semi-Automatic classification
    - Matching
    - ...
谢谢

http://xgranier.free.fr