



3D as a Service for Cultural Heritage

Xavier Granier

► To cite this version:

Xavier Granier. 3D as a Service for Cultural Heritage. 5th Sino-French Symposium on Virtual Reality, Aug 2018, Chengdu, China. hal-01923104

HAL Id: hal-01923104

<https://inria.hal.science/hal-01923104>

Submitted on 14 Nov 2018

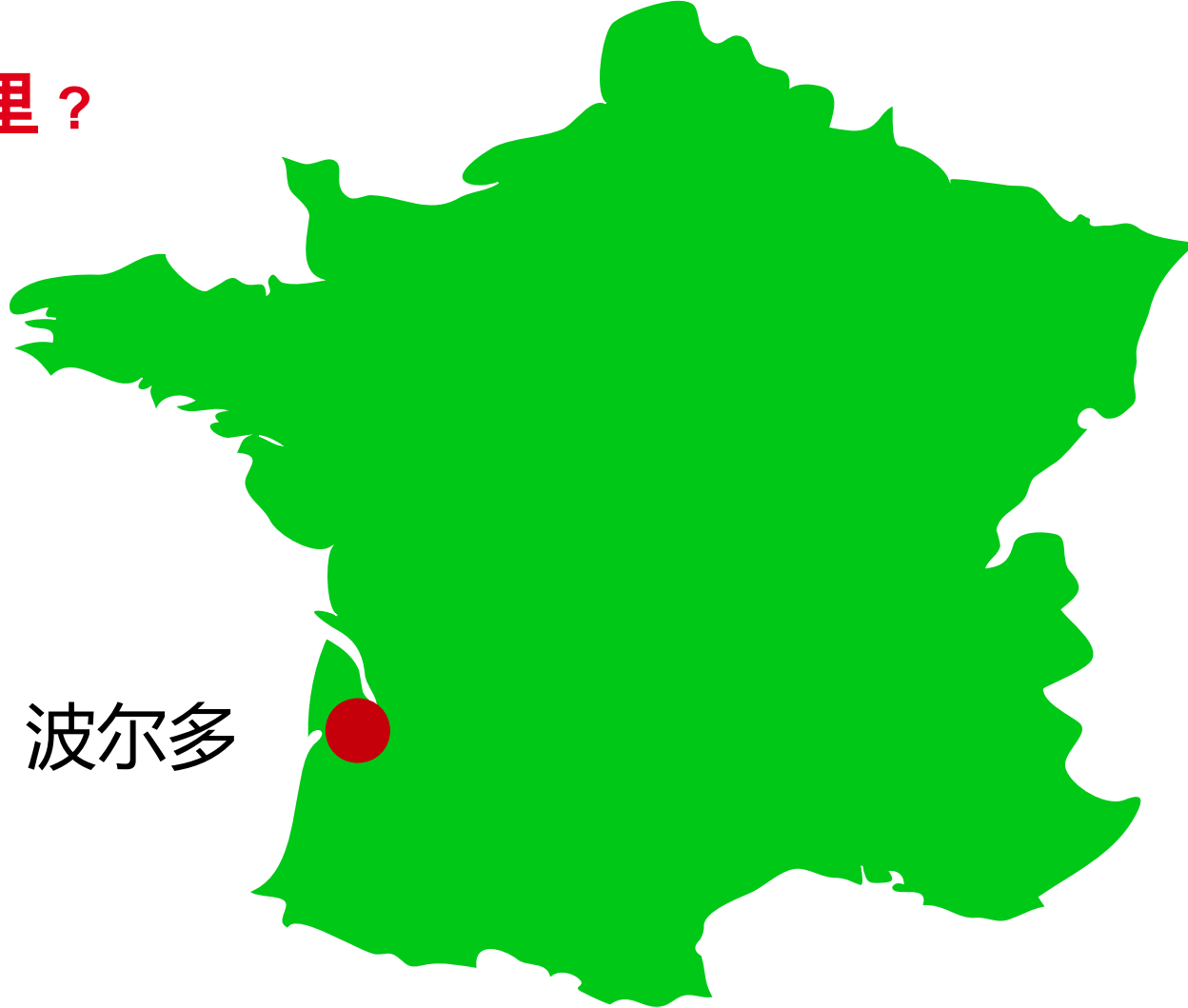
HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

3D as a Service for Cultural Heritage

xavier.granier@institutoptique.fr

我们在哪里？



法国

Scientific Context

- Optic
 - Professor @ IOGS
 - Member of LP2N
 - Since 2012
- Computer Graphics
 - Head of MANAO team
 - 2011 – 2018
- Archeology
 - Archeovision
 - Scientific Director
 - 3D Constortium
 - 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

1

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Unpublished – New device for acquisition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



MEB

MUSÉE D'ETHNOGRAPHIE
DE L'UNIVERSITÉ DE BORDEAUX



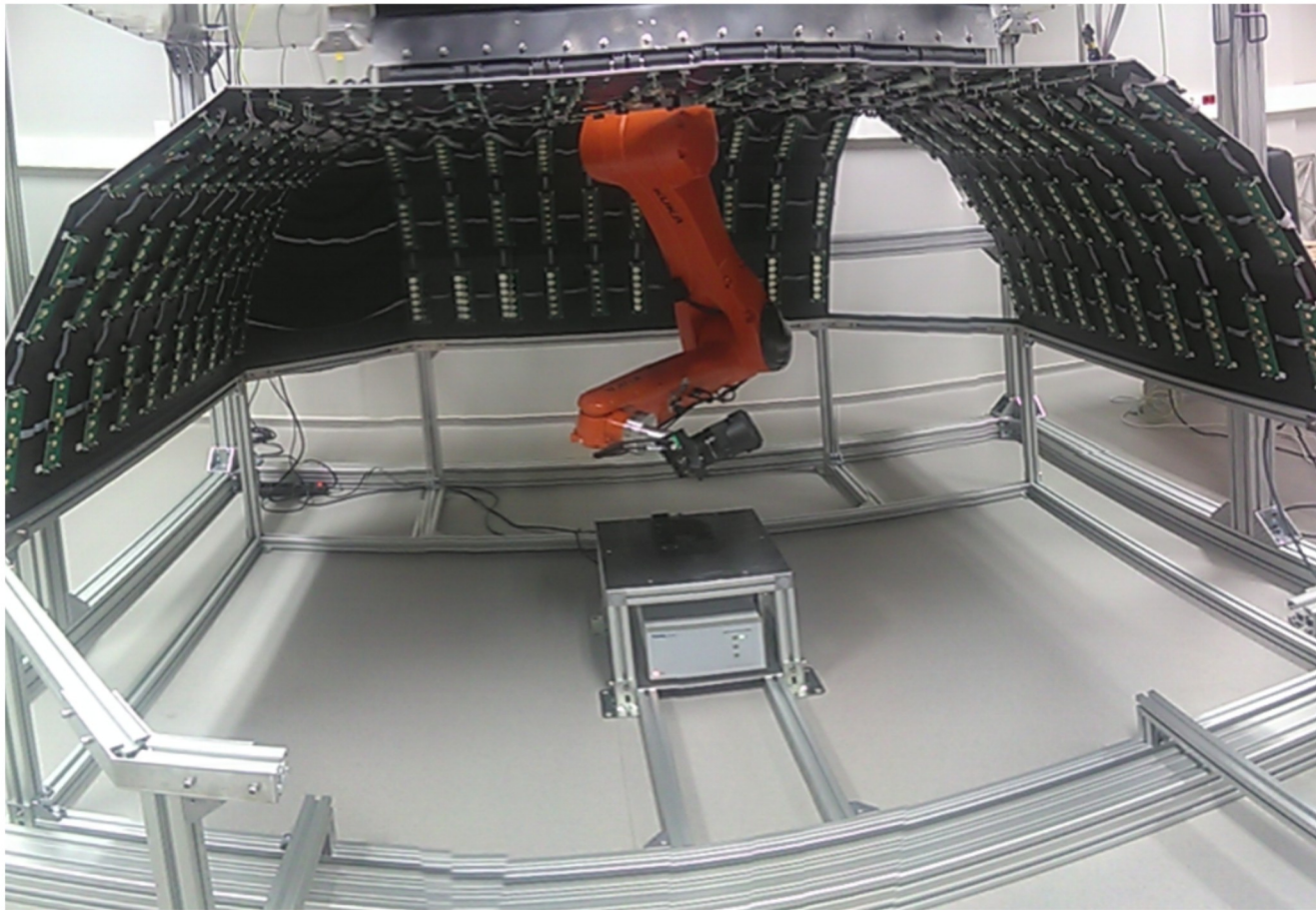
New acquisition platform

- 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



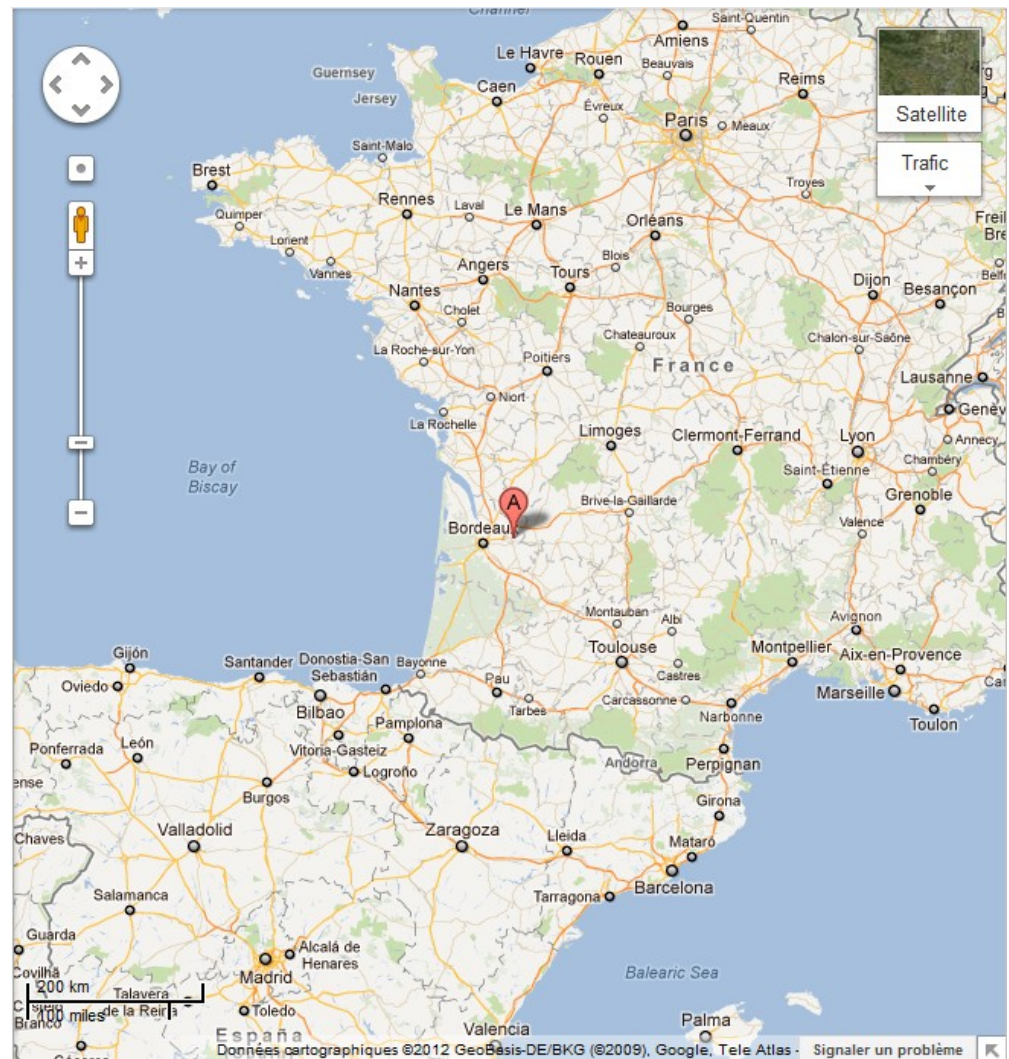
Classical Phong Shading



Illustrative Material

3D model of d'Isis (d'Alexandria LightHouse)
Acquired by **CEAlex** & **Archéovision**

Epitaph of St. Emilion



Epitaph of St. Emilion

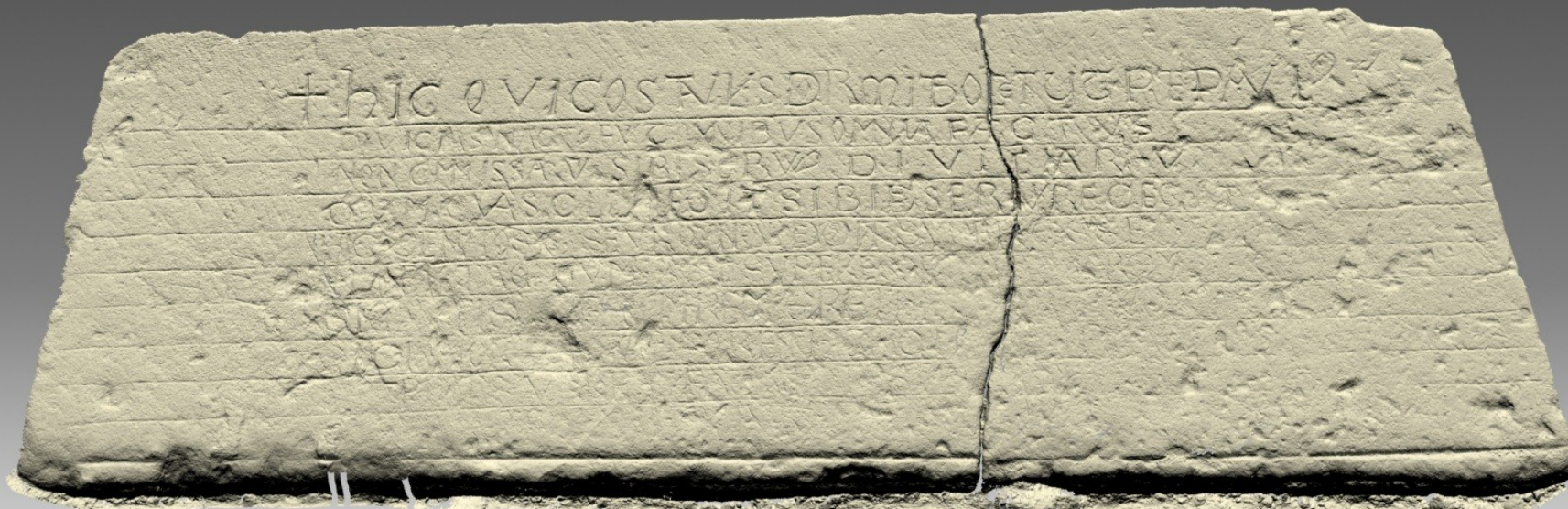
- Discovered between 1934 and 1951
- Oldest written trace of St Emilion relics ?



Frédéric Boutoulle (Univ. Bordeaux, CNRS)
Pascal Mora (Archéovision, Univ. Bordeaux, CNRS)
Romain Vergne (Inria, Univ. Bordeaux)



Epitaph of St. Emilion



Taking into account scale + filtering

For Digital Squeeze



Taking into account scale + filtering

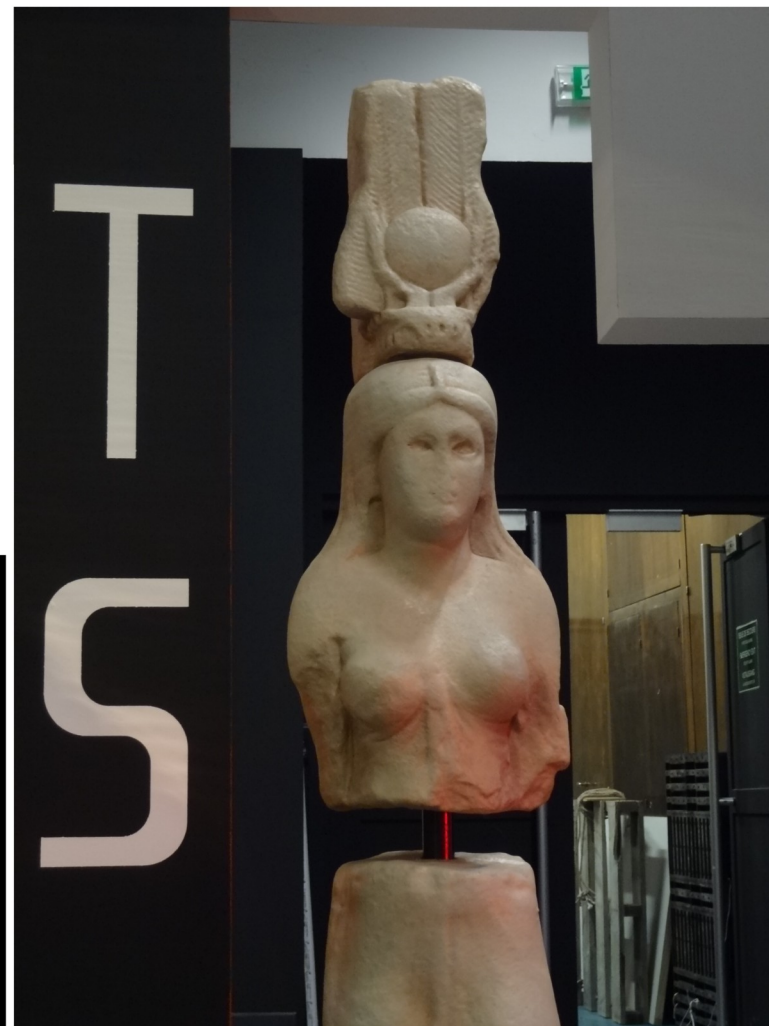
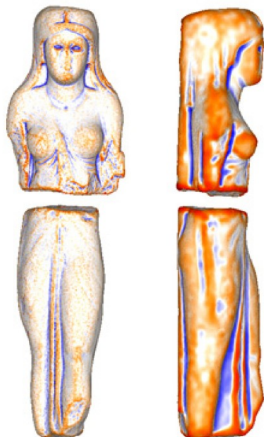
L. Amman, P. Barla, G. Guennebaud, X. Granier & P. Reuter
CGF 2012



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

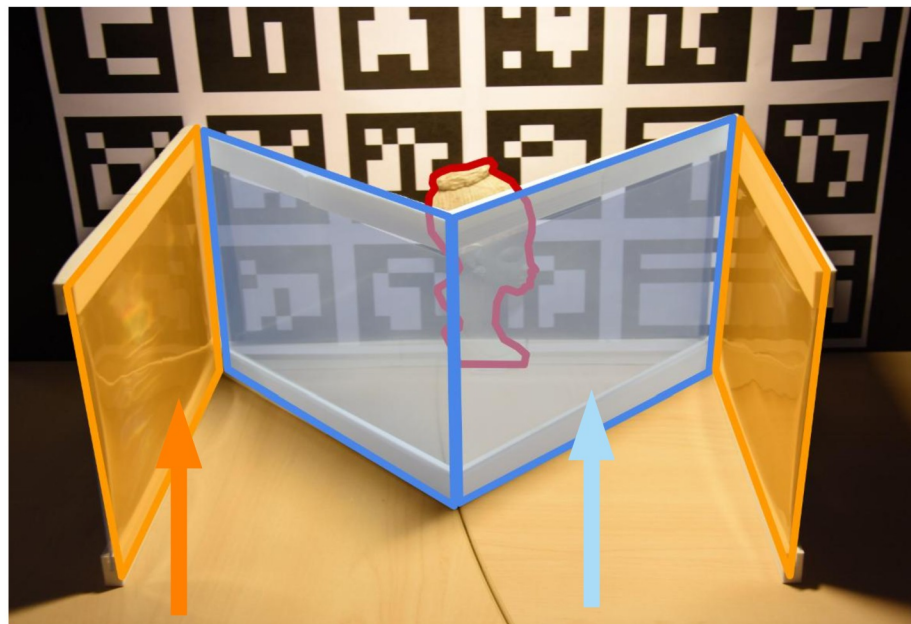


**Mercati di Traiano
Museo dei Fori Imperiali**



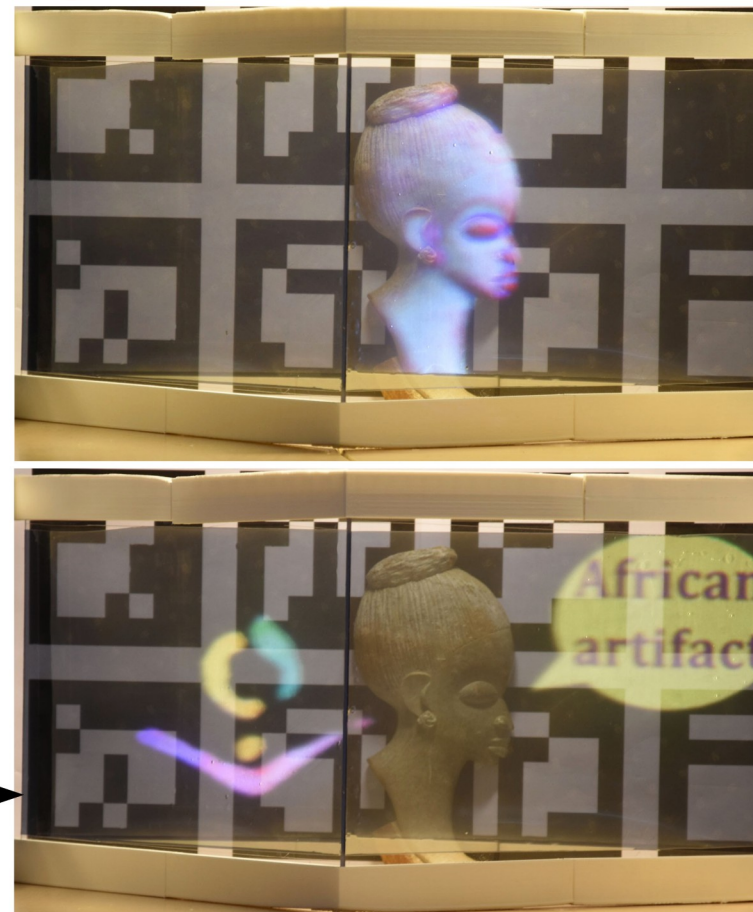
ACM JOCCH 2014

EgoSAR : Spatial Augmented Reality for Multiple Users



Retroreflection Beam splitter
Personalized & view-
dependant augmentation

IEEE ISMAR 2016



4

Archiving



archéovision



Archeo**transfert**



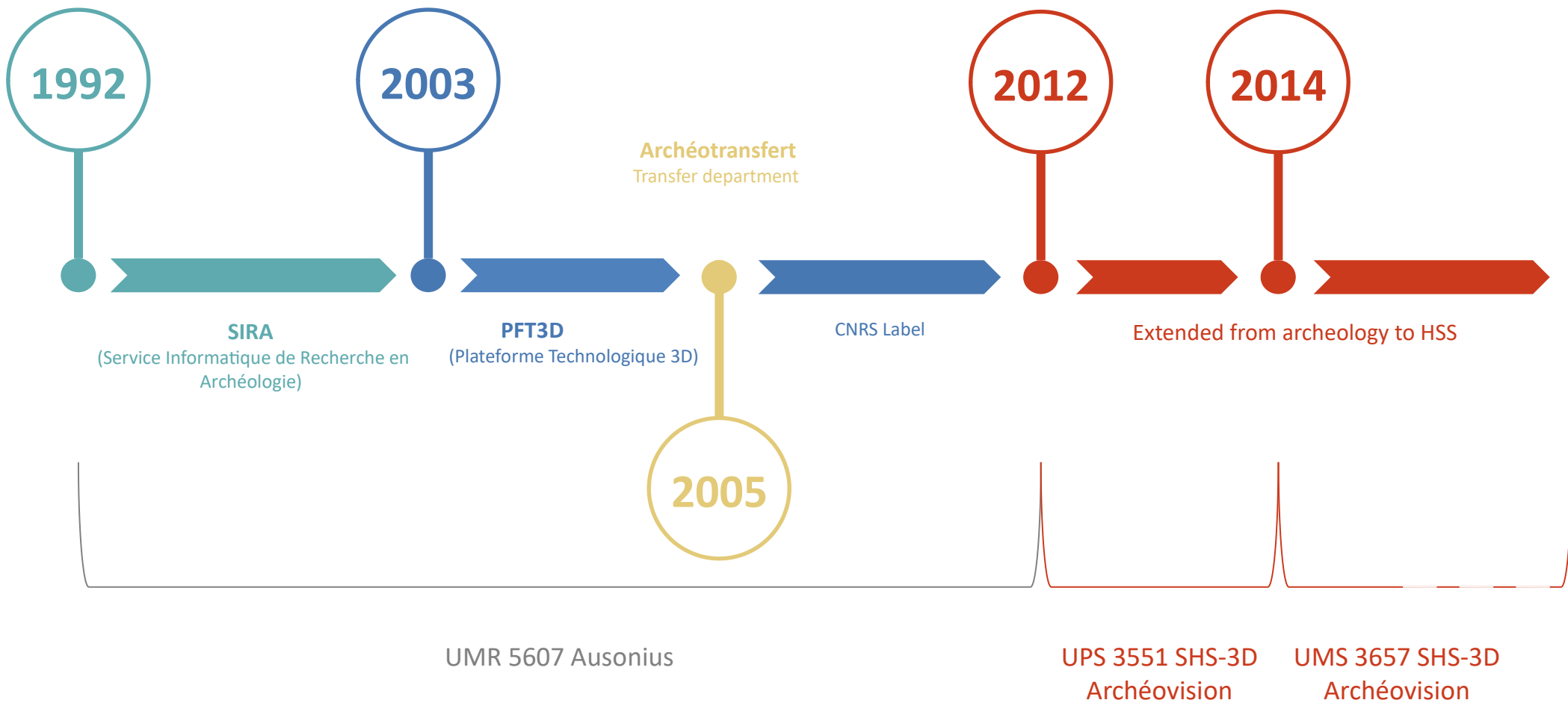
UMS SHS-3D 3657

Cellule de transfert d'Archéovision



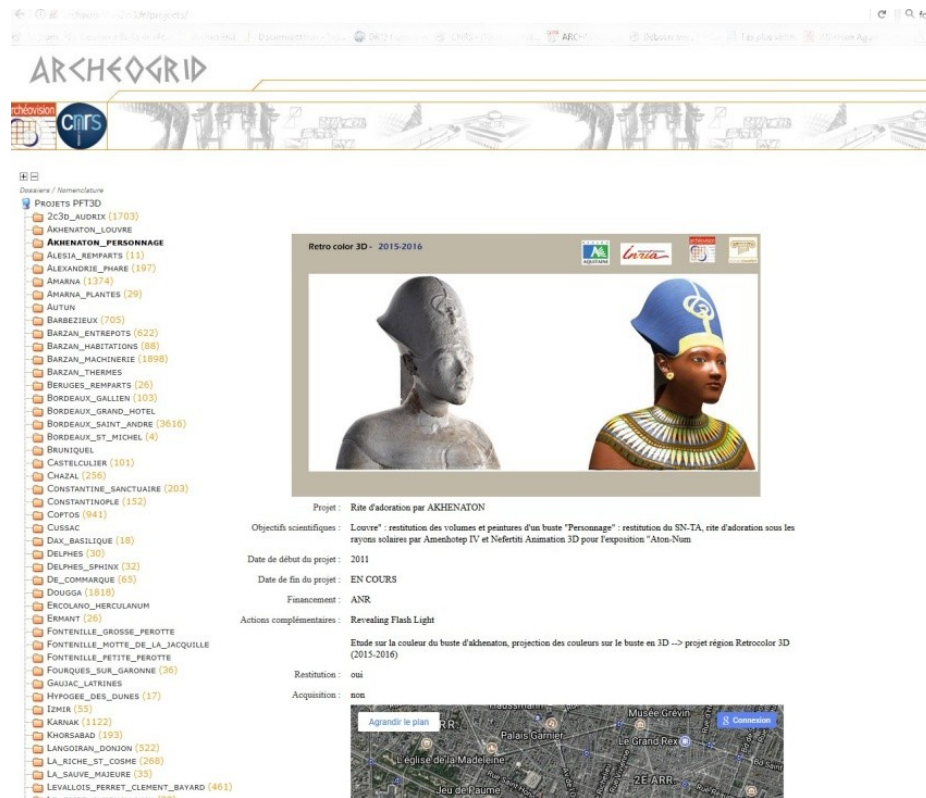
université
de **BORDEAUX**

25 years of experience



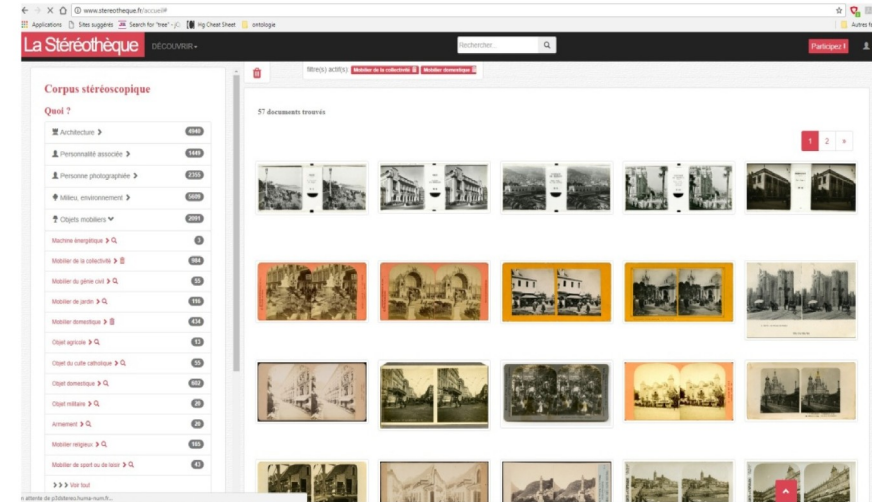
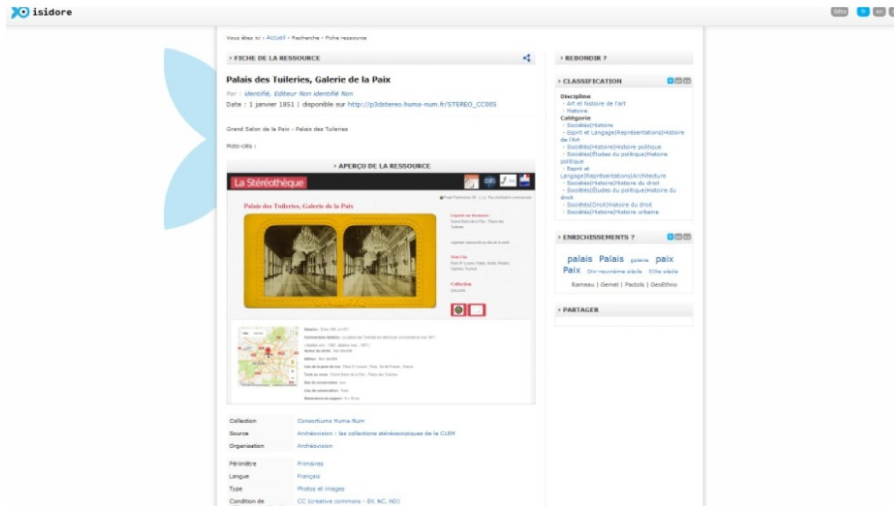
Archeogrid : more than 15 years of data organization

- Organize data from the team
- Data management
- Metadata enrichment
- Collaborative work with partners



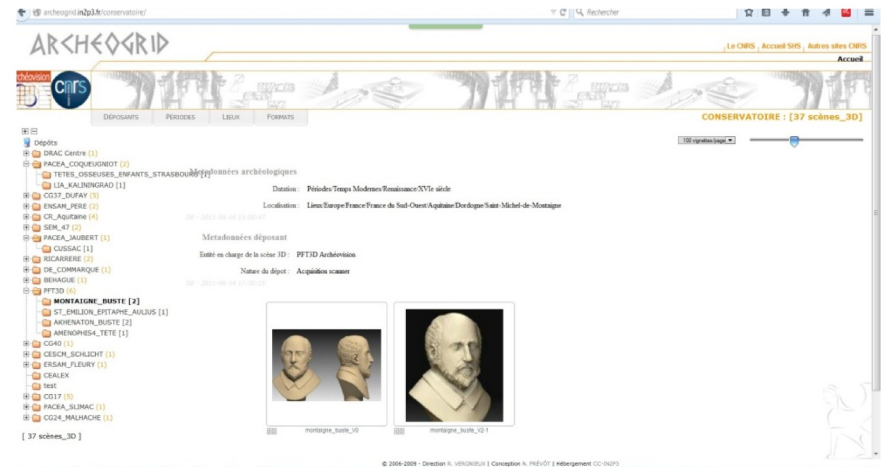
Archeogrid: 3D data diffusion

- Publication of Corpus for research and other public with the Stereothèque
- Gathering and managing metadata



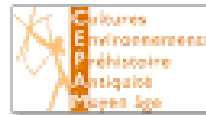
Archeogrid: Data archiving

- Saving into Conservatory of 3D data for HSS, preparation to final archiving to CINES
- Servers from TIGIR Huma-Num
 - National Digital Infrastructure for HSS



3D Consortium for Human & Social Sciences

3D for all HSS



CNRS - UMR 5175
(Paris)



MSH - UMR 5175
(Paris)



Archéovision - UMR 5175
(Paris)



CFV - UMR 5175
(Paris)



mar - UMR 5175
(Paris)



Inrap - UMR 5175
(Paris)



IRCYN - UMR 5175
(Paris)



CIREVE - UMR 5175
(Paris)



LARA - UMR 5175
(Paris)



Archéologie et Patrimoine - UMR 5175
(Paris)



Archéologie des Sociétés Méditerranéennes - UMR 5175
(Paris)

Equipes membres du consortium 3D



<https://shs3d.hypotheses.org/>

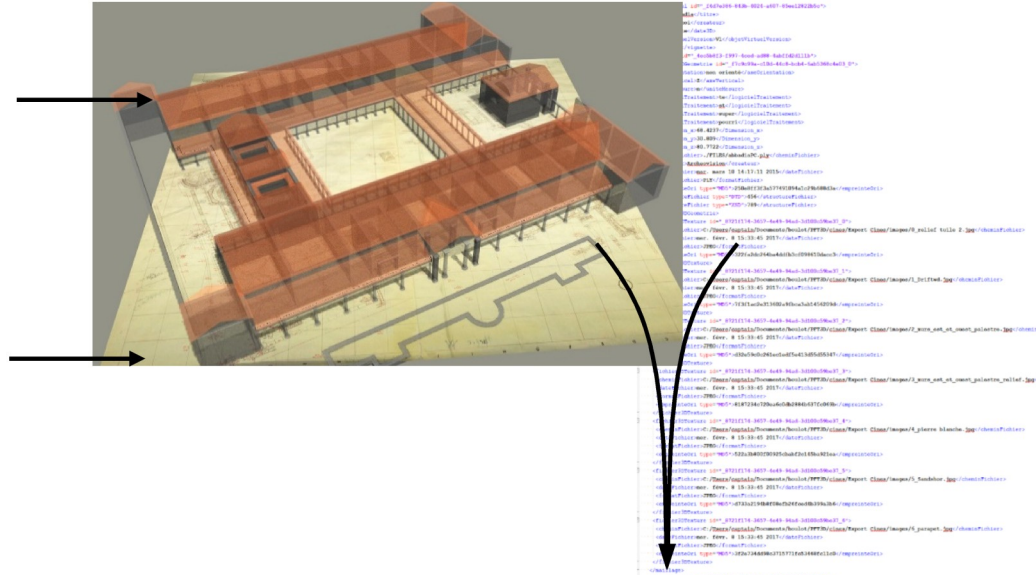
Goals

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





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

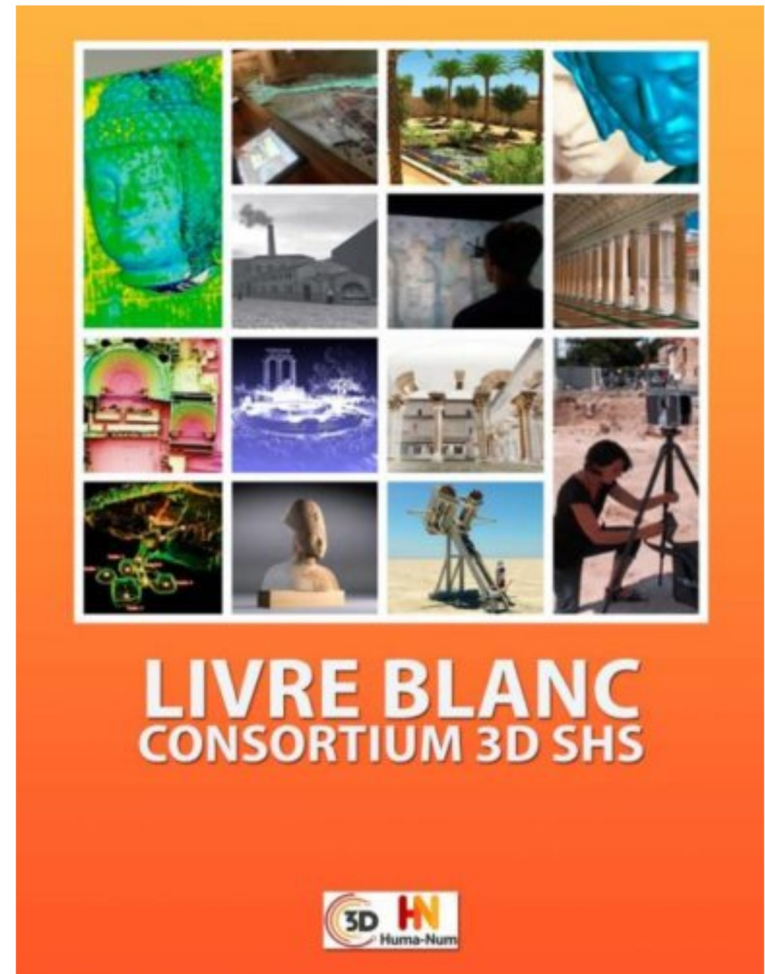


consortium3d-coordination@services.cnrs.fr

White Paper

- Tools &
- Good Practices

<https://hal.archives-ouvertes.fr/hal-01683842/>



5

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>

